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1

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CONTENTS

ECONOMICS, BUSINESS ADMINISTRATION, TOURISM AND STATISTICS

PRACTICING OF RENEWABLE ENERGY AUCTION SCHEME — EXPECTED SOCIETAL & ECONOMIC GAINS FOR THE DEVELOPING COUNTRIES

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Abstract: *With the devastating impacts of climate change, it is evident that many polls show a shift in power generation from fossil fuels to renewable energy. To support this transition, flexible and adaptable support mechanisms are required to maintain a stable and attractive environment for investments in the renewable energy sector, while ensuring the reliability and sustainability of the energy system in an economical way. Auctions have gained momentum as a dominant strategy, either solely or in collaboration with supplementary trials, to provide incentives for renewable energy deployment. The auction mechanism has expanded widely, with only six states accepting Renewable Energy Sources (RES) auction in 2005, and at least 84 states adopting this tool by 2017. This study aims to explore the potential of the auction mechanism in promoting renewable energy in the developing countries like Bangladesh, which has yet to add the required capacity to its energy mix due to the lack of a suitable support scheme to achieve its carbon neutrality goal. The research outlines the opportunity to design auctions based on qualitative research along with levelised cost of electricity (LCOE) model as quantitative part, the impact of auctions on energy costs and thus the feasibility of suggested auctioning schemes based on country-specific empirical evidence and benefits to develop an auctioning model for the countries. The potential auction model will add further positive value to the society as well as the both local and national economy. The results indicate that a systematic auctioning scheme with socio-economic development instruments, under a qualification requirement, can ensure various benefits for an emerging state with renewable energy resources.*

Keywords: *Renewable Energy; Auction; Socio-Economic Development; Gains*

JEL Classification: *D44; O13; P28; Q42*

1. Introduction

Electricity has been generated by burning fossil fuels such as coal, gas, and fuel oils for decades. Developed countries have relied on these sources to build their economies and meet their electricity demands. Almost all economic activities require energy as an input, making the development of sustainable energy sources a top priority for most nations. But the energy sector alone accounts for two-thirds of global Green House Gas (GHG) emissions (Matthaus, 2020). The excessive amount of CO_2 in the air is the primary cause of global warming and climate change. As the detrimental effects of climate change become more apparent, many countries are calling for a transition away from fossil fuels in power generation and an increased focus on renewable energy sources (RES) to combat this problem. A joint analysis conducted by the International Monetary Fund (IMF) and the International Institute of Applied System Analysis suggests that transforming our energy system is not only a significant challenge, but also a huge opportunity for economic growth and job creation. Zhang et al. (2021) conducted a study using provincial data from China between 2000 and 2017 to investigate the effects of low-emission electricity and found that increasing the ratio of low-emission electricity to total electricity by 1% could increase GDP by 0.16% and decrease CO_2 emissions by 0.848%, thereby promoting low-carbon economic development. Similarly, Rennkamp et al. (2017) state that renewable energy policies can reduce CO_2 emissions while also promoting socio-economic development.

The increasing adoption of RES across the globe can be attributed to the falling prices of RES, technological advancements, and growing environmental concerns. In addition to reducing the costs, fiscal incentives for RES investments have also been found to reduce the Levelized Cost of Energy (LCOE) by 16-33% in developing countries. This impact of renewable energy (RE) support systems on average prices is supported by evidence (IRENA, 2020; Castillo-Ramirez et al., 2017). Moreover, Hochberg and Poudineh (2018) argue that auctions provide an effective means of distribution for governments and a market-based approach that addresses several objectives such as promoting renewable energy, reducing tariffs, attracting foreign investment, improving reliability, regulating CO_2 emissions, and supporting economic development. Energy efficiency and competitive RE programs have been identified as potential areas for cost savings and a win-win situation where economic development and emission reduction can be achieved (Rennkamp et al., 2017; Beg et al., 2002). Additionally, IEA (2021) points out that targets and competitive auctions can facilitate the transition of the electricity sector to wind and solar technologies.

Contrary to global best practices, power projects in Bangladesh (both conventional and renewable energy) are still awarded on an unsolicited basis, such as through Power Purchase Agreements (PPAs) or Requests for Quotations (RFQs), and tariffs are determined through direct negotiation between the Bangladesh Power Development Board (BPDB) and Independent Power Producers (IPPs). This has resulted in higher prices for renewable energy compared to global trends. Cost declination by following auction schemes with modern hands-on methods is a positive sign for global energy generation from renewable energy sources.

The objective of this paper is to examine how the design features of renewable energy auctions influence auction outcomes and the associated societal and economic benefits. To accomplish this, firstly the author conducts a thorough and systematic literature review to provide an overview of auction design features and their effects on auction outcomes. Secondly, the author identifies the design features that may have varying impacts on different technologies and analyzes their effects on the levelized cost of energy (LCOE), which is a measure of cost competitiveness. The paper focuses on two renewable energy technologies: solar PV and on-shore wind.

2. Literature Review

The RE auction/tender process is a method that helps countries to acquire clean and green energy at competitive prices. In this process, the government establishes guidelines and procedures for buyers and suppliers. Renewable energy suppliers compete against each other for contracts to produce power for buyers. The buyers select the offering with the lowest price. The government sets the auction volume that is required in the auction process. Bidders then propose prices and auctioneers make bids. The final price is determined based on either the ranked bids, resulting in a uniform pricing, or the pay-as-bid (PAB) method, where each individual's bid is taken into account (USAID, 2019).

The auction system for renewable energy (RE) projects is often considered economically efficient because the compensation process is competitive, and the cost is usually close to the bidders' actual cost. This system allows for more efficient expansion of capacity. The regulatory body establishes the quantity, and project developers use a bidding system to determine viability (Bichler et al., 2020; Yalili et al., 2020; Mora et al., 2017; del Rio and Linares, 2014; IRENA, 2013). This process is considered a flexible one, and policymakers must adopt it considering a country's specific circumstances to achieve renewable energy volume targets. The auction

scheme has the ability to balance cost and effectiveness (Shrimali et al., 2016). Under the auction scheme, a RE project development follows four steps: planning, winner selection, construction, and operation (Botta, 2019). According to IRENA (2019), the factors that affect the price resulting from auctions are (i) country-specific conditions; (ii) investors' confidence and learning curve; (iii) policies supporting renewables, and (iv) auction design. Kitzing et al. (2019) highlight that when there are budget and volume limitations, RES auctions can be an efficient mechanism for allocating support.

According to del Rio et al. (2017), auctions can be a cost-effective way to support renewable energy projects. The authors found that compared to a feed-in tariff (FiT) or feed-in premium (FiP) support scheme, auctions can reduce support costs by 5% and 23%, respectively, for the EU in 2030. However, the amount of cost savings varies depending on the market scenario, technology, and auction design of a specific country. Botta (2019) suggests that auction design features can lead to prudent improvements in financing costs by lowering the cost of equity by between 0.5% and 1.5%. The auction system has the potential to reduce compensation and avoid overcompensation, but it must be designed and implemented correctly (Bichler et al., 2020; Mora et al., 2017; del Rio and Linares, 2014). This view is supported by AURES II (2020) in achieving the robust deployment of renewable energy and meeting climate targets.

Blazquez et al. (2016) proclaims that successful infiltration of RE could fall victim to its own success in slackened power markets, enhancing the cost of future positioning of renewables and lessening their scalability and the situation in being mentioned as the 'renewable energy policy paradox'. For overcoming the situation, the authors suggest for auction (more specifically pay-as-bid auction) for alternative price setting mechanisms as of receiving actual bid for each market generator, again up to the uppermost market clearing bid. Further, for local industrial development, RE auction scheme may be seen as an opportunity and for this policy makers need to focus on the localization of production activities (Hansen et al., 2020; Bayer et al., 2018; Hochsteller and Kostka, 2015).

Local content requirement (LCR) has a contributory role in NIMBY syndrome. In this connection, del Rio (2019) urged for the local community support. Botta (2019) argues that for reducing/abolishing the NIMBY syndrome, there is an obligation to offer a fixed percentage of project shares to local residents. This step not only mitigates the risk but also ensures financial gains to promote RE and expands support. Other side, the LCR feature can be linked to a location or site-specific auction, where the government chooses the project site and may partially or fully pre-develop it. The government establishes a target volume for the auction, and

bidders compete for the right to construct their projects at the selected site. For example, in Zambia's initial auction round, issues with the government's choice of project sites resulted in additional development work following the award of projects (USAID, 2019). Based on 120 studies and above citied literatures, a list was created that focused on different features of auction design for constructing a feasible auction scheme for the developing countries like Bangladesh (that yet not enters into the auction scheme) in table 3. Policymakers can incorporate these design elements in line with the country's overall goals to maximize the societal and economic benefits of renewable energy deployment (Gephart et al., 2017; IRENA-CEM, 2015).

3. Methodology

3.1 Qualitative Segment

To investigate the appropriate auction design process, a qualitative study was conducted. A systematic literature review was piloted with three objectives in mind: first, to assess the potential of auctions; second, to identify auction design features; and third, to determine the benefits of auctions based on country-specific empirical evidences. Another systematic literature review was conducted to examine the use of auctions in relation to cost-effective renewable energy deployment. This review included a reproducible search and applied explicit criteria for study inclusion and exclusion, as outlined by Sovacool et al. (2018). A semi-structured approach was taken, following the methodology proposed by Petticrew and Roberts (2006). The peer-reviewed literature on renewable energy auction design was searched in the Scopus database using the keyword "renewable energy auction design." A snowball sampling method was used to identify additional articles based on the references cited in the initial articles, following Cooper's (1998) approach. In addition, country-specific policy reports, guidelines, organizational reports, and policy papers were also included to provide a comprehensive overview of the literature on auction design and its benefits. This process yielded a list of 180 studies for further analysis and from there a subset of 120 studies was selected based on their relevance to the link between auction design, benefits, and country-specific evidence. These studies were summarized in Figure 1. The majority of the studies were qualitative in nature. Based on the 120 studies, a compiled list was created that focused on the key features of auction design, such as auction pricing rules, technology and location specificity, auction volume, and auction outcomes. Specifically, the qualitative screening of the studies explored how the systematic integration of socio-economic development

instruments and qualification requirements in the auction design could result in diverse benefits.
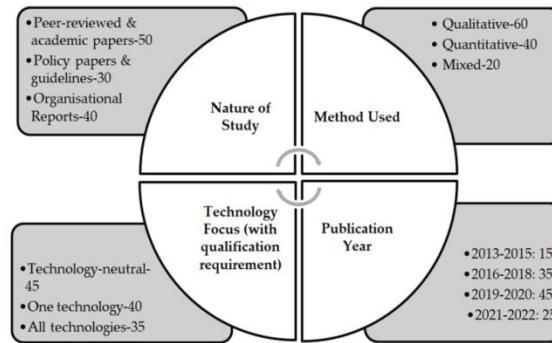
Figure 1: Compressed qualitative summary
Source: Author's creation based on the characteristics of articles

3.2 LCOE Model

Next, the quantitative analysis utilized the Levelized Cost of Electricity (LCOE) model. LCOE measures the average cost of generating one unit of electricity in a given power plant and represents the minimum price at which electricity must be sold to break-even (Reichelstein and Sahoo, 2015). This study focuses on Bangladesh as its sample area. However, LCOE data for Bangladesh is not available in international databases and then it was obtained through personal communication with relevant companies. The data for the other countries were collected from the International Energy Agency (IEA-NEA, 2020) database. LCOE was calculated based on the generation cost of renewable energy from two solar and one on-shore wind power plant that are recently implemented or under implementation under the utility-scale (IPP model). This was done to compare the factual portrayal of energy cost in Bangladesh with countries which are following the RE auction scheme. To calculate LCOE, the total average cost of building and operating the power plant over its entire lifespan was divided by the total electricity production of the plant over its entire lifespan (Equation 1).

$$\text{LCOE} = \frac{\text{Initial Investment} + \sum_{t=1}^{n} \frac{\text{O \& M Expenditure}_t}{(1+\text{CoC})^t}}{\sum_{t=1}^{n} \frac{\text{Electricity Generated}_t}{(1+\text{CoC})^t}} \qquad \text{………..} (1)$$

where, Initial Investment = the initial cost or capital cost/mega-watt (MW) (CAPEX) at $t = 0$

O & M Expenditure$_t$ = inflation adjusted operation & maintenance cost/MW and each year (OPEX)

Electricity Generated$_t$ = electricity generated in mega-watt-hours (MWh) per MW each year corresponding to the annual full-load hour (FLH)

n = the lifetime of the plant

t = year

CoC = cost of capital/the discount rate privately

4. Results

4.1 LCOE Analysis

Comparing with some auction scheme practicing countries, the LCOE is higher in Bangladesh and the country has not been implemented auction scheme yet. Thus, the capital costs are higher here; for example, the total capital cost to establish a 7.4 MW solar PV is 44.45 USD/MWh, whereas a total capital cost of 31.91 USD/MWh was required in India to establish a 35 MW plant and in France it required 30.42 USD/MWh to establish 25 MW RE plant (table 1). Both the countries follow auction scheme to establish RE plants (Altenburg and Engelmeier, 2013; IRENA, 2013). Other side, for the case of utility scale on-shore wind plant, India needed 32.19 USD/MWh as capital cost for founding 65 MW plant. Following the unsolicited path, Bangladesh needs 45.92 USD/MWh as capital cost for launching a 55 MW plant (table 2). Another notable segment is CoC/discount rate, 12% CoC was applied for each of the two solar and one on-shore wind plant for Bangladesh, which is higher than the current global trend.

Table 1: LCOE data (for utility-scale solar PV)

Country	Plant size (MW)	Construction costs (USD/MWh)	Refurbish-ment costs (USD/MWh)	Decommis-sioning costs (USD/MWh)	Total capital costs (USD/MWh)	Discount rate	LCOE (USD/MWh)
France	25	30.17	0	0.25	30.42	0.07	33.94
India	35	31.65	0	0.26	31.91	0.07	35.60
USA	100	38.55	0	0.32	38.87	0.07	44.25
Brazil	25	39.17	0	0.33	39.5	0.07	46.02
China	20	42.4	0	0.35	42.75	0.07	50.77
Canada	20	55.39	0	0.46	55.85	0.07	62.47
Bangladesh[*]	7.4	42.33	0	2.12	44.45	0.12	45.41
	50 (IPP model)	59.61	0	5.96	65.57	0.12	70.62

Source: IEA-NEA 2020

[*]Base data for Bangladesh were collected through author's personal communication

Table 2: LCOE data (for utility-scale on-shore wind)

Country	Plant Size (MW)	Construction costs (USD/MWh)	Refurbish-ment costs (USD/MWh)	Decommis-sioning costs (USD/MWh)	Total capital costs (USD/MWh)	Discount rate	LCOE (USD/MWh)
Brazil	30	27.38	0	0.23	27.61	0.07	33.59
India	65	31.92	0	0.27	32.19	0.07	35.91
Netherlands	50	25.42	0.3	0.21	25.93	0.07	41.16
Finland	30	37.62	0	0.31	37.93	0.07	44.87
Italy	10	37.65	0	0.31	37.96	0.07	52.87
	20	49.17	0	0.41	49.58	0.07	59.52
France	50	38.04	0	0.32	38.36	0.07	56.09
China	50	44.87	0	0.37	45.24	0.07	58.42
Bangladesh[*]	55 (IPP Model)	45.92	0	0	45.92	0.12	54.19

Source: IEA-NEA 2020

[*]Base data for Bangladesh were collected through author's personal communication

Discount rate (CoC) influences the LCOE significantly, because if the rate is high, then the LCOE will be enhanced and vice versa. For instance, if the CoC were 6%, then the LCOE for India's 35 MW solar PV would be 32.92 USD/MWh, i.e. just a reduction of 3.68 USD/MWh for a 1% reduction of CoC (IEA-NEA, 2020). The same scenarios (for both total capital and CoC) are depicted in the on-shore wind energy case. So, RE auction scheme is a helpful tool and will be a helpful toolkit in the RE market to ensure a low-cost energy with other positive returns. But obviously, the auction has to be tailored properly as per the requirement of the country. Further, for reducing the discount rate, the public entities are responsible to initiate different steps for the generators and the investors as it has an impact on launching the targeted amount of renewable energy in any country for hurtling the global net zero aim.

4.2 Renewable Energy Auction Model based on Reviewed Literatures

Based on the literature review, auction design elements can effectively ensure diverse returns both directly and indirectly, as well as competitive, low-cost energy. Auctions have been demonstrated to be a successful means of attracting new participants and aligning supply and demand when competition is desirable and feasible. They have had significant impacts across various economic industries (WBG, 2014). A list was observed based on the 120 studies which focused on the overall features of the auction design (del Rio, 2017; IRENA-CEM, 2015), with special focus on the auction volume (Kitzing et al., 2019; Schmidt et al. 2019), regularity of auctions (Hochberg and Poudinesh, 2018; Mora et al., 2017; Wigand et al., 2016), technology specificity (Mora et al., 2017; del Rio, 2017; Wigand et al., 2016), location specificity (USAID, 2019), auction price rule within which pay-as-bid pricing (Haelg, 2020; Shrimali et al., 2016; IRENA-CEM, 2015), ceiling price allocation process (USAID, 2019; Gephart et al., 2017), award criteria (AURES II,

2021; IRENA, 2016), auction type (GIZ, 2015; IRENA-CEM, 2015; Held et al., 2014; Maurer and Barros, 2011), remuneration type/form of support auctioned (USAID, 2020; del Rio, 2017; Förster and Amazo, 2016; GIZ, 2015), support period (del Rio, 2019; del Rio, 2017; IRENA-CEM, 2015), pre-qualification requirement (AURES II, 2021; Anatolitis and Grundlach, 2020; IRENA-CEM, 2015; IRENA, 2013), penalty (AURES II 2021; Rosenlund and Jaana, 2016; IRENA-CEM, 2015; Held et al., 2014). Moreover, several sources have shed light on how auction design can serve as a tool for socioeconomic development by implementing qualification and local content requirements. These requirements guarantee that bidders possess the necessary financial, technical, and legal expertise to execute the project successfully. Policymakers can introduce these design elements to maximize the socioeconomic advantages of renewable energy deployment, aligning with the nation's overarching objectives (Gephart et al., 2017; IRENA-CEM, 2015).

Table 3 presents an evaluation of the advantages and potential benefits identified in past renewable energy auction's outcomes. A renewable energy auction model proposed (as per table 3) for developing countries like Bangladesh, who are new entrants to the auction scheme, to promote robust deployment of low-cost sustainable energy with lower subsidies by ensuring more competition, high realization rates of the projects with varied technology, balanced grid expansion, and expanded socio-economic gains.

Table 3: Renewable energy auction model for the developing countries like Bangladesh

Category	Auction Design Features	Gains
AUCTION SCOPE	**Auction Volume:** Capacity (MW/year) [Government's yearly target should be divided into 3 slices as there will be 3 auctions per year]	• supporting high energy growth and fast capacity addition; • attracting more bidders, thus increasing competition and attaining a lower price; • offering guidelines to the bidders due to its simplicity and transparency; • encouraging private investment
	Auction Format: multi-unit auction	• reducing non-compliance risk; • improving cost & deployment effectiveness via boosting competition & differentiating developer-specific risk.
	Lead time to bid: 06 months	• attracting more bidders; • helping to speculate equipment prices;

Category	Auction Design Features	Gains
		• helping bidders to reduce auction uncertainties.
	Technology Specificity: Technology neutral	• promoting diversified energy-mix; • offering more competitive bidding within less expensive technology; • minimizing generation costs; • ensuring compliance with the applicable regulation demands; • ensuring stability and reliability of the grid; • improving the value of energy; • enhancing the dispatchability; • removing incentive by reducing windfall profit
	Location Specificity: Site specific (site/geographical location will be selected and developed by the government)	• allowing better coordination among project construction, required grid expansion and land acquisition; • balancing the electricity expansion areas; • reducing risks and costs (transition costs) for producers; • lessening uncertainty and obtaining good regional development; • faster project execution; • attracting new market entrants.
	Auction Schedule: Regular/systematic auctioning schedule [3 times per year]	• bringing a result of lower WACC; • promoting better guidance for placing the grid infrastructure; • ensuring a continuation of renewable energy project in pipeline; • decreasing risk, increasing investors' confidence and reducing the bid price; • technological progress and reduced technology prices through learning by doing process; • preventing underbidding as other projects are in the pipeline.

Category	Auction Design Features		Gains
QUALIFICATION REQUIREMENT	**Prequalification Requirement (financial)**	**Bid Bond [amount/ MW]**	• confirmation of land ownership and grid connection agreement, lowering the possibility of project's non-realization, meeting contractual obligations and protecting fake bids (by bid bonds);
		Performance bond [amount/ MW]	• sustaining the realization schedule and standard of the project (by performance bond);
	Lenient Prequalification Requirement (material): detail project description, environmental assessment, etc.		• encouraging a high level of competition; • lenient prequalification requirement lessens the risk for investors.
	Local Content Requirement: 30 percent of the local content (like local employment, local labor for civil works, locally manufactured materials, etc. and then the investor will get an specific percent of tax credit by the authority)		• encouraging innovation and supply chain improvement; reducing local risk (NIMBY syndrome); • ensuring local industrial development as a socio-economic development instrument; • creating new employment generation, gearing up empowerment locally and/or nationally; • facilitating regional economic development.
ALLOCATION PROCESS	**Auction Type:** Static seal-bid auction		• straightforward and easy to understand; • lower participation for the bidders; • supply and demand are matched here; • small actors can participate in bidding process; • less vulnerable to collusion compare to dynamic auction.
	Pricing Rule: Pay-as-bid (PAB)		• offers actual bid price for each market generator; • minimizing the cost of RE by discovering the real demanded price; • favoring more financially viable projects; • wider acceptance from a social and political standpoint;

Category	Auction Design Features	Gains
		• pathway for solving RE policy paradox.
	Award Criteria: Price only	• lowering bid price compare to multi-criteria auction; • preventing underbidding
	Price Limit: Ceiling price (disclosed)	• leading significant lower prices; • preventing excessive prices, collusion & price manipulation, thus giving bidders higher planning security; • attracting more participants even potentially weaker ones; • helping government acknowledge upfront potential risk if the auction scheme may not fulfill its intended role; • giving bidders more planning security and reducing allocation risk.
CONTRACT DESIGN	**Remuneration type/form of support auctioned:** Contract for differences (CfD) [for first 3 years]	• zero premium payment to the generators as RE generators participate in ancillary services and market balancing; • no public subsidy, i.e., savings of public money; • strong signal for value of energy; • RE generators can sell energy directly to the wholesale market that helps the generators to be self-reliant for the future.
	Remuneration type/form of support auctioned: Fixed premium [from the 4th year]	• reducing bid prices for ensuring stable revenues; • stable revenues lessen risk premia and cost of capital (CoC); • encouraging competition by engaging small players
	Support Period: 15 years [may be less or higher depending on the goal and technological maturity of the specific country]	• enhancing the confidence of investors that influence to offer low cost for auction by a long term support period; • reducing LCOE, investment risks and CoC;

Category	Auction Design Features	Gains
		• enhancing competitions
	Realization Time Limit to build: Solar-24 months & Wind-36 months	• reducing risk for paying penalty with realistic realization time; • negotiating with manufacturers for low bid price; • helping to guess technology price
	Penalty: Gradual and proportionate penalty should be imposed based on the commissioning delay of the project	• proving the seriousness of the bidders; • managing underbidding risk; • establishing cost and deployment effectiveness.
OTHER	**Support Level Adjustment:** No adjustment for inflation. Contract will be done in USD	Signing contract in local currency- • increasing bid prices; • reducing the capability of developers for rising debt; • due to exchange rate fluctuation, risk & CoC increased

Source: Author's own creation by the reviewed literatures

5. Discussion and Conclusion

The access to energy is no longer a binary marvel – it is the quality energy access high up on the energy ladder (Burke, 2013) and not the mere quantity that is related to the economic development. In many places, RE technologies have proven valuable and sometimes vital. They play a significant role in sustaining current economic growth and have recently been instrumental in pushing the energy access boundaries around the world. The global scenario is changing rapidly, with the share of renewables in the energy mix increasingly globally. The growing emphasis on environmental issues increases public and private awareness and growing support of the topic. There is increasing pressure on the industry to meet such needs. Fossil fuel-based power generation could also lose its earlier role in the energy mix due to price reductions in constantly increasing power generation from RE. This can be partially explained by the theory of learning curves. Although FF-based power generation may gain price benefits from higher efficiency or smart technologies, the RE market is moving at a much faster pace. Wright (1936) provided a framework for forecasting cost declines due to cumulative production. Moore (1965) referring to the transistor market development – predicted it would double every two years because of time.

Others later explained the cost reductions by economies of scale (Goddard, 1982) or combined the abovementioned factors with each other (Swanson, 2011). Clean technology cost reductions arise from fundamental physics and lower input material costs from scale as well as lower labor costs through manufacturing automation and lower waste driven by higher efficiency. All these cost reductions appear naturally due to manufacturing scale and vertical integration rather from than performance improvements. Thus, the advances in clean technology are a function of experience and production, closely related to "learning by doing."

Besides the learning curve-indicated technological progress, the new channels of support for RE generation have also contributed to the drastic fall in RE prices, thus improving the accessibility of energy for wider consumer groups. However, finance and sustainability are the most important design criteria for investing in RE. Studies show that significant results can arise from all support channels (Izgec et al., 2017), especially if designed carefully (del Río et al., 2021). The features of cost-effectiveness, enabling real price discovery regarding the project and resulting in a lower support level mean that many countries worldwide are shifting from feed-in tariffs to a competitive auction process (Kreiss et al., 2017). The impacts of the learning curve and the various support channels work together and strengthen each other, enabling lower prices to be the prime motivation for the further espousal of auction schemes globally.

Market based and lower support cost mechanism, i.e., auction scheme ensures the low cost clean energy for the mass people of the developing countries. The LCOE analysis proves that the per MWh energy cost (for both solar and wind) is higher in Bangladesh compare to other countries those practice auction scheme under clean energy policy. When today's energy cost will be less, then the tomorrow's investment will be higher in this sector. Being a driving force for every economy, the energy will play a perceive firm impact both in the society and the economy by uplifting the societal productivity, regional economic development, empowerment of the local community, clean energy employment, local industrial promotion, self-sufficiency of the local bidders and last but not the least the global environmental scenario. So, the prime responsibility of the policy makers is to tailor a technology-neutral, location-specific volume auctions, in conjunction with socio-economic development tools and qualification criteria, by which it is possible to achieve diverse benefits for economies with untapped renewable energy potential. Further, it is a recommendation for the policymakers that 'current or at this moment solution' concept is not applicable for the energy sector — rather long term planning is linked with the sector.

References

1. Altenburg, T. and Engelmeier, T. (2013) 'Boosting solar investment with limited subsidies: rent management and policy learning in India'. *Energy Policy,* 50(c), pp. 866-874.

2. Anatolitis, V. and Grundlach, P. (2020) *Auctions for the support of renewable energy in Ukraine: auction design for the planned 2020 RES auctions*. Karlsruhe: Auctions for Renewable Energy Support II. Available at: https://publica-rest.fraunhofer.de/server/api/core/bitstreams/4b91ce47-1bb5-44a2-8035-adbc1ad265f4/content (Accessed: 20 November 2022).

3. AURES II (2020) *The future of renewable energy auctions-scenarios and pathways*. Karlsruhe: Auctions for Renewable Energy Support II. Available at: https://www.researchgate.net/publication/348935328_The_future_of_renewable_energy_auctions_scenarios_and_pathways (Accessed: 20 November 2022).

4. AURES II (2021) *Auction design and renewable energy financing*. Karlsruhe: Auctions for Renewable Energy Support II. Available at: http://aures2project.eu/wp-content/uploads/2021/09/AURES_II_D5_4_auction_design_financing.pdf (Accessed: 25 November 2022).

5. Bayer, B., Bertholt, L. and Freitas, B. (2018) 'The Brazilian experience with auctions for wind power: an assessment of project delays and potential mitigation measures'. *Energy Policy,* 122, pp. 97-117.

6. Beg, N., Morlot, J.C., Davidson, O., Afrane-Okesse, Y., Tyani, L., Deston, F., Sokona, Y., Thomas, J.P., la Rovere, E.L., Parikh, J.K., Parikh, K. and Rahman, A.A. (2002) 'Linkages between climate change and sustainable development'. *Climate Policy,* 2, pp. 129-144.

7. Bichler, M., Grimm, V., Kretschmer, S. and Suttener, P. (2020) 'Market design for energy auctions: an analysis of alternative auction formats'. *Energy Economics,* 92, pp. 1-14.

8. Blazquez, J., Bollino, C.A., Fuertes, R. and Nezamuddin, N. (2016) 'The renewable energy policy paradox'. *King Abdullah Petroleum Studies and Research Center,* KS(1650-DP045A), pp. 1-14.

9. Botta, E. (2019) 'An experimental approach to climate finance: the impact of auction design and policy uncertainty on renewable energy equity cost in Europe'. *Energy Policy,* 133, pp. 1-13.

10. Burke, P. J. (2013) 'The national-level energy ladder and its carbon implications'. *Environment and Development Economics,* 18(4), pp. 484–503.

11. Castillo-Ramirez, A., Mejia-Giraldo, D. and Molina-Castro, J.D. (2017) 'Fiscal incentives impact for RETs investments in Colombia'. *Energy Source, Part B: Economics, Planning, and Policy,* 12(9), pp. 759-764.

12. Cooper, H. (1998) *Synthesizing Research: A Guide for Literature Reviews.* Washington DC: Saga.

13. Förster, S. and Amazo, A. (2016) *Auctions for renewable support in the Brazil: instruments and lessons learnt*. Karlsruhe: Auctions for Renewable Energy Support II.

Available at: http://aures2project.eu/2021/07/06/auctions-for-renewable-energy-support-in-brazil-instruments-and-lessons-learnt/ (Accessed: 1 August 2022).

14. Gephart, M., Klessmann, C. and Wigard, F. (2017) 'Renewable energy auctions- where are they (cost-) effective'? *Energy Environment,* 28, pp. 145-165.

15. GIZ (2015) *Renewable energy auctions: goal-oriented policy design*. Bonn: German Corporation for International Cooperation. Available at: https://www.researchgate.net/publication/279183731_Renewable_energy_auctions_Goal-oriented_policy_design (Accessed: 22 February 2022).

16. Goddard, C. (1982) 'Debunking the learning curve'. *IEEE Transactions on Components, Hybrids, and Manufacturing Technology,* 5, pp. 328-335.

17. Haelg, L. (2020) 'Promoting technological diversity: how renewable energy auction designs influence policy outcomes'. *Energy Research & Social Science*, 69, pp. 1-21.

18. Hansen, U.E., Nygaard, I., Morris, M. and Robbins, B. (2020) 'The effects of local content requirements in auction schemes for renewable energy in developing countries: a literature review'. *Renewable and Sustainable Energy Reviews,* 127, pp. 1-12.

19. Held, A., Ragwitz, M., Gephart, M., de Visser, E. and Klessmann, C. (2014) *Design features of support schemes for renewable electricity*. Utrecht: Ecofys Netherlands B.V. Available at: https://www.eesc.europa.eu/sites/default/files/resources/docs/2014_design_features_of_support_schemes--2.pdf (Accessed: 20 January 2022).

20. Hochsteller, K. and Kostka, G. (2015) 'Wind and solar power in Brazil and China: interests, state business relations and policy outcomes'. *Global Environment Politics,* 15, pp. 74-94.

21. Hochberg, M. and Poudineh, R. (2018) 'Renewable auction design in theory and practice: lessons from the experience of Brazil and Mexico'. *The Oxford Institute of Energy Studies*, EL(28), pp. 1-62.

22. IEA-NEA (2020) *Project costs of generating electricity*. Paris: International Energy Agency-Nuclear Energy Agency. Available at: https://www.iea.org/reports/projected-costs-of-generating-electricity-2020 (Accessed: 20 September 2022).

23. IEA (2021) *Net zero by 2050- a roadmap for the global energy sector.* Paris: International Energy Agency. Available at: https://www.iea.org/reports/net-zero-by-2050 (Accessed: 20 March 2022).

24. IRENA (2013) *Renewable energy auctions in developing countries.* Abu Dhabi :International Renewable Energy Agency. Available at: https://www.irena.org/publications/2013/Jun/Renewable-Energy-Auctions-in-Developing-Countries (Accessed: 11 March 2022).

25. IRENA-CEM (2015) *Renewable energy auctions: a guide to design.* Abu Dhabi: International Renewable Energy Agency. Available at: https://www.irena.org/publications/2015/Jun/Renewable-Energy-Auctions-A-Guide-to-Design (Accessed: 11 March 2022).

26. IRENA (2016) *Renewable energy benefits: measuring the economics*. Abu Dhabi: International Renewable Energy Agency. Available at: https://www.irena.org/-

/media/Files/IRENA/Agency/Publication/2016/IRENA_Measuring-the-Economics_2016.pdf   (Accessed: 11 March 2022).

27. IRENA (2019) *Renewable energy auctions-status and trends: beyond price.* Abu Dhabi: International Renewable Energy Agency. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jun/IRENA_Auctions_beyond_price_2019_findings.pdf (Accessed: 25 May 2022).

28. IRENA (2020) *Power system organizational structures for the renewable energy era.* Abu Dhabi: International Renewable Energy Agency. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jan/IRENA_Power_system_structures_2020.pdf (Accessed: 25 May 2022).

29. Izgeç, M. M., Tamer, E., Adnan, S. and Ömürgönülşen, M. (2017) 'Financial sustainability analysis of renewable energy plant applications'. *Energy Sources Part B: Economics, Planning, and Policy*, 12(10), pp. 895-902.

30. Kitzing, L., Anatolitis, V., Fitch-Roy, O., Klessmann, C., Kreiss, J., Rio, P.D., Wigand, F. and Woodman, B. (2019) 'Auctions for renewable energy support: lessons learned in the AURES Project'. *The International Association of Energy Economics*, 3rd Quarter, pp. 11-14.

31. Kreiss, J., Ehnhart, K.M. and Haufe, M.C. (2017). 'Appropriate design of auctions for renewable energy support—prequalifications and penalties'. *Energy Policy*, 101, pp. 512-520.

32. Maurer, L.T.A. and Barroso, L.A. (2011) *Electricity auctions- an overview of efficient practices.* Washington D.C: The World Bank Study. Available at: https://documents1.worldbank.org/curated/en/114141468265789259/pdf/638750PUB0Exto00Box0361531B0PUBLIC0.pdf (Accessed: 25 March 2022).

33. Matthaus, D. (2020) 'Designing effective auctions for renewable energy support'. *Energy Policy,* 142, pp. 1-9.

34. Moore, G. E. (1965) 'Cramming more components onto integrated circuits'. *IEEE Solid-State Circuits Society Newsletter*, 19th April, pp. 114. Available at: https://ieeexplore.ieee.org/document/4785860 (Accessed: 2 April 2021).

35. Mora, D., Kitzing, L., Rosenlund Soysal, E., Steinhilber, S., del Rio, P., Wigard, F., Klessmann, C., Tiedemann, S., Amazo, A., Welisch, M., Kreiβ, M., Fitch-Roy, O. and Woodman, B. (2017) *Auctions for renewable energy support: taming the beast of competitive bidding*. Karlsruhe: Auctions for Renewable Energy Support. Available at: http://aures2project.eu/wp-content/uploads/2021/07/aures-finalreport-1.pdf   (Accessed: 30 May 2022).

36. Pitticrew, M. and Roberts, H. (2006) *Systematic reviews of social sciences: a practical guide.* Victoria: Blackwell Publishing.

37. Reichelstein, S. and Sahoo, A. (2015) 'Time of day pricing and the levelized cost of intermittent power generation'. *Energy Economics*, 48, pp. 97-108.

38. Rennkamp, B., Haunss, S., Wongsa, K., Ortega, A. and Casamadrid, E. (2017) 'Competing coalitions: the politics of renewable energy and fossil fuels in Maxico, South Africa and Thailand'. *Energy Research and Social Science,* 34, pp. 214-223.

39. del Río, P. (2017) 'Designing auctions for renewable electricity support-best practices from around the world'. *Energy for Sustainable Development*, 41, pp. 1-13.

40. del Río, P. (2019) *Auctions for the support of renewable energy in Mexico: main results and lessons learnt*. Karlsruhe: Auctions for Renewable Energy Support II. Available at: http://aures2project.eu/wp-content/uploads/2019/12/AURES_II_case_study_Mexico.pdf (Accessed: 20 June 2022).

41. del Río, L. and Linares, P. (2014) 'Back to future? Rethinking auctions for renewable electricity support'. *Renewable Sustainable Energy Review,* 35, pp. 42-56.

42. del Río, P., Papadopoulou, A. and Calvet, N. (2021) 'Dispatchable RES and flexibility in high RES penetration scenarios: solutions for further deployment'. *Energy Sources, Part B: Economics, Planning, and Policy*, 16(1), pp. 1-3.

43. del Río, P., Resch, G., Ortner, A., Liebmann, L., Busch, S. and Panzer, C. (2017) 'A techno-economic analysis of EU renewable electricity policy pathways in 2030'. *Energy Policy,* 104, pp. 484-493.

44. Rosenlund, E. S. and Jaana, K. (2016) *Pre-qualifications and penalties*. Karlsruhe: Auctions for Renewable Energy Support. Available at: https://core.ac.uk/download/pdf/154333899.pdf (Accessed: 30 June 2022).

45. Schmidt, T.S., Steffen, B., Egli, F., Pahle, M., Tietjen, O. and Edenhofer, O. (2019) 'Adverse effects of rising interest rates on sustainable energy transitions'. *Nature Sustainability*, 2, pp. 879–885.

46. Shrimali, G., Konda, C. and Farooquee, A.A. (2016) 'Designing renewable auctions for India: managing risks to maximize deployment and cost-effectiveness'. *Renewable Energy*, 97, pp. 656-670.

47. Sovacool, B.K., Axsen, J. and Sorrell, S. (2018) 'Promoting novelty, rigor, and style in energy social science: towards codes of practice for appropriate methods and research design'. *Energy Research and Social Science,* 45, pp. 12-42.

48. Swanson, R. (2011) *The Stanford Energy Seminar*. Available at: https://www.youtube.com/watch?v=_MbG1-JgtXg&ab_channel=Stanford (Accessed: 30 June 2021).

49. USAID (2019) *Designing renewable energy auctions: a policymaker's guide.* Washington DC: United State Agency for International Development. Available at: https://2017-2020.usaid.gov/sites/default/files/documents/1865/USAID_SURE_Designing-Renewable-Energy-Auctions-Policymakers-Guide.pdf (Accessed: 10 June 2021).

50. USAID (2020) *Renewable energy auctions toolkit: stages of auction design*. Washington DC: United State Agency for International Development. Available at: https://www.climatelinks.org/sites/default/files/asset/document/2022-04/USAID_SURE_Renewable-Energy-Auction-Design-Stages.pdf (Accessed: 10 July 2022).

51. WBG (2014) *Performance of renewable energy auctions: experience in Brazil, China, and India.* Washington DC: World Bank Group. Available at: https://documents1.worldbank.org/curated/en/842071468020372456/pdf/WPS7062.pdf (Accessed: 10 July 2021).

52. Wigand, F., Förster, S., Amazo, A. and Tiedemann, S. (2016) *Auctions for renewable energy support: lessons learnt from international experiences*. Karlsruhe: Auctions for Renewable Energy Support. Available at: http://aures2project.eu/2021/06/28/auctions-for-the-support-of-renewable-energy-lessons-learnt-from-international-experiences/ (Accessed: 13 May 2022).

53. Wright, T. P. (1936) 'Factors affecting the cost of airplanes'. *Journal of Aeronautical Science,* 3(4), pp. 22–128.

54. Yalili, M., Tiryakis, R. and Gozen, M. (2020) 'Evolution of auction schemes for renewable energy in Turkey: an assessment of the results of different designs'. *Energy Policy*, 145, pp. 1-11.

55. Zhang, Z., Chen, Y-H. and Wang, C-R. (2021) 'Can CO2 emission reduction and economic growth be compatible? Evidence from China'. *Frontiers in Energy Research*, 9, pp. 1-11.

IMPACT OF SIX SIXMA ON TOURISM INDUSTRIES PERFORMANCE IN INDONESIA: EVIDENCE FROM STRUCTURAL EQUATION MODEL

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Abstract: *Concept of Six Sigma is comprehensive for finding the appropriate strategy as of the industry can run as efficiently as possible and survive in an economic wave currently under challenging times, including the tourism industry, which is the object of this research. These papers examine an overview of the empirical study of relationships between six sigma strategies toward tourism industry performance. For many countries, tourism is seen as one of the instruments for developing country because it can trigger new economic activities. Tourism also has assertive economic impact on the balance of payments, unemployment, GDP, and profitability. Unplanned and uncontrolled tourism growth has an impact on financial sustainability. The methodology used in this research is quantitative by distributing an online questionnaire consisting of 16 statement items with a five-point Likert scale. The sample size used for this research is 300 tourism service providers in 10 of the city in Indonesia, which is the leading destination for tourists. This research was processed using smart PLS 3.2.9 analysis tools and methods research in this study using Structural Equation Modeling (SEM), namely the equation model with a variance-based approach or modeling component-based structural equations. The findings from this study indicate that the latent variable models are involvement and top management commitment, training and education, cultural change, industrial infrastructure, and teamwork has a fit outer model relationship (> 0.7) between latent variables and indicators of efficacious Six Sigma implementation in the tourism industry in Indonesia. However, top management commitment and industrial infrastructure have a low t value, so of course, this is a challenge and input for developing the tourism industry in Indonesia in the future.*

Keywords : *tourism ;six sigma; sustainability*

JEL Classification: *Z32; C51*

1. Introduction

The impact of the Covid-19 pandemic that hit Indonesia and other countries worldwide was felt. Tourism is the hardest-hit sector. Tourists cannot travel or enjoy

tourist destinations because the government has set stringent regulations. The impact is felt in the tourism sector, such as hotels, travel agencies, or tourist villages that were busy attracting visitors before the pandemic. Today's tourism market circulation is characterized by increasing international competition and rapidly changing and challenging customer demands. (Beritelli P et al., 2007); when the pandemic hit, the tourist destination was empty of visitors, as is known, the tourism sector is one of the contributors to foreign exchange and employment that is able to sustain the strength of a nation in running its economy. To maintain its contribution to modern economic growth, all forms of industry, including tourism, are required to improve the production quality to meet increasingly high market demands and high expectations level of precision in the midst of a pandemic (Yurim Zagloel et al., 2018). Published by (Meadow et al.,1972) entitled The Limit to Growth which caused the world to turn its attention to the sustainability process, including in the field of tourism, The essence of tourism destination development involves several problems, including the need to manage and coordinate many elements in the tourism destination system. (Iunius, R.F et al.,2915). The Central Statistics Agency of Indonesia (BPS) recently reported an increase in foreign tourist arrivals as of May 2022. According to the agency's report, tourist visits as of May 2022 reached 212,330 visits or an annual jump of 1,382.45 percent, and in January-May, it reached 397,770 visits or grew 616.40 percent. BPS released the publication on tourist visits in early July 2022. The report is undoubtedly fresh air for stakeholders and business people in the sector after the service industry has been in a slump for a long time. Meanwhile, based on data from the Indonesian Ministry of Creative Economy and Tourism, foreign tourists visiting Indonesia in July 2022 amounted to 476,970 visits or grew by 6,396.46% compared to July 2021, which amounted to 7,342 visits. Based on nationality, the number of foreign tourist visits in July 2022 at the main entrance and other gates (Non-MPD) recorded the highest number of visits, namely: Australia with 84,569 visits, Singapore with 59,802 visits, Malaysia with 42,551 visits, India with 27,756 visits, and the United States with 21,511 visits. A critical success factor is an essential ingredient required for the success of a Six Sigma project within an industry (Coronado, R. & Antony. J, 2002). In addition, most companies do not even know and realize how important the benefits of the Six Sigma concept are, so they cannot implement it effectively. (Zeeshan et al.,2017). The purpose of this study assumes that the industry performance can be an indicator of the success of Six Sigma implementation to answer the questions;(a)to investigate the critical success factors of the implementation of Six Sigma in the Indonesian tourism industry;(b)to investigate the successful implementation of Six Sigma in the Indonesian tourism

industry;(c) to investigate the correlation between latent variable as a critical success factor of the Indonesian tourism industry.

2. Literature Review

According to (Yurim Zagloel et al., 2018) In his research, It can be concluded that the overall view of the urgent critical success factor theory for this research can be measured by the following factors, namely; involvement and commitment of top management, training and education, teamwork, cultural change, and industrial infrastructure. In the literature review by identifying the use of PLS-SEM in measuring the impact of six sigma towards sustainability (Barcia et al., 2022), implementing five categories of search criteria into the database platform as a methodology for measuring the impact of six Sigma on industrial sustainability; the results of the research are Six Sigma has a positive effect on 83% of economic indicators, 78% of environmental indicators, and 70% of social indicators. Furthermore, other studies observing the implementation of six sigma in the SMES industry and its outputs show that management style has a positive impact on SMES environmental performance. (Ali et al., 2021). The implementation of six sigma is a continuous steps that contains elements of continuous improvement (Kaizen); of course, it is not easy to make these efforts, so it is classified as a unique application and difficult to implement. The principle is based on resource efficiency and waste minimization; therefore, it can be measured significantly from the perspective of financial turnover, product life cycle, and increasing competition worldwide. The tourism sector itself is an interesting industry to study; along with the development of science, there are only a few studies in this field, one of which is by (Foris et al., 2020). The Six Sigma method is claimed by the Tourism Promotion and Development Association (APDT) in Brasov, Romania to have been implemented for the management of tourist destinations; by conducting a series of practical application testing frameworks that guarantee the management of tourist destinations. According to (Henderson et al., 2000) this pattern consists of five critical success factors that has been used in previous studies that is Top management involvement and commitment, is a determining factor for the successful implementation of the six sigma; Training and Education. Training and education programs are essential for implementing Six Sigma stages. Creating new goals for the company is possible when employees can act and think (Szeto. A et al., 2005); Teamwork is how employees interact in a group that directly actively supports and helps one another. Teamwork is a variable that cannot be avoided because of effective communication.(Carvalho & Pinto, 2014); Cultural Change. An industry

can be said to be successful if it can synergize with culture and create positive relationships with the surrounding environment. research has concluded that the collaboration of Supply Chain Orientation (SCO) and environmental cultural orientation makes a positive contribution to the environmental performance of a company or organization. (Kirchoff et al., 2016); Industrial Infrastructure. Six Sigma functions to maximize and maintain business success. It has been adopted by various levels of the organization to meet consumer needs to achieve the target. Research in Turkey illustrates that the implementation of Six Sigma for company performance results in an 80-100% increase in business profitability, thus showing the impact of Six Sigma on a company's business performance (Erturk et al., 2016).

3. Research Methodology

The measurement of six Sigma on the performance of the tourism industry Using online survey questionnaires using mechanisms and approaches according to research needs and the objects studied are related to the implementation of six sigma which have been implemented by several tourism service providers in Indonesia. This stage is of course carried out to test the model of the five latent variables along with the appropriate indicators with the literature in the previous chapter.Questionnaires were distributed to tourism service providers who had implemented Six Sigma in Indonesia. A total of 16 questionnaire questions items along with 300 respondents were applied to five measurement scales. The results of the answers from the respondents were interpreted on a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The quantitative method approach is implemented in data analysis for further processing in software, in this case, using the Smart PLS application. In this study, a qualitative approach was also used because the question instrument was chosen to measure and analyze each indicator which was collected based on the progress of the development of the tourism industry in in ten main tourism destination cities in Indonesia, namely Jakarta, Bali, Papua, North Sulawesi, West Nusa Tenggara, Southeast Sulawesi, South Sulawesi, East Kalimantan, North Sumatra, Central Java with several contradictory assumptions and practice to provide authentic evidence to test the hypotheses and parameters of the SEM model. SEM models contribute very well to researchers working with structural equation models, such as using non-normally distributed data, small sample sizes, and indicators of formative research models (Hair J. Black, 2014). A schematic diagram of this research model is shown in figure 1.

Figure 1. Laten Variable Model Diagram
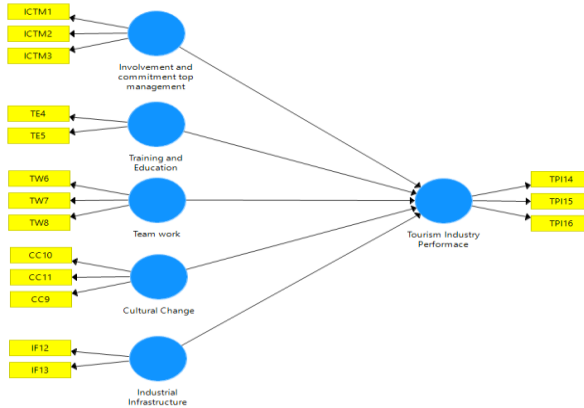
Source: Smart PLS

4. Findings and Result

4.1 Outer model testing

To see the validity and reliability of a model, outer testing is carried out. The analysis of this test can be seen from the value of the Loading factor, average variance extract (AVE), Discriminant Validity, and Composite Reliability. The outer model is the initial stage in testing the validity of a model; a condition for factor loading must be > 0.6 (Taherdoost et al., 2014) so that the indicator is said to be valid. If it is not valid, then it must be deleted model. To find out the analysis of the outer model of this research can be seen in Figure 2 below.
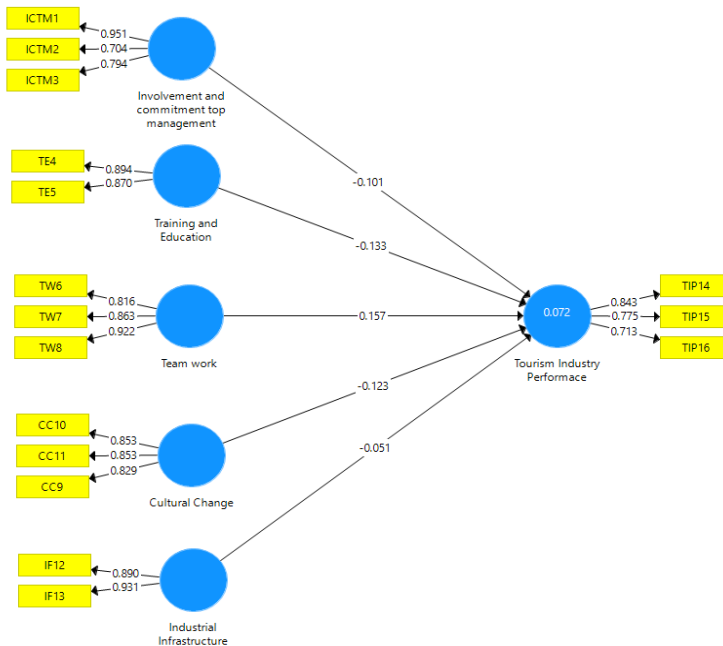
Figure 2. Algorithm Loading model Exploratory
Source: Smart PLS

Based on Figure 2, it can be concluded that the results of data processing obtained the largest number for the loading factor between the indicator and the latent variable is 0.951 (ICTM1), and the lowest is 0.704 (ICTM2), and there is no latent variable value that has a loading factor below 0.7. This proves that the model is feasible to be tested to the next stage, or in other words, the latent variable has good convergent validity. Thus, to see if the latent variables and their indicators have good reliability can be seen in table 1 below, which shows each latent variable and its indicators with Cronbach Alpha criteria of more than 0.7(Amora, 2021) and the AVE value is greater than 0.5 (Sekaran, Bougie 2016). Based on the first research question, ICTM, TE, TW, CC, and IF are critical factors for the successful implementation of the six sigma model in the tourism industry in Indonesia.

Tabel.1 Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Cultural Change	0.805	0.829	0.882	0.714
Industrial Infrastructure	0.797	0.826	0.907	0.830
Involvement and commitment top management	0.814	1.450	0.861	0.676
Teamwork	0.850	0.996	0.901	0.754
Tourism Industry Performance	0.682	0.709	0.822	0.607
Training and Education	0.715	0.720	0.875	0.778

Source: Smart PLS

From the results of the Construct Reliability and Validity above, it can be concluded and answered the second question of this study latent variable elements and their indicators can be used to measure Tourism Industry Performance in Indonesia through the implementation of six Sigma, which has been and is currently being implemented.

4.2. Hypothesis test

Procedures are carried out bootstrapping to assess the significance of the effect of standards between variables. Based on the results of the path coefficients in table 2 below, it shows that the variables Training and Education (TE), Teamwork (TW), and Cultural Change (CC) are significant to the construct with a t-statistic value >

1.96 and a p-value <0 .05, while Industrial Infrastructure (IF) and Involvement and commitment top management (ICTM) have a t-value <1.96. This proves that in accordance with the third research question, ICTM and IF as a model do not have a significant influence on Tourism Industry Performance, even though the author's justification in the field assumes that there are several tourism service providers in Indonesia through the commitment of the leadership and management committees who have collaborated to implement six sigma model in tourism programs. On a macro level, the tourism industry in Indonesia has yet to play a strategic role in creating six sigma principles for tourism service providers due to a lack of knowledge and financial limitations. Nonetheless, this research proves that exploratory six sigma training and education programs have been encouraged in the tourism industry in Indonesia, teamwork has a very important role in the progress of implementing the six sigma model, and it should be noted that Indonesia does have a culture change that can gradually be accepting advances in science and technology.
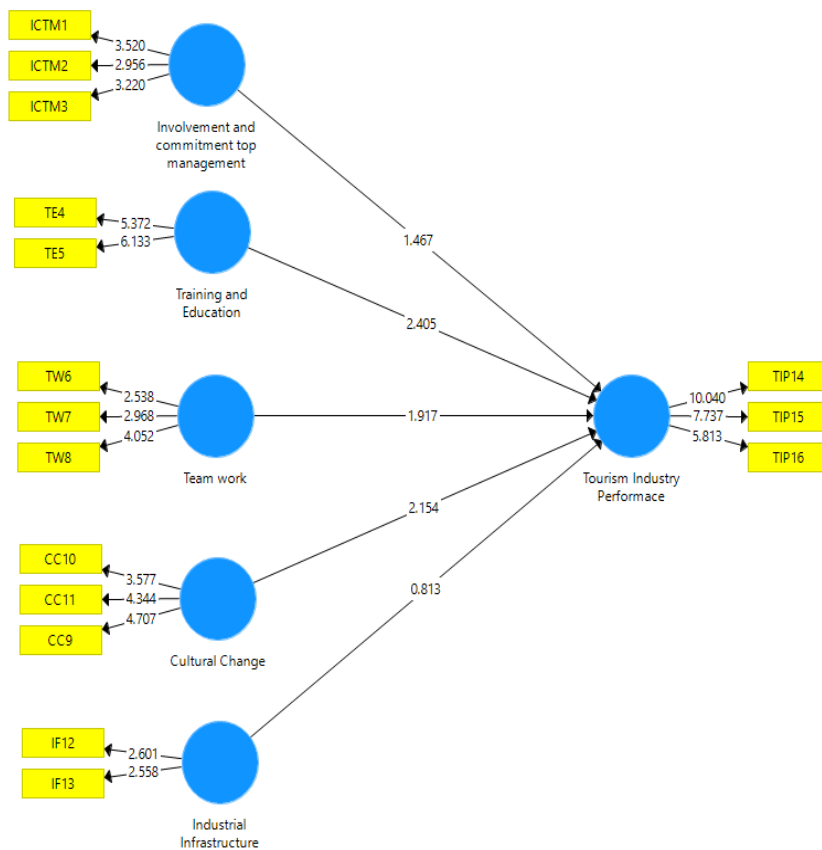
Tabel.2 Bootstrapping Analysis Result
Source: Smart PLS

4.3 Path Coefficient

The path coefficient (path coefficient) is a value that is useful to indicate the direction of the relationship to the variable, whether a hypothesis has a positive or negative direction. The path coefficient has a value in the range of -1 to 1. If the value is in the range of 0 to 1, it can be stated as positive, whereas if the value is in the range of -1 to 0, it can be stated as negative. The positive and negative relationships between latent variables and their indicators can be seen in table 3 below.

Tabel.3 Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Cultural Change -> Tourism Industry Performace	0.123	-0.138	0.057	2.154	0.032
Industrial Infrastructure -> Tourism Industry Performace	-0.051	-0.057	0.063	0.813	0.417
Involvement and commitment top management -> Tourism Industry Performace	-0.101	-0.105	0.069	1.467	0.143
Teamwork -> Tourism Industry Performace	0.157	0.169	0.082	1.917	0.056
Training and Education -> Tourism Industry Performace	0.133	-0.137	0.055	2.405	0.017

Source: Smart PLS

From the table above, it can be concluded that the relationship between Cultural Change, Teamwork, and Training and Education has a positive association with Tourism Industry Performance, while Industrial Infrastructure and Involvement and top management commitment have a negative association with Tourism Industry Performance, following up on these results as previously stated that in practice Industrial Infrastructure and Involvement and commitment top management have a

role in the implementation of the six sigma model in the tourism industry in Indonesia.

5. Conclusion and Recommendations

Even though there has been a lot of research in the field of tourism, the novelty of the research is that it contributes to the fact that there are still many tourism industries in Indonesia or in other countries that need to maintain the sustainability of this industry and continue to make improvements by implementing six sigma models, especially after Covid-19 and the world is currently being hit by the economic crisis caused by war, political interests and so forth. While economic conditions are uncertain, companies in the tourism sector, especially in Indonesia, can still make cost savings and maintain and even improve the quality of their services. There is a proven effective way to do this, namely by adopting the principles of Six Sigma. In the future, of course, there will be many challenges faced by Indonesia and other countries, and stressed by authors is financing and investment as well as improving infrastructure and quality; therefore, it is hoped that the results of this research can make a positive contribution to tourism service providers.

References

1. Ali, Yousaf Younus, Ahsan Khan, Amin Ullah Pervez, Hamza, (2021), Impact of Lean, Six Sigma and environmental sustainability on the performance of SMEs, International Journal of Productivity and Performance Management, v.70,p. 2294-2318, DOI 10.1108/IJPPM-11-2019-0528

2. Amora, Johnny T.(2021). Convergent validity assessment in PLS-SEM: A loadings-driven approach, Data Analysis Perspectives Journal, Vol.2, pp.1-6.

3. Banuelas, R. and Antony, J. (2004), "Six sigma or design for six sigma?", The TQM Magazine, Vol. 16 No. 4, pp. 250-263.

4. Barcia, Kleber F. Garcia-Castro, Lizzi Abad-Moran, Jorge (2022), Lean Six Sigma Impact Analysis on Sustainability Using Partial Least Squares Structural Equation Modeling (PLS-SEM): A Literature Review, Sustainability (Switzerland), v.14, DOI 10.3390/su14053051.

5. Beritelli, P.; Bieger, T.; Laesser, C.(2007) Destination governance: Using corporate governance theories as a foundation for effective destination management. J. Travel Res., 46, 96–107.

6. Carvalho, M.M., Ho, L.L. and Pinto, S.H.B.(2014), "The Six Sigma program: an empirical study of Brazilian companies", Journal of Manufacturing Technology Management, Vol. 25 No. 5, pp. 602-630

7. Coronado, R. B., & Antony, J.(2002) Critical success factors for the successful implementation of six sigma projects in organizations. The TQM Magazine, 14 (2), 92-99

8. Erturk, M., Tuerdi, M. and Wujiabudula, A. (2016), "The effects of six sigma approach on business performance: a study of white goods (home appliances) sector in Turkey," Procedia-Social and Behavioral Sciences, Vol. 229 No. 1, pp. 444-452.

9. Foris, Diana Florescu, Adriana Foris, Tiberiu Barabas, Sorin, (2020), Improving the management of tourist destinations: A new approach to strategic management at the demo level by integrating lean techniques, Sustainability (Switzerland), v.12,p. 1-22, DOI 10.3390/su122310201

10. Hair, J., Black, W., Babin, B., and Anderson, R. (2014) Multivariate Data Analysis, 7th ed. (electronic edition), Pearson Education Limited, London

11. Hill, J., Thomas, A.J., Mason-Jones, R.K. and El-Kateb, S. (2018), "The implementation of a Lean Six Sigma framework to enhance operational performance in an MRO facility," Production and Manufacturing Research, Vol. 6 No. 1, pp. 26-48.

12. Henderson, K., & Evans, J. (2000) Successful implementation of Six Sigma: benchmarking general electric company. Benchmarking and International Journal, Vol, (4), pp. 260-281.

13. Iunius, R.F.; Cismaru, L.; Foris, D.(2015) Raising Competitiveness for Tourist Destinations through Information Technologies within the Newest Tourism Action Framework Proposed by the European Commission. Sustainability, 7, 1289

14. Kirchoff, J.F., Tate, W.L. and Mollenkopf, D.A. (2016), "The impact of strategic organizational orientations on green supply chain management and firm performance," International Journal of Physical Distribution and Logistics Management, Vol. 46 No. 3, pp. 269-292.

15.Kwak, Y. H., & Anbari, F. T. Benefits,(2006) obstacles, and future of six sigma approach. Technovation, 26, 708-715

16. Sekaran, U. and Bougie, R. (2016) Research Methods for Business: A Skill-Building Approach. 7th Edition, Wiley & Sons, West Sussex.

17. Szeto, A. and Tsang, A. (2005) Antecedents to the successful implementation of Six Sigma", International Journal of Six Sigma and Competitive Advantage, Vol. 1, No. 3, pp.307–322.

18. Taherdoost, H.Sahibuddin, Jalaliyoon, N.(2014) Exploratory Factor Analysis; Concepts and Theory, Mathematics, and Computers in Science and Engineering Series, pp. 375-382, ISBN. 9789604743803

19. Yurim Zagloel, Teuku Ardi, Romadhani Poncotoyo, Wahyu, (2018), Six sigma implementation model based on critical success factors (CSFs) for Indonesian small and medium industries, MATEC Web of Conferences, DOI.I 10.1051/matecconf/201821804017

20. Zeeshan, M., Kouser, R. and Iqbal, Z. (2017), "Why Pakistani small and medium enterprises are not reporting on sustainability practices?", Pakistan Journal of Commerce and Social Sciences (PJCSS), Vol. 11 No. 1, pp. 389-405.

ROMANIA AS A DESTINATION FOR CULTURAL AND HERITAGE TOURISM

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Abstract: *Romania possesses a consistent heritage including cultural, historical and folkloric resources with a high potential for tourism valorization. Despite of this valuable heritage, the development of cultural tourism is still limited and more actions are needed to be undertaken for a better promotion and attraction of tourist flows in the most important cultural areas. Due to this potential and to recent massive operations of restoration and renovation of historical buildings, but also due to the improvement of services and education, Romania has succeeded to improve its supply for heritage tourism. In this paper we analyze the main issues related to the competitiveness of Romania as a cultural destination, we assess its place among other countries in Central and Eastern Europe, but also which were the recent developments on this topic. A detailed investigation has been performed regarding the main attractions and destinations for heritage tourism in Romania, including the cultural and intangible cultural heritage sites from Romania included on the UNESCO World Heritage list. Our conclusions go to the actions necessary for improving Romania's place on the market of cultural and heritage tourism, such as: improvements in the infrastructure for increasing the accessibility of the most important destinations, a more focused vision and enhanced strategy for the development and management of tourist attractions, more efficient actions for internal and international promotion, the adoption of appropriate management and marketing tools to make these objectives known, especially to international tourists etc.*

Keywords: *cultural tourism; heritage; Romania*

JEL Classification: F63; L83; Z32.

Introduction

Tourism is one of the most important economic sectors in the world and it highly contributes to economic development (Badulescu and Bac, 2004), enhancing regional competetiveness (Leslie et al., 2016; Badulescu, Badulescu and Borma, 2014), and improving the image of a place (Sultan et al, 2021). Regarding Romania, we have high expectations from the development of tourism in general, and cultural tourism in particular, and the figures of the last 10-15 years show a continuous increase in the number of domestic and foreign tourists, as well as a diversification and increase in volume and quality of the offer of accommodation and associated services (food, transport, leisure, etc.). However, it should not be forgotten that other countries do the same, and Romania competes with them to attract as many tourists as possible, to increase the length of stay and the volume of tourist expenses.

According to the researches, maintaining the main interest in the traditional forms and destinations of tourism (coastal, mountain, spa with social valences) becomes ineffective and, somewhat, outside the trends of modern tourism, at the international level. Thus, Romania should focus on four main tourism segments, in order to obtain higher volumes of tourist traffic, increase the average length of stay and the volume of expenses of domestic and international tourists. Focusing efforts on these directions would ensure Romania not only an increase in the efficiency and importance of the tourism sector in the economy, but also an adaptation of the offer to the new trends in world tourism consumption.

In other words, cultural attractions are gaining more and more importance in the choice of destinations. According to Flash Eurobarometer 499. Attitudes of Europeans towards tourism -Report (European Union, 2021) "the cultural offer at the destination - museums, local events and experiences, festivals, gastronomy" is the most important motivation in choosing a holiday destination or tourist trip. Romania has a cultural, historical and ethno-folkloric heritage of great value, which can constitute a remarkable potential for tourism. However, the development of cultural tourism involves more than the promotion and attraction of tourist flows in certain areas and localities, or on the occasion of certain events, holidays with a cultural and recreational charge. It involves the identification, restoration and renovation of historical buildings, and in general the existing historical heritage, physical and digital accessibility, information and services, education and responsiveness, to which is added the identification, protection and promotion of local traditions, their valorization through adapted cultural products and performance.

1.The challenges of modernizing Romanian tourism

Romania offers a wide variety of tourist experiences and has considerable natural, cultural and human potential, which could ensure the relaunch of tourism and

maximize its contribution to local, regional and national economic growth. The forms of tourism currently practiced in Romania can be classified into the following categories: (1) Nature and adventure; (2) Winter sports and skiing; (3) Culture and History; (4) Health and *wellness* ; (5) Sea and sun; (6) City breaks ; (7) Meetings, conferences and exhibitions (*Meetings , Incentives , Conferences and Exhibition - MICE*), and (8) Gastronomy (Ministerul Turismului, 2018).

According to the National Strategy of Romania for the development of tourism for the period 2019-2030, proposed by the Ministry of Tourism in 2018 (Ministerul Turismului, 2018), after analyzing the data extracted from the Competitiveness Index in the field of tourism and travel, the resources and assets of competing countries in the region, the new development trends of tourism in the contemporary period and by putting "visitor experiences" in the foreground, it can be observed that Romania would obtain more significant benefits if it focused on four major key segments, in order to increase revenues and the average length of stay of tourists domestic but especially international tourists in Romania. These are :

1. Cultural heritage, cultural and historical tourism (complete with gastronomic experiences);
2. Nature and adventure, including ecotourism and rural tourism;
3. Health and *wellness* , making better use of the country's outstanding spa resources;
4. Meetings, Conferences and Exhibitions (*MICE*).

Of course, these proposals mean a focus on the most important sources of comparative advantage, in order to obtain a maximum efficiency of the efforts/results ratio, capitalizing on certain assets and resources specific to Romania. They do not mean overshadowing the other three segments and activities mentioned above: Sea and sun; Winter sports and skiing; City- breaks , "traditional" tourist activities (sea, sun, winter sports, etc.) or more modern, but profitable - such as city-breaks . They are imported especially for domestic tourism, at least for the fact that they represent, at the level of 2017-2020, about 80% of all trips made in Romania (Institutul National de Statistica, 2022).

2.Tourism, culture and history in Romania

Historical tourism potential comes from a multitude of resources that can favor its growth and internal recognition, but especially international, and can generate a competitive advantage (Ministerul Turismului, 2018).(World Economic Forum, 2019)

From the perspective of the competitiveness of cultural tourism (as promoted in the World Economic Forum -WEF studies), the indicators that evaluate a country's

performance include a series of UNESCO cultural objectives, a number of intangible cultural heritage objectives, but also the online demand for tourism and cultural entertainment. In WEF *The Travel & Tourism* reports *In the Competitiveness Report* d in 2017 and 2019, Romania occupied in cultural tourism *(Cultural resources & business travel*) meritorious scores, well above the average of the Balkan Region and Eastern Europe in which it is included (Table 1).

Thus, in the 2017 WEF Report, at an average of 1.7 for the region, within the aforementioned indicator, Romania occupies the second position (equal with Hungary) with a score of 2.3, out of 12 countries analyzed, being surpassed only by Poland. The positions are also maintained in the 2019 WEF Report, at a Region average of 1.8.

Table 1. The "Natural and cultural resources" component of the Travel and Tourism Competitiveness Index, for the Balkans and Eastern Europe Region

Country/Region	The Travel & Tourism Competitiveness Report 2017		The Travel & Tourism Competitiveness Report 2019	
	Natural Resources	Cultural resources and business travel	Natural Resources	Cultural resources and business travel
Slovenia	3.8	1.5	3.8	1.5
Bulgaria	3.8	2.1	3.8	2.1
Poland	3.0	2.8	3.0	2.8
Hungary	2.6	2,3	2.6	2,3
Slovakia	3,4	1.5	3,4	1.5
Romania	**3.0**	**2,3**	**3.0**	**2,3**
Montenegro	2.6	1.1	2.6	1.1
North Macedonia	2.1	1.4	2.1	1.4
bondage	2.0	1.7	2.0	1.7
Albania	2.2	1.1	2.2	1.1
Bosnia and Herzegovina	1.8	1.4	1.8	1.4
Moldavia	1.6	1,2	1.6	1,2
Average of the Region	2.7	1.7	2.7	1.7

Source:(World Economic Forum, 2017) (World Economic Forum, 2019)

From the point of view of the number of UNESCO cultural objectives, Romania occupies a commendable place (position 36), in the first half of the ranking, and according to the number of objectives included in the intangible cultural heritage, Romania is in position 25. However, the positioning Romania's 80th place in terms

of online demand for cultural tourism is lower than the EU average, ahead of only a few countries in the Balkans region and Central and Eastern Europe (Ministerul Turismului, 2018).

Cultural heritage, both material (real estate such as buildings, monuments, constructions, or movable - collections, artifacts), and immaterial (traditions, crafts, holidays) is well represented in Romania, from a quantitative point of view. At the end of 2015, in the reports of the Ministry of Culture, 30,136 monuments are inventoried, of which 59% are architectural monuments, 32% archaeological, 6% funerary monuments, and almost 3% monuments in public space (statues, etc.). Less than a quarter (23%) are of national importance and 77.19% are of local interest (see Table 2, below).

Table 2. Number and share of material cultural heritage assets (real estate), by type of monuments and category (area) of interest

The type of monument	2013	2014	2015	Share of each category (%, in 2015)
By type:				
Archaeological monuments	9686	9687	9687	32.14%
Architectural monuments	17825	17880	17882	59.34%
Monuments located in public space	682	688	688	2.28%
Memorial and funeral monuments	1875	1884	1879	6.24%
By category of interest:				
Monuments of national interest	6871	6878	6875	22.81%
Monuments of local interest	23197	23261	23261	77.19%
Total	30068	30139	30136	100.00%

Source:(Ministerul Culturii, 2016)

According to the National Strategy for Culture and Heritage issued by the Ministry of Culture, in 2016, only 16% of all monuments are in average, good or very good condition, while 38% are in bad condition, 3% are severely damaged or collapsed,

and almost half (34%) are uninventorized from the point of view of the state of conservation (Ministerul Culturii, 2016). According to the same source, 20% of cultural heritage monuments are publicly owned (fully or partially), 46% are privately owned, and the rest did not have a clear patrimonial situation, especially due to unfinished retrocession processes, litigation, lack of data And so on In the last decade, numerous interventions and restoration works have been carried out at various objectives (5 of them are on the UNESCO list), but the number and pace of these works is considered insufficient considering the large number of degraded objectives, in critical condition, on which no -they have been doing significant work for a long time. Implicitly, a number of attractions, urban or rural, resorts and points of tourist interest have been deprived of the restoration, enhancement and promotion of monuments for tourist purposes, and in some cases, entire ensembles of non-renovated or deeply damaged heritage sites have printed an unfavorable image of some towns and tourist resorts in Romania.

Along with immovable assets, the attractiveness of an area is also achieved through movable assets and intangible heritage. Movable goods, composed, as a rule, of artefacts, museum collections, etc., were, in 2017, in a number of 46,672 items, of which about 19% are archaeological artefacts, 18% coins, 17.50% are ethnographic artefacts, 14 % related to the natural sciences, 11% to the fine arts, and the rest are objects and documents related to history, science and technology, old maps and medals.

At the level of 2017 (the last with data available at the INS) there were 762 museums in Romania, up from 202 (663 units) and 2008 (667 units) (Institutul Național de Statistică, 2017). The vast majority (70%) were museums of local importance, 18% of county and regional interest, and 12% of national importance, respectively. By specialization, the largest number of museums are in the fields of ethnography and anthropology (28%), art (22%), and archeology and history (14%).

From the perspective of distribution on the national territory, 20% of the museums and public collections are concentrated in the center of Transylvania - the counties of Alba, Brașov, Covasna, Harghita, Mureș, Sibiu; 17% are in northern Moldova and Bucovina, and 15% in the counties of southern Romania. The most are, as expected, in the Municipality of Bucharest (44 units), followed by Timiș (37), Prahova (32), Suceava (30), Neamț (28), Harghita (28), Maramureș (25), Brașov (24), Argeș (23), Cluj (22), Dâmbovița (21), Sibiu (21), Iași (21), Bacău (20), Constanta (19) (Institutul Național de Statistică, 2017).

If we try a classification of the regions according to the number of museum visitors, we find that the first two regions in terms of visitors also have the largest number of museums.

3.The main cultural heritage destinations in Romania

In an attempt to establish which are the main cultural and heritage tourism destinations in Romania, in terms of popularity, a study conducted under the auspices of the Romanian Ministry of Tourism and published in 2018, inventoried the first 15 destinations, by county , according to the number of visits to museums, in 2017 (Ministerul Turismului, 2018). This ranking has been adjusted with the number of arrivals in accommodation units, also in 2017, to correlate the fact that cultural tourism is a relevant product for local, regional (county) or national and international markets, as well as with the number of museums, with the percentage of historical monuments present in these counties, castles, fortresses, etc., with the number of UNESCO objectives, etc. Of course, some cultural tourist objectives include several sub-objectives, such as, for example, the fortified churches of Transylvania, which are spread over the territory of several counties, and the number of visitors to a certain objective / museum can be made by tourists and hikers on a one-day circuit, with accommodation in another county. Another observation concerns the relevance of visits to museums, as a sufficiently suggestive indicator for the cultural motivation of tourists in a certain locality. Thus, visiting some objectives (historical city centers, heritage buildings, historical monuments in public spaces, etc.) is not actually registered (by buying a ticket, etc.) and, therefore, cannot be evaluated, quantitatively, within an indicator , but it is an important motivation in visiting some cities. Just as the consumption of some products (food, souvenirs, etc.) by some tourists in a certain city is not associated with actual visits, reflected in the overnight stay indicator.

With all these inaccuracies and observations that can be brought to this approach, we believe that it is sufficiently suggestive for the inventory of the main points (areas) of cultural-tourist attraction in Romania, useful to capture the particularities and assets of some localities and areas with a touristic vocation, but also to suggest measures to boost cultural tourism, and not only, in Romania.

In order to validate and reinterpret these data, we proceeded to update them, with the figures relating to the number of visitors to museums, and, respectively, arrivals in accommodation units in the counties of Romania, in the years 2019, 2020 and 2021. We considered that the other indicators of "synchronization", i.e. of the relevance of tourism in general, and cultural tourism in particular, in a certain region or locality have not changed in these 5-6 years, and the number of important cultural objectives,

of national relevance or the UNESCO list (so the points of interest), remained unchanged.

In Table A1 in the appendix, we presented the data for the years 2019, 2020 and 2021, and then continued the analysis and interpretation of the results, using both the perspective of the 2017 study (mentioned earlier) and the interpretation of the updated data.

After corroborating the two sets of results, we reached the following conclusions:

- The first most visited counties in the last 5-6 years, from the point of view of the objectives of cultural interest, are Brașov, the Municipality of Bucharest, Sibiu and Prahova. Counties such as Suceava, Constanța, Hunedoara, Iași compete for the 5th-6th places during this interval.

- It should be noted that these first 5-6 counties also host, in their localities, the most visited museums and sights. Thus, we mention Bran Castle - the most visited tourist attraction in Romania, with over 800,000 visitors annually, followed by the Dimitrie Gusti Museum in Bucharest (Village Museum in Bucharest), the Grigore Antipa National Museum of Natural History, the "Astra" Village Museum in Sibiu , Peleș Castle from Sinaia, Corvinilor Castle from Hunedoara, etc.

- Brașov County is the most visited county in Romania from the point of view of cultural visits, and among the first 2-3 counties from the point of view of tourist arrivals (in general). The sights are remarkable - Bran Castle, associated (not necessarily historically) with "Dracula"; The restored fortresses of Râșnov and Rupea, the Saxon villages, and the center of Brașov (with the well-known Black Church), etc.;

- With the richest and most diverse museums and collections, Bucharest is the cultural center of Romania, but also the most visited destination. The tourist offer of the capital is comprehensive, but the share of cultural tourists is relatively small, most of the international tourist arrivals (about 45% of the total international arrivals in accommodation units) are mainly due to business tourism;

- Sibiu is a traditional destination of cultural tourism in Romania, and the year 2007, when the city of Sibiu was the European Capital of Culture, or the year 2019, when it was the center of the European Gastronomic Region, confirmed this status. The center of the city of Sibiu is well appreciated by domestic and international tourists who come here for a longer term, as well as by tourists who come for a city break, especially in the summer months, and promotes two of the most visited museums in the country (the Bruckenthal Museum and the Astra);

- We find that, after Bucharest, as a historical region, Transylvania remains the first cultural destination (but also in general) for international tourists, attracted by the multiculturalism and diversity of rural settlements (Romanian, Hungarian,

Saxon, etc.), by the picturesque centers of medieval cities or late 19th century, of captivating myths, places and legends;

- Prahova and Suceava occupy the 4th-5th places, in terms of cultural tourism, especially through the contribution of visitors to the Peleș Castle in Sinaia, which accumulates more than half of the total number of visitors in the county, respectively, by the monasteries in Bucovina and urban sites in Suceava;

- Constanța, with a large number of summer tourists, has a good positioning in cultural terms as well, argued by the large number of visitors to the Museum Complex of Natural Sciences (in which the Aquarium and the Dolphinarium are located, and which attract about 500,000 visitors annually) . Constanța County also has other remarkable cultural objectives, but they are not significant according to the number of visits recorded;

- Cultural tourism in Hunedoara County focuses on the large number of tourists attracted by the Corvinilor Castle, complemented by the smaller number of visitors to the Dacian ruins of the Sarmisegetuza Regia fortress, the Roman ruins at Ulpia Traiana and other cultural sites in Țara Hațegului. The researchers noticed that, although it is a fairly small area, but rich in monuments and cultural objectives, the area does not stand out in terms of the total number of stays (overnights). Probably, in many cases, the objectives are "achieved" during day trips in Transylvania, and the tourists stay in Sibiu, Alba Iulia, Brașov, etc (Ministerul Turismului, 2018).;

- The counties of Maramureș, Neamț, Dâmbovița, Vâlcea, Argeș and Caraș-Severin enter (with slight variations) in a possible Top 15; however, the objectives of cultural heritage, tangible or intangible, mainly attract the interest of domestic tourists. Seasonal traditions and wooden churches in Maramureș have a special cultural value, but they do not generate such a large number of visitors to "push" Maramureș county into the first 5-7 places at the national level;

- Mureș county has a special situation, which attracts national and international interest for cultural tourism. This county has two very important centers of attraction: Sighișoara, which registers around 100,000 annual arrivals in accommodation units , but where the number of visitors in the historic center is probably much higher, and, respectively, the citadels and fortified churches, both objectives being on the UNESCO list;

- Counties such as Iași, Cluj or Bihor are also in a hypothetical Top 10-15, with a large number of museum visitors. We especially note the Turda Salina in Cluj county, but also the museums and sights in the municipalities of Cluj Napoca or Iași, or the historical center and points of interest in Oradea, Bihor county. All these three counties perform better in terms of the total number of visitors, than in terms of cultural tourism (explained by the share of business and professional tourism - in

Cluj-Napoca and Iași, respectively relaxation - spa, in the surroundings of Oradea Municipality).

- As a final remark, both in 2017 and in 2019 and 2020, we note that Timișoara (and Timiș county, in general) did not enter the Top 15, in terms of the number of visitors to museums and cultural heritage sites (17th places 18), even though, in terms of tourist stays, the county ranks 11-13. The designation of the municipality of Timișoara as "European Cultural Capital" in 2023 may mean a revival in this regard and may contribute decisively to a higher positioning of Timiș County and the Municipality of Timișoara on the map of cultural tourism. Of course, if the project is carried out, promoted and exploited properly.

4. UNESCO World Heritage in the framework of cultural tourism in Romania

Romania has two natural sites, seven cultural heritage tourist sites and seven intangible heritage sites inscribed on the UNESCO list (see Table 3 below). To these are added a number of 8 objectives, considered proposals for inclusion on this list. It is noted that many of these objectives (already on the list, or proposed) are relatively evenly distributed throughout the country, in various regions and urban and rural areas, with varying particularities and characteristics. They represent major centers of tourist interest in the regions where they are located, especially important for domestic tourism.

Table 3. Natural, cultural and intangible cultural heritage sites from Romania included on the UNESCO World Heritage list

A. Natural sites inscribed on the UNESCO World Heritage List	• The Danube Delta • The secular and virgin beech forests of the Carpathians (and other regions of Europe)
B. Cultural sites on the UNESCO World Heritage List:	• The churches of Moldova • Horezu Monastery • Villages with fortified churches in Transylvania • Dacian fortresses in Orăștiei Mountains • The Historical Center of Sighisoara • Wooden churches from Maramureș • Roșia Montană cultural mining landscape
B1. Proposals for listing	• Neamt Monastery • Byzantine and post-Byzantine churches in Curtea de Argeș • The monumental complex from Târgu Jiu • The rock ensemble from Basarabi • The Church of the Three Hierarchs from Iasi

	• "Culele" from Oltenia
	• Densus Church
	• The historical core of the city of Alba Iulia
C. Objectives of the Intangible Cultural Heritage of Romania registered on the UNESCO list	• The gag ritual
	• play the doina
	• Ceramics from Horezu
	• The male choir carol
	• Ticus virgin (virgin game)
	• The craft of traditional carpets (traditional techniques of making bark in Romania and the Republic of Moldova)
	• Mărţişorul (traditional practices associated with March 1st)

Source: (Ministerul Culturii. Institutul Naţonal al Patrimoniului, 2022),(UNESCO, 2022)

However, most of them do not attract a number of visitors at the level of their cultural-historical value, especially if we compare them with other, more "popular touristic" objectives such as Bran, Peleș, Corvinilor Castles, or a series of museums in Bucharest, which do not are included in these lists, but attract a larger number of visitors than many of the UNESCO cultural heritage sites. Beyond the symbolic value or notoriety of some of these objectives on the UNESCO list, capable of fueling tourist interest, we can also mention other factors that condition the flow of tourists to them: access and infrastructure possibilities, inadequate promotion, inadequate administration of tourist attractions and the lack of development of associated products that would attract a diversity of categories of tourists, inclusion in tourist packages, supplementing and diversifying facilities and facilities for visiting and staying, etc.

The rich resources of the cultural heritage constitute the necessary premises for the development of cultural tourism. However, it is equally important that these tourist attractions are ready to receive domestic and international tourists, in terms of accessibility, infrastructure, signage, management and hotel capacity, as well as in terms of availability, quantity and the quality of information and promotion in different languages of international circulation, but also their inclusion in diverse and complex tourism products, the quality of facilities and other activities available in addition to the objective.

Beyond the tourist attractions of tangible heritage, Romania has a set of rich, varied and unique cultural traditions, such as a great diversity of rituals, celebrations, events and cultural products, some of which are included in UNESCO's list of world intangible cultural heritage (see Table 3, above).

Most of them are well known and attractive to domestic tourists and constitute real impulses in tourist consumption such as those associated with legal and religious holidays, when rural destinations with well-preserved traditions (Maramureș, Bucovina) are "rediscovered annually" and become centers of interest in short-term travel. They are relatively unknown to international tourists, and a first step could be their development within the diaspora - Romanians who return home for the holidays and who could bring with them groups of people from the countries they emigrated to (Ministerul Turismului, 2018).

Conclusions

We have approached the relationship between tourism and the cultural potential in Romania from two perspectives. On the one hand, we make a presentation of the main objectives and destinations, and on the other, we analyze the potential and competitiveness of cultural-urban destinations, both from a domestic and international point of view. Implicitly, we want to identify those measures and strategies that must be followed in order for Romania to make urban cultural tourism (and not only) one of the most important points of attraction, adapting to the new trends in European and world tourist circulation.

The cultural, historical and ethno-folkloric heritage of Romania can constitute a particularly valuable resource for tourism, and especially for cultural tourism. However, its development requires more than the promotion and attraction of tourist flows in certain areas and localities or on the occasion of festive events or contexts with a cultural and leisure load. It must consider the identification, restoration, rehabilitation and renovation of historic and heritage buildings and sites, the provision of physical and digital accessibility, information and services. Also, enhancing cultural tourism requires actions in the field of non-material heritage, i.e. identifying, protecting and valuing (promoting) local traditions, including them in adapted and performing cultural products.

Although most tourist attractions have a basic infrastructure capable of receiving visitors and supporting the attractiveness of cultural tourism in the area, improvements are needed to become truly attractive to visitors. Beyond the measures taken at the local level, general measures are also needed, a better vision for the development and management of tourist attractions, for internal and international promotion, the adoption of appropriate management and marketing tools to make these objectives known, especially to international tourists.

References

Badulescu, A., & Bac, D. (2004). Economia turismului. Editura Universitatii din Oradea

Badulescu, A., Badulescu, D., & Borma, A. (2014). Enhancing cross-border cooperation through local actors' involvement. The case of tourism cooperation in Bihor (Romania)– Hajdú-Bihar (Hungary) Euroregion. Lex Localis-Journal of Local Self-Government, 12(3), 349-371

European Union, 2021. Flash Eurobarometer 499. Attitudes of Europeans towards tourism - Report, sl: European Commission, Directorate-General for Communication.

Leslie, D. (Ed.). (2016). Tourism enterprises and the sustainability agenda across Europe. Routledge

National Institute of Statistics, 2022. Tempo Online. Tourism. [Online], Available at: http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table, [Accessed 11 07 2022].

National Institute of Statistics, 2017. Tempo Online. ART104A - Museums and public collections by counties and localities. [Online], Available at: http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table

[Accessed 12 07 2022].

National Institute of Statistics, 2022. Tempo Online. ART113A - Visitors to museums and public collections, by counties and localities. [Online], Available at: http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table, [Accessed 10 07 2022].

National Institute of Statistics, 2022. Tempo Online. Arrivals of tourists in tourist reception structures by types of structures, by counties and localities. [Online], Available at: http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table, [Accessed 10 07 2022].

Ministry of Culture. National Heritage Institute, 2022. UNESCO World Heritage List. [Online], Available at: https://patrimoniu.ro/monumente-istorice/lista-patrimoniului-mondial-unesco

[Accessed 12 07 2022].

Ministry of Culture, 2016. National strategy for culture and heritage 2016-2022, Bucharest: sn

Ministry of Tourism, 2018. Romania: Romania's National Strategy for Tourism Development 2019-2030, Volume 1: Report on the Rapid Assessment of the Tourism Sector, Bucharest: Ministry of Tourism.

Sultan, M. T., Sharmin, F., Badulescu, A., Gavrilut, D., & Xue, K. (2021). Social media-based content towards image formation: A new approach to the selection of sustainable destinations. Sustainability, 13(8), 4241.

UNESCO, 2022. World Heritage List. [Online], Available at: https://whc.unesco.org/en/list/
[Accessed 07 07 2022].

World Economic Forum, 2017. The Travel & Tourism Competitiveness Report 2017, Geneva: WEF.

World Economic Forum, 2019. The Travel & Tourism Competitiveness Report 2019, Geneva: WEF.

Appendix Table A1. The number of visitors to museums and, respectively, the number of arrivals in accommodation units, in the years 2019, 2020 and 2021, for the first 15 counties in Romania (thousands of people)

No. crt.	The year 2019				The year 2020				The year 2021			
	County	Visitors to museums and public collections	Number of arrivals in accommodation units	Rank in number of arrivals	County	Visitors to museums and public collections	Number of arrivals in accommodation units	Rank in number of arrivals	County	Visitors to museums and public collections	Number of arrivals in accommodation units	Rank in number of arrivals
1	Brașov	2630	1422	1	Brașov	1040	725	2	Brasov	1857	1029	2
2	Bucharest municipality	2288	2039	2	Bucharest municipality	838	560	3	The city of Bucharest	1355	905	3
3	Sibiu	1673	576	7	Sibiu	683	263	6	Sibiu	899	430	4
4	Prahova	985	586	6	Prahova	478	313	4	Prahova	609	427	5
5	Constant	901	1381	3	Hunedoara	405	72	26	Constant	623	1269	1
6	Suceava	827	466	8	Constant	391	1005	1	Cluj	325	409	7
7	IASI	794	342	12	IASI	354	144	14	Suceava	410	406	8
8	German	662	265	15	German	353	149	12	Iasi	557	235	11
9	Hunedoara	644	194	21	Dambovita	298	72	25	German	332	210	13
10	Mures	625	599	5	Mures	283	244	9	Mures	441	357	10
11	Bihor	603	541	8	Suceava	279	254	8	Bihor	465	425	6
12	Dambovita	526	122	25	Bihor	273	265	5	Waltz	277	373	9
13	Cluj	480	671	4	Galati	229	52	31	Timis	61	193	15
14	dale	470	423	10	Maramures	218	133	15	Maramures	255	217	12
15	Maramures	423	276	13	Caras-Severin	202	145	13	Caras-Severin	195	193	14

Source: (Institutul Național de Statistică, 2022), (Institutul Național de Statistică, 2022)

PUBLIC POLICIES TO SUPPORT SMES' ACCESS TO FINANCING: BETWEEN CHALLENGES OF CRISES AND THE FUNCTIONING OF MARKETS

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Abstract: *Access to finance for small and medium-sized enterprises has been identified in many studies as the most important factor determining the survival and growth of SMEs in both developing and developed countries. Access to financing means access to working capital to finance current activity, but also investments and the acquisition of modern technologies, thus ensuring the competitiveness of SMEs, as well as the performance of the economy and society as a whole. Governments, through specialized agencies, often in cooperation with financial regulatory authorities and banking associations, develop various measures and programs aimed at better access to finance for SMEs. Of course, the motivations, scope and success of these initiatives are influenced by the level of development and sophistication of the financial banking sector, by its orientation and composition, by the way in which the various objectives and needs of small and medium businesses are understood. The implementation and prioritization of these programs and schemes are dramatically influenced by the availability of financial and non-financial resources, organizational skills and, finally, the sincerity and stability of dedicated public policies. This paper aims to analyze the impact of financial support policies for SMEs, the effects of crises (economic, financial, pandemic) on these policies, but also the evolution of interest in this type of support at the level of European companies. We found that government financial assistance helps SMEs to improve their financial performance and thus be able to access, in the future, various forms of financing, but also that there are significant differences, by activity sectors, types of companies and, respectively, countries, in regarding the importance and impact of public support to the business sector.*

Keywords: SME; financial institutions; financial support polices

JEL Classification: G21, G28

1. Introduction

Small and medium-sized enterprises generally do not receive sufficient funding and therefore require special attention because of their information opacity and limited available funding resources. Given this imperfect ability to obtain funding, many researchers and practitioners consider government intervention justified. Government intervention often takes the form of financial assistance, focusing on directly subsidised credit programmes and indirect credit guarantee schemes. There are numerous pros and cons about their impact, and the question that emerges is whether they are for the general benefit of society, or whether the results are outweighed by the costs.

Policy at European Union level supports the financing of SMEs using forms of direct assistance, including tax benefits, grants, and subsidies, as well as indirect assistance, using credit guarantee schemes, especially during the recent global financial and health crises, when many SMEs have faced additional restrictions on their access to finance due to the deterioration of their financial situations. There is a concern that direct and indirect financial assistance will encourage intensive capital use, repayment for longer periods, but there are also signals that it allows the survival of weaker or unprofitable firms (Hallberg, 1999), leading to lower productivity of sectors.

However, the general argument is that government financial assistance plays an important role in mitigating the financial constraints of SMEs, helping to generate additional cash flows and/or supporting SMEs in obtaining more complex financing. In this article we intend to analyze the impact of financial support policies for SMEs, the effects of economic, financial, and pandemic crises on these policies, as well as the interest shown by European companies in these support measures. Thus, after this Introduction, we will analyze the main ideas and currents regarding public assistance for SMEs as they appear in the literature, later supplemented by a section dedicated to the rationale behind the policies and measures to support access to finance for SMEs in times of crisis. Next, we will make an analysis of the public support for SMEs funding in Europe, and finally we will present the main conclusions of our research.

2.Literature review

A considerable literature focuses on the limited capacity of SMEs to obtain financing due to their informational opacity (Beck et al., 2005, 2008; Berger and Udell, 2006; Guiso and Minetti, 2010; Dietrich, 2012). On the one hand, SMEs are less likely to have direct access to finance through the capital markets and thus they rely heavily on financing brokered by banks and other financial institutions (Iturralde et al.,

2010). On the other hand, lenders can fail in allocating loans effectively because they consider both the interest rate they will receive on the loan and its risk when deciding to borrow. In this case, the adverse selection emerges from the informational asymmetry, leading to the conclusion that an interest rate suitable for both creditors and debtors has a low probability of existing. Adverse selection is a consequence of an environment in which creditors relate to the risk characteristics of a group of debtors, but not of each individual borrower. In these circumstances, moral hazard can make the situation worse, as higher interest rates can cause firms that initially incurred lower risks to commit riskier projects (Craig et al., 2009). As a result, lenders, such as banks, may want to have less exposure to SMEs, or they may require SMEs to have higher commissions and interest rates relative to the size of the loan, in order to achieve the returns provided by lending to larger firms (Beck et al., 2008). It can be said that these market conditions can justify government intervention. Traditional approaches to financial assistance to SMEs have focused on subsidised credit programmes and indirect credit guarantee schemes. Compared to direct government assistance, credit guarantee schemes are considered a market-oriented strategy for improving SMEs' access to finance and have been widely adopted by many countries to alleviate the problems faced by SMEs looking for credit, and so that they can ultimately achieve economic benefits (Boocock and Shariff, 2005; Chandler, 2012; Riding et al., 2007). There are also controversies around credit guarantee schemes. De Rudy (2007) argues that banks could push SMEs towards secured loans because guarantees make them more profitable (and secure) customers for banks.

Given the administrative costs of the schemes, a question arises: whether the benefits of the programmes exceed their costs (Craig et al., 2009). Guarantee schemes represent indeed a continuous stream of government subsidies disguised as providing free or low-cost facilities and services, as well as costs with the secondment of staff from other public departments (Green, 2003). That is why the question should be asked whether guarantee schemes are the best way to help SMEs finance themselves at the lowest possible social cost, because, from the point of view of the costs and of the access improvement to finance, a more efficient way could be to implement training programmes on lending to SMEs for bank employees, grants or direct grants, tax reductions, etc. (Green, 2003).

In theory, government financial assistance can help SMEs in two main ways. First, financial assistance can help the business improve its performance and thus generate cash flows, directly reducing financial constraints. Secondly, SMEs that have received government financial assistance are more likely to obtain financing from creditors, having similar effects to the presentation of a guarantee. Thus, public

financial assistance helps to diminish information asymmetries and, respectively, improves the skills and capabilities to provide guarantees for obtaining loans (Liu et al., 2011), (Kon and Storey, 2003).(Badulescu, 2013).

Unit borrowing costs tend to be higher for smaller firms, obtaining information requires more resources as a percentage of the loan given, visiting borrowers to assess their activity and monitoring them are expensive activities and not always economically rational when the size of a loan is small (Green, 2003). Adverse selection is another problem arising from information asymmetry. In this context, adverse selection begins with the market phenomenon whereby the probability of default increases with the interest rate. As interest rates rise, safer borrowers are removed (they pay off committed loans faster and/or avoid applying for new loans), while more risky borrowers remain in the banks' portfolio and/or apply for new loans. This leads to an increasingly risky loan portfolio for lenders. However, the inflexibility of banks prevents many SMEs from obtaining credit, even if they would be willing to pay higher interest rates, and the result is the rationalisation of loans. Both the opposing selection and the administrative costs of the loan can lead to a selection process largely based on the size of the firm and the provision of collateral. As a result, profitable projects that do not meet these conditions may not be able to obtain financing, leading to a sub-optimal allocation of credit. Thus, credit guarantee schemes can help banks overcome information asymmetries, helping to accurately identify credit risk and improve banks' ability to make appropriate lending decisions (Levitsky, 1997).

3. Fundamentals of policies and measures of supporting the access to finance for SMEs in times of crisis

In all European countries, recovery, and resilience plans from crises (economic, financial, health) have included moratoriums on loan repayments, tax deferrals, grants, capital facilities and wage subsidies, credit guarantee schemes as fundamental instruments in the set of public policies implemented by governments aimed at supporting the liquidity need of enterprises, SMEs in particular (Anderson et al., 2021; Lehmann & Lenaerts, 2021). The increase in the volume of guarantees, as well as the number of firms, raises important questions both about the sustainability of public finances and about the real effectiveness of these programmes in terms of economic growth (Ciani et al., 2020; European Banking Authority, 2020).

The debate on the accessibility of bank financing is highly polarised: entrepreneurs accuse banks of not lending enough funds to small businesses, while banks complain about the lack of a demand for credit from entrepreneurs. Previous studies show that

the amount of credit available to SMEs has fallen sharply since the onset of the global financial crisis in 2008, but it is not clear whether this decrease was caused by low demand from firms, or by the limited supply from creditors (Ayadi and Gadi, 2013; Popov and Udell, 2012; Kremp and Sevestre, 2013; McGuinness and Hogan, 2016). Regarding the years preceding the Covid-19 health crisis, in the period 2014-2019 the lending conditions were favourable, the bank interest rates registering a decline, the conditions regarding the access to financing being relatively relaxed. After the financial shock of 2008-2009, SMEs restored their profit margins and according to data provided by the European Commission (European Commission, 2019), during this period, few SMEs considered the access to finance to be their most pressing problem. Compared to the year 2018, in 2019, lending to SMEs registered a decreasing trend in many OECD countries, even if the attitude of financial institutions on lending was much improved. Regarding non-performing loans, they were at a low level in the years leading up to the health crisis. There was also an increase in non-bank financing, especially in Central and Eastern Europe (Slovakia by 255%, Poland by 154% and Estonia by 121.87%), according to the study published by the OECD (2020).

The restrictions prompted by the COVID-19 pandemic have triggered a severe global recession, all sectors of the economy have been directly or indirectly affected, and SMEs have felt these shocks strongly, many of them being forced to drastically reduce their activity or even suspend it. On the financial front, they had to cope with the sharp drop in revenues and face a liquidity deficit. According to the study conducted by the OECD and the World Bank, among the SMEs that continued their activity during May-December 2020 in the European Union countries, a percentage of 55-70% recorded a decrease in income, of which, two thirds said that their incomes decreased by more than 40% (OECD, 2020).

Along with the outbreak of the crisis, many of the measures were aimed at providing aid to viable but non-liquid companies and limiting bankruptcies. These measures were taken for short periods of time and were addressed to a large number of beneficiaries. Given the unexpected nature of the crisis, policymakers demonstrated flexibility and a willingness to adjust their approaches as implementation continued. This often-included simplifying schemes and adapting eligibility criteria; governments mainly worked with banks to channel support to SMEs.

The demand for and availability of public funding increased in the years after 2020 thanks to the support provided by governments through monetary and fiscal policies, as well as through banks, guarantee institutions, and similar organizations. However, as the profits of SMEs have been hit hard, SMEs seem to be taking on more and more debt, which is in fact replacing the decrease in revenues generated by current activity.

In the United States, for example, 46% of the firms that have accessed a loan in the last 12 months, plan to contact additional debts to cover the financial gap left by the COVID-19 crisis (Federal Reserve Bank of New York, 2020).

During the crises, governments have taken packages of necessary measures to stimulate SMEs according to the specifics of each country. International institutions have also taken steps to ensure the liquidity of SMEs. However, while there is broad agreement regarding the need for further measures to support and incentivise SMEs, the sustainability of public finances has become a concern. On the one hand, given the fragility of the global economy and of many small businesses, the support measures taken should not be withdrawn too abruptly (OECD, 2020). On the other hand, governments are aware that the current support measures are not indefinitely.

Thus, government policies also include measures to support the liquidity of SMEs, measures that do not include the increase of their debt such as: supporting start-up firms in the field of technology and with a rapid development and which would require investments from private actors; loans convertible into equity if the borrower is unable to repay; providing grants, so that a wide spectrum of firms can benefit without increasing their indebtedness; fiscal policies that support the consolidation of SMEs' own capital, a key mechanism that can increase the capacity of SMEs to maintain their cash flow; supporting the spread of crowdfunding tools, etc.

Often, however, the above instruments have a limited adoption, driven by the reluctance of SME owners, implementation difficulties, the risk of public support not going to the right beneficiaries, attempted fraud, and misappropriation of funds (OECD, 2020). In addition to the fiscal impact, supporting a very large number of companies without strong conditionalities brings with it the risk of misallocating resources and keeping afloat non-viable companies, thus affecting the dynamism of the economy and hindering competition (OECD, 2020). So, policymakers must find a balance between avoiding the bankruptcies of viable firms, on the one hand, supporting non-viable firms, on the other, and preventing the growth of the non-performing loan portfolio of banks (Badulescu & Simut, 2012).

We could consider that a failing firms are actually a market failure in evaluating the potential of a new businesses by lenders, private investors or makers. On the one hand, an investor, a lender, may lose if the individual financed firm fails, but there are also positive externalities generated by the failure of new firms, which may contribute to the success of other firms. From a public policy perspective, it does not matter which firm succeeds and which disappears, as long as some businesses continue to emerge, and some to growth, and the general development in term of business and entrepreneurship are useful to the region or sector supported. However, it is required that decision-makers support and promote entrepreneurial initiatives,

become partners for the business sector, allowing and encouraging the establishment and development of companies, thus their success to be constituted as strong models for others (Audretsch, 2003).

Thus, during more than a half of century, public policies have gone through different phases, from regulations to stimulate competition and temper the dominance of large companies, to de-regulation and privatization policies, and finally to a new approach, which focuses on the creation and commercialization of knowledge and the support of small firms, high growth oriented, of those in knowledge-based fields, the stimulation of entrepreneurial behaviours through publicly funded programs (Cenan (Ciucoş), 2022). There are numerous programs and measures that aim to remove bottlenecks in the development and financing of new companies in high research and technology fields, the creation of innovation centers to support the development of small technology-based companies, research parks to promote the competitiveness of a certain region or sector, of business incubators and accelerators, on the entrepreneurial education of young generations (see Table 1). Regarding access to diverse types of credits there are various financing schemes and loan guarantees, where SMEs without their own guarantees get access to bank loans, and the state acts as a guarantor. Generally, all are considered useful, but with minor impact on overall SME financing in most countries. Also, access to equity financing, through different investment arrangements as tax breaks for wealthy people to become "business angels" are considered to have "blurry effects" on general development on private productive sector (Audretsch, 2003), (Storey, 1994), (Cenan (Ciucoş), 2022).

4. General trends of SMEs' access to public financing in Europe

In order to understand the size of the problem, the importance and accessibility of different forms of financing and, in particular, of public support for SMEs, we will call on different Surveys on the Access to Finance of Enterprises, as the main tool for monitoring the evolutions of the access to SMEs the European Commission's funding.

4.1. The size and importance of the problem

According to the SAFE report for the year 2022 (European Commission, 2022) access to financing is, at the end of 2022, the most important concern for (only) 8%-10% of EU companies (around 10% for micro-enterprises, 8% for companies small and medium and below 7% for large companies). The situation in this area has improved considerably in the last ten years (2009-2019), as this concern decreased from an average of 17% in 2009 (even 21% for micro-enterprises) to 10% in 2015

and 9% in 2019. In -a ranking of the most important/pressing problems for a company, access to financing is continuously decreasing, from 2nd place in 2009 (after "Finding customers"), to 5th place in 2014, and finally to 7th place in 2019 - 2022. However, we note that the percentages tend to increase slightly during the pandemic and post-pandemic period (2020-2022).

Of course, the problem appears somewhat more important for micro-enterprises, but here too the trend is similar, access to finance being gradually considered a less and less acute problem in the last decade. However, results differ between countries and the highest proportion of SMEs experiencing the effects of difficult access to finance in the last 3-4 years) appear in Greece (an average of around 19%), Malta and Lithuania (13 %-14%) and Cyprus (12-14%). The problem of financing is reported not only among small companies, but also among relatively young companies (established in the last 2-5 years), those oriented towards sustained growth, exporters and innovative ones, with about 2-3% in above average (European Central Bank, 2019), (European Commission, 2022).

The diversity of forms of financing and support for companies to choose the most suitable financing is reflected in the relative importance of the different sources of financing used, but it is also obviously influenced by the level of development of different types of financial institutions and segments of the financial markets, such as be it stock market, bond market or securitization.

4.2. The relevance and effectiveness of public support for SMEs

In recent years (2017 - 2022), EU SMEs considered credit lines and overdraft as the most relevant forms of external financing, followed by leasing and bank credit (in its various forms.).

In all EU Member States, the majority of SMEs (82%) used debt financing in one form or another in 2022. Thus, 47% of respondents mentioned the credit line or overdraft as relevant in 2022, (although in a slightly lower proportion than in previous years). Leasing (and similar forms of financing) is the second type of financing in order of relevance, about 47% of respondents mentioning them. Finally, bank loans and trade credit are also presented as a relevant type of financing, although there was a decrease in the relevance of these types of financing in the pre-pandemic period (from 57% in 2014 to 46% in 2019 and, respectively, from 36% in 2014 to 31% in 2019) and a slight resumption of growth in the last two years (2021-2022). Bank loans and trade credits are followed by public grants and subsidized bank loans and domestic funds, respectively. Other loans, raising equity capital, factoring, debt securities are mentioned as relevant by smaller percentages of SMEs than the other types of financing, and their relevance gradually decreased during the

analysed time period (European Central Bank, 2019), (European Commission, 2019), (European Commission, 2022).

Depending on the country, the relevance of debt financing has important but not dramatic variations, in all the countries examined, the vast majority of SMEs indicated that at least one type of debt financing was (constantly) relevant to their enterprise for a certain period of time. For the EU countries, the proportion varied from 90% for SMEs in Malta to 69% for those in Luxembourg, compared to an EU average of 82%.

In net terms, companies in the euro area reported a considerable increase (with percentages varying between 4 and 15%) in the demand for external financing, compared to previous years, both for bank loans, especially lines of credit (from 7%), but also other forms of commercial credit, leasing, such as informal loans from family and friends, from affiliated companies or shareholders, or equity and debt securities. The increased demand signals the need for companies to diversify their external financing, both to ensure survival and growth needs, which cannot be covered from internal sources, but also to negotiate favourable financing conditions - costs, guarantees, flexibility (Badulescu, 2011). The 2022 SAFE report notes that, in contrast to previous years (2019-2021), the growth in demand for external financing was sustained slightly more by large firms than by SMEs for most instruments.

A few reflections from the latest SAFE report (2022) are worth considering here. Thus, grants or subsidized bank loans are considered as an important source for many SMEs, although in significant decrease in the last decade (from 54% in 2012, to around 42% in 2022), an interval that also contains, however, a short, but fast, increase during the pandemic period. The decrease of almost 12% is explained either by mitigating the impact of the pandemic crisis in 2022 and, implicitly, the concerns of the business environment related to it, but probably also the difficulties of access. Thus, although almost half of the respondents at the EU level consider it an important form of financing, only 11% of the total say they used it in 2022 (compared to about 16% in 2021). Finally, almost a third of the respondents (31% at the EU level) say that they did not consider accessing such support during 2022. At the national level, the differences are significant, the use of this form of financing has high percentages in Hungary (17%), Romania (16%) and Italy (15%), while only 1% of firms in the Netherlands, or 2% in Cyprus, Slovakia or Latvia state that they used this form of financing. Regarding the relevance or the possibility of considering, in the near future, the use of this form of financing, the interest is very low in countries such as the Netherlands or Denmark (81-83% are not interested).

By sectors, dimensions or degree of internationalization, the differences are also significant, as averages at the EU level. Small and medium-sized companies (with less than 50 employees), construction and exporters are more inclined to use (also) these forms of financing, and the percentages are about 3-10% higher compared to large companies (with over 250 employees), od firms from construction, trade or services, or companies without relevant export activity. Similarly, innovative firms or high-growth firms or gazelles indicate much higher interest percentages compared to the other types of firms (see also Table 1).

Table 1. Interest and use of public support, grants and subsidized loans depending on the activity sector, size and type of company), in 2019 and 2022 (% of responses)

Sector/type of firm	Used in the past 6 months		Did not used in the past 6 months		This source of financing is not relevant to my firm		This source of financing is relevant to my firm, but I don't know is I used		Don't Know/Non-answer	
	2019	2022	2019	2022	2019	2022	2019	2022	2019	2022
Industry	12%	15%	28%	35%	57%	46%	2%	1%	1%	3%
Construction	6%	10%	22%	28%	68%	58%	3%	0%	1%	4%
Trade	6%	10%	22%	30%	68%	56%	3%	1%	1%	3%
Services	7%	10%	22%	31%	68%	56%	3%	1%	0%	3%
Micro (1-9 employees)	5%	8%	23%	30%	69%	58%	2%	0%	1%	4%
Small (10-49 employees)	8%	11%	25%	33%	65%	52%	2%	0%	0%	4%
Medium (50-249 employees)	11%	15%	23%	30%	63%	51%	3%	0%	0%	1%
Large (over 250 employees)	10%	15%	19%	26%	67%	56%	3%	0%	1%	3%
High-growth	9%	15%	24%	34%	64%	48%	3%	0%	0%	3%
Exporters	10%	13%	25%	32%	63%	52%	2%	3%	0%	3%
Non-exporters	6%	10%	23%	31%	68%	56%	3%	3%	0%	0%
Innovative	10%	14%	26%	36%	61%	47%	3%	1%	0%	2%

Non-innovative	5%	8%	21%	27%	71%	62%	2%	0%	1%	3%

Sources: (European Central Bank, 2019), (European Commission, 2019), (European Commission, 2022)

Probably also as an expression of the gradual elimination of several support measures in the EU, about 15% of companies considered that access to subsidized grants or loans (and implicitly their consideration for future business development) has decreased. In terms of firm's size, it appears that SMEs are more pessimistic than large firms in this regard.

Regarding public financial support (see Figure 1), the number of SMEs perceiving deterioration was higher than the number of SMEs considering improvement, for the entire analysed period, although the difference tends to decrease, from around -15 % (in 2014) to – 7/8% in recent years.
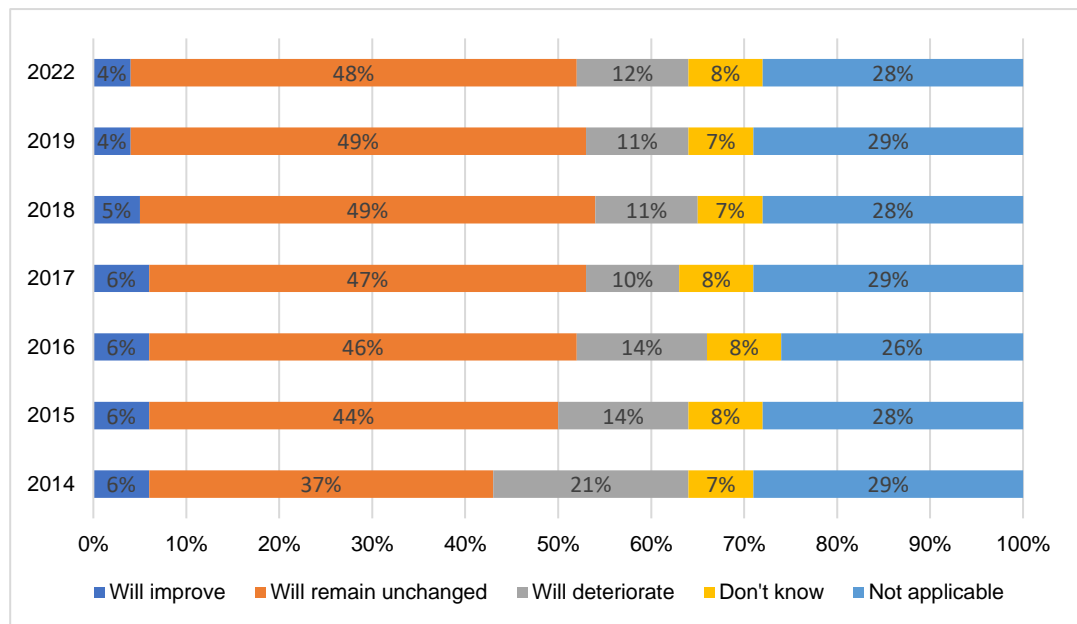
Figure 1. Changes in the perception of public financial support, able to affect the availability of external financing for SMEs in the EU member states (2014-2022, in %)
Sources: (European Commission, 2019), (European Commission, 2022)

5. In conclusion

After the economic and financial crisis of 2007-2009, national and regional government interventions aimed at supporting small and medium-sized enterprises, contributed to the stability of the banking industry and minimized the economic impact of the crises; the lessons learned on this occasion proved useful also throughout the COVID-19 pandemic, supporting the activities of the private sector

in many countries. The banking industry has facilitated and helped address many of the challenges faced by governments, industries, markets, and individuals, during the health crisis.

The issue of access to finance and government measures put in place to ease financing constraints, has a different impact on SMEs depending on the country, the sector of activity, and their size, the general conclusion being that government assistance helps SMEs to improve their financial performance and thus in the future be able to access various types of financing, which leads to economic development.

References

1. Anderson, J., Papadia, F., & Véron, N. (2021). COVID-19 creditsupport programmes in Europe's five largest economies. Working Paper No. 3, Bruegel. Retrieved January 14, 2022, from https://www.bruegel.org/2021/02/covid-19-creditsupport-programmes-in-europes-fve-largest-economie

2. Audretsch, D., 2003. *Entrepreneurship A survey of the literature. Enterprise Papers No. 14,* Brussels: Enterprise Directorate-General European Commission.

3. Ayadi, R. and Gadi, S., 2013. Access by MSMEs to Finance in the Southern and Eastern Mediterranean: What role for credit guarantee schemes? European Commission, MEDPRO Technical Report No. 35/2013

4. Badulescu, D., 2011. Collateral in SMEs' lending: Banks' requirements vs customers' expectations. *The USV Annals of Economics and Public Administration,* 11(1), pp. 255-263.

5. Badulescu, D., 2013. *Dezvoltarea și finanțarea afacerilor antreprenoriale. Particularități în turism/Development and financing of entrepreneurial business. Particularities in tourism.* Cluj Napoca, Romania: Presa Universitară Clujeană.

6. Badulescu, D. & Simut, R., 2012. *Banks and SMEs: Empirical Quantitative Approach on Banks Behaviour as Lenders to Small Businesses during Crisis Times.* Prague, Conference Proceedings of the 6th International Economic Conference "International Days of Statistics andand Economics", September 13-15, 2012.

7. Beck, T., Demirguc-Kunt, A. and Maksimovic, V. (2005), "Financial and legal constraints to firm growth: does size matter?", The Journal of Finance, Vol. 60 No. 1, pp. 137-177

8. Beck, T., Demirguc-Kunt, A. and Maksimovic, V. (2008), "Financing patterns around the world: are small firms different?", Journal of Financial Economics, Vol. 89 No. 3, pp. 467-487

9. Boocock, G. and Shariff, M.N.M. (2005), "Measuring the effectiveness of credit guarantee schemes: evidence from Malaysia", International Small Business Journal, Vol. 23 No. 4, pp. 427-454

10. Cenan (Ciucoș), M., 2022. *Performanța antreprenorială și dezvoltarea economico-socială în România în context internațional,* Oradea: PhD Thesiss defended at University of Oradea.

11. Ciani, E., Gallo, M., Rotondi, Z. (2020). Public credit guarantees and fnancial additionalities across SME risk classes. Bank of Italy. Working Papers No. 1265. Retrieved January 14, 2022, from https://www.bancaditalia.it/pubbl icazioni/temi-discussione/2020/2020-1265/index.html? com.dotmarketing.htmlpage.language=1

12. Craig, B.R., Jackson, W.E. and Thomson, J.B. (2009), "The economic impact of the small business administration's intervention in the small firm credit market: a review of the research literature", Journal of Small Business Management, Vol. 47 No. 2, pp. 221-231.

13. Chandler, V. (2012), "The economic impact of the Canada small business financing program", Small Business Economics, Vol. 39 No. 1, pp. 253-264.

14. De Rudy, V. (2007),"The SBA's justification IOU", Regulation, Vol. 30 No. 1, pp. 26-34.

15. Dietrich, A. (2012), "Explaining loan rate differentials between small and large companies: evidence from Switzerland", Small Business Economics, Vol. 38 No. 4, pp. 481-494.

16. European Central Bank, 2019. *Survey on the Access to Finance of Enterprises in the euro area (April to September 2019),* Frankfurt am Main, Germany: European Central Bank.

17. European Commission, 2006. *Communication from the Commission "Fostering entrepreneurial mindsets through education and learning" COM(2006) 33 final.* [Online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52006DC0033
[Accessed 11 02 2022].

19. European Commission, 2019. *Survey on the access to finance of enterprises (SAFE). Analytical Report 2019,* Brussels: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs.

20. European Commission, 2022. *Survey on the access to finance of enterprises (SAFE). Analytical Report 2022,* Brussels: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs.

23. Federal Reserve Bank of New York (2020), Small Business Credit Survey 2020

24. Green, A. (2003), "Credit guarantee schemes for small enterprises: an effective instrument to promote private sector-led growth?", SME Technical Working Paper, No. 10, UNIDO, Vienna

25. Guiso, L. and Minetti, R. (2010), "The structure of multiple credit relationships: evidence from US firms", Journal of Money, Credit and Banking, Vol. 42 No. 6, pp. 1037-1071

26. Hallberg, K. (1999), "A market-oriented strategy for small and medium-scale enterprises", Discussion Paper No. 40, International Finance Corporation, Washington, DC.

27. Iturralde, T., Maseda, A. and San-Jose, L. (2010), "Empirical evidence of banking relationships for Spanish SMEs", International Small Business Journal, Vol. 28 No. 3, pp. 274-295.

28. Kon, Y. and Storey, D.J. (2003), "A theory of discouraged borrowers", Small Business Economics, Vol. 21 No. 1, pp. 31-49.

29. Lehmann, A., & Lenaerts, K., 2021. When and how to unwind COVID support measures to the banking system? Retrieved January 14, 2022, from https://www.europarl. europa.eu/RegData/etudes/IDAN/2021/659646/IPOL_ IDA(2021)659646_EN.pdf

30. Levitsky, J. (1997). Credit guarantee schemes for SMEs–An international review. Small Enterprise Development, 8(2), 4–17. https://doi.org/10.3362/0957.1329.1997.013

31. Liu, M.H., Margaritis, D. and Tourani-Rad, A. (2011), "Asymmetric information and price competition in small business lending", Journal of Banking and Finance, Vol. 35 No. 9, pp. 2189-2196.

32. OECD(2020) - Financing SMEs and Entrepreneurs: An OECD Scoreboard Special edition: The impact of COVID-19, OECD, November 2020

33. Popov, A. and Udell, G.F., 2012. Cross-border banking, credit access, and the financial crisis. Journal of International Economics, 87(1), pp. 147-161

35. Riding, A., Madill, J. and Haines, G. (2007), "Incrementality of SME loan guarantees", Small Business Economics, Vol. 29 No. 1, pp. 47-61

36. Storey, D., 1994. *Understanding the Small Business Sector.* s.l.:Thomson Learning.

37. Xiang,D. & Worthington,A.C.(2017), The impact of government financial assistance on the performance of Australian SMEs, Accounting Research Journal, Vol.30, no.4, pp.447-464, https://doi.org/10.1108/ARJ-04-2014-0034

HOW IMPORTANT EDUCATION IS? AN EXPLORATIVE ANALYSIS OF THE DROPOUT PHENOMENON IN EASTERN EUROPE

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Abstract: *Early school leaving is a structural problem related to the socioeconomic environment involving aspects of local culture and customs that characterize a country. If not controlled, with the intent of hindering it, this phenomenon can generate unemployment, social exclusion, poverty, health problems and a slowdown in the country's economic growth. Since education policies are one of the most important concerns of national governments and international organizations, the UN 2030 Agenda, containing the common ambitions of the signatory countries, proposes 17 sustainable development goals and specifically, among these, inclusive and equitable quality education. In some Eastern European countries, the percentage of young people who decide not to continue their studies is really too high, exceeding 10%. Therefore, the aim of the paper is to study the dropout phenomenon in this context. We employ a panel vector autoregressive model in first differences to test complex dynamic relationships between share of the population aged 18 to 24 not involved in any education or training (as a proxy for the dropout phenomenon), GDP per capita (as a proxy for a country's wealth and industrial modernity), gross domestic expenditure on R&D in higher education (as a proxy for a country's effort to improve its education system), and share of people reporting crime, violence or vandalism (as a proxy for a country's social condition). The study concerns 10 Eastern European countries for the period 2000-2021. The results show that the government expenditure in education is negatively related to the dropout rate. Moreover, the increase in the relative number of early school leavers seems to stimulate a worsening in social conditions, with an increase in cases of crime, violence and vandalism. Finally, both an increase in dropouts and a deterioration in social conditions generate negative effects on the well-being of the community and economic growth. Improving the quality of the education system is therefore crucial (this is also confirmed by the variance decomposition analysis), even if it may not be enough: from the impulse response functions analysis, indeed, a shock exerted on the government expenditure on R&D in higher education produces positive effects on the*

(declining) dropout rate, but only for a short period. Policymakers should therefore make constant efforts to reduce the early school leaving.

Keywords: *school dropouts; education; human capital; socioeconomic development*

JEL Classification: *I2; H52*.

1. Introduction

The importance that a society gives to education is the basis for human capital development. Education is therefore an important driver for economic growth (Coman et al., 2023) and a key factor for the knowledge-based economy (Castagna et al., 2010). The education system can be one of the fundamental pillars for the socioeconomic development of a country. Hence, while it is true that education is one of the factors that can ensure economic growth, the interruption of studies is a real obstacle to socioeconomic development. Specifically, early school leaving is a structural problem related to the socioeconomic context involving aspects of local culture and customs that characterize a country (Colombo 2010).

Among the reasons for dropping out there are the medium- and low-tech production contexts (European Commission, 2015), the poor quality of the school system (Archambault et al., 2009), the limited economic possibilities of the family (Bynner and Parsons, 2002), the low importance that families attribute to the educational development of their offspring (Gorard, 2010), the poor integration with peers (Wehlage et al., 1989), as well as the presence of delinquency in the area of residence (Ripamonti and Barberis, 2018).

Education policies are among the most important concerns of national governments and international organizations. The UN 2030 Agenda, containing the common ambitions of the signatory countries, proposes 17 sustainable development goals and, among these, inclusive and equitable quality education. In the European context, cutting early school leaving is a priority. Already in 2010, recording an average school dropout rate of 16.4%, the European Commission included the reduction of the phenomenon among the objectives of the Europe 2020 strategy. On average, the school dropout rate has decreased from 13.4% in 2011 to 10.2% in 2019 across Europe. Although some progress has been made, the fight against early school leaving cannot stop, especially considering that in some countries such as Germany, Spain, Italy, Portugal, Romania, Bulgaria, and Hungary, rates are still too high (Grosseck, et al., 2020; Caroleo et al., 2020; Palmisano et al., 2022).

The purpose of the work is to study the phenomenon of early school leaving in 10 Eastern European countries, investigating the factors that can influence the choice of young people not to continue with their education, as well as the related consequences. We therefore employ a panel vector autoregressive model in first differences to test complex dynamic relationships between dropout phenomenon (proxied by the share of the total population aged 18 to 24 not involved in any education or training, DROP), wealth and industrial modernity of a country (proxied by the GDP per capita, GDP), government effort to improve the education system (proxied by the gross domestic expenditure on R&D in higher education, EXP), and social conditions (proxied by the share of people reporting crime, violence or vandalism in the area of residence, SOC).

2. Empirical analysis

2.1. Methodology and model specification
The aim of the analysis is to highlight the role that some key factors can play in determining the dropout phenomenon, as well as its possible consequences, in a panel of 10 Eastern European countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia), using the longer time span possible from 2000 to 2021. We employ a PVAR model based on a system of equations in which all the variables are treated as endogenous. Such a feature helps in exploring multiple relationships between variables. Moreover, the PVAR allows to capture the effects of one exogenous shock in one variable to another variable in the system, while keeping all other variables invariant. This permits to highlight bidirectional dynamic effects and potential path dependences. In line with the recent literature, we propose a PVAR model based on the indicators listed in Table 1.

Table 1: Data description and sources

Variable	Definition	Source
DROP	Share of the total population aged 18 to 24 who has completed at most lower secondary education and is not involved in further education or training	Eurostat
GDP	GDP per capita (constant 2015 US$)	World Bank
EXP	Government expenditure on R&D in the higher education sector (%, relative to GDP)	Eurostat
SOC	Share of people reporting crime, violence or vandalism in their local area	Eurostat

The conventional PVAR model is given by the following system of equations (Love and Zicchino, 2006):

$$X_{it} = f_i + g_t + \square(L)X_{it} + \square_{it} \tag{1}$$

where X_{it} is the vector of stationary variables in our analysis, f_i is a vector of country fixed effects, g_t is a vector of year fixed effects, $\square(L)X_{it}$ is a square matrix of polynomials in the lag operator, and $\square_{it}$ is the random error term (later, d denotes the first difference operator). Table 2 shows the main descriptive statistics.

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
DROP	9.54	4.53	3.00	22.40
GDP	12916.46	4704.08	3717.90	24744.84
EXP	0.25	0.16	0.04	0.73
SOC	12.23	6.71	3.20	28.70

2.2. Empirical testing

The use of the PVAR model requires stationary variables, since non-stationarity can cause spurious results in the context of VAR and panel analyses. Hence, the first step of the analysis is to test for the stationarity of the various series through first- and second-generation unit root tests. Specifically, two first-generation unit root tests (IPS and MW) and one second-generation unit root test (Pesaran) were performed. All tests are characterized by a null hypothesis assuming a unit root. The results reported in Table 3 show that the variables are non-stationary in level.

Table 3: Unit root tests: variables in level

Variable	IPS W-t-bar	MW	Pesaran
DROP	-2.9572	19.306	0.475
GDP	3.2615	18.995	0.083*
EXP	-0.8227	23.075	0.088*
SOC	-0.961	26.411	0.512

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

In these cases, a possible solution is the use of the first-difference transformation (Gyimah et al, 2022; Acheampong, 2018). The above listed unit root tests were also performed to the transformed variables. Based on the results listed in Table 4, we can conclude that all the series are integrated of order one (I(1)), i.e. all the chosen variables are stationary after the first difference transformation.

Table 4: Unit root tests: variables in first differences

Variable	IPS W-t-bar	MW	Pesaran
dREN	-7.426***	72.602***	-4.352***
dGDP	-8.787***	79.066***	-1.670**
dRAD	-10.684***	105.252***	-3.915***
dWOM	-6.619***	51.970***	-3.422***

Note: *p < 0.1; **p < 0.05; ***p < 0.01

Subsequently, four cointegration tests introduced by Westerlund (2007) were performed to check for possible cross-section interdependence. These tests assume the null hypothesis of no cointegration, which cannot be rejected based on the results of all four tests listed in Table 5. The choice of the first-difference estimates is therefore supported, since the variables in level are non-cointegrated, as well as non-stationary.

Table 5: Cointegration tests

Statistic	Value	p-value
G_τ	-1.66	0.38
G_α	-4.12	0.68
P_τ	-4.42	0.38
P_α	-2.52	0.70

Note: p-value are robust critical values obtained through bootstrapping with 100 replications

We also examined the correlation matrix and variance inflation factor (VIF) in order to assess whether collinearity and multicollinearity were a problem for our analysis. Given the low correlation values and low mean VIF and VIF reported in Table 6 (dDROP has been used as the dependent variable), we can conclude that collinearity and multicollinearity are not a concern.

Table 6: Correlation matrices and VIF statistics

	dDROP	dGDP	dEXP	dSOC
dDROP	1.00			
dGDP	0.01	1.00		
dEXP	0.07	0.01	1.00	
dSOC	0.14	-0.16	0.04	1.00
VIF		1.03	1.00	1.03
mean VIF	1.02			

The selection of the optimal lag is the last preliminary step of our analysis. According to the econometric literature, the commonly used criteria are the Moment Akaike Information Criterion (MAIC), the Moment Bayesian Information Criterion (MBIC), and the Moment Hannan-Quinn Information Criterion (MHQIC), which are maximum likelihood-based selection criteria. Following Andrews and Lu (2001), the ideal lag length should minimize the moment model selection criteria MBIC, MAIC, and MHQIC. Accordingly, considering the results shown in Table 7, the optimal model is a first order PVAR.

Table 7: Lag order selection criteria

Lag	MBIC	MAIC	MHQIC
1	-199.184	-51.575	-111.514
2	-136.335	-37.929	-77.889
3	-76.633	-27.430	-47.410

We removed the country fixed effects f_i in Eq. (1) by means of the first difference transformation. This method, however, may generate the so-called Nickell bias (1981) due to the correlation between the first-differenced lag and the first-differenced error term, both dependent on $\square_{it-1}$. In this context, estimating the model using OLS will produce biased and inconsistent results (Baltagi, 2008). We therefore used forward mean-differencing, also referred to as the Helmert transformation (Ht) (Arellano and Bover, 1995; Love and Zicchino, 2006) to overcome this problem. Moreover, applying the Ht to data produces the same result as applying the Ht to demeaned data, so that the year fixed effects g_t in Eq. (1) are also removed. Therefore, the system can be estimated using the Generalized Method of Moments and the lagged values of regressors can be used as instruments.

2.3. Results

The first order PVAR results are shown in Table 8.

Table 8: PVAR results

		Dependent variables			
		dDROP	dGDP	dEXP	dSOC
Lagged independent variables	**dDROP**	0.354***	-225.804***	-0.049*	0.659***
	dGDP	0.000	0.018	0.000	0.001**
	dEXP	-1.846*	-3651.894***	-0.016	3.112
	dSOC	-0.046	-206.323***	0.006	0.246***

Note: *p < 0.1; **p < 0.05; ***p < 0.01

In line with the literature (Dincă, 2019), an increase in EXP generates a decrease in DROP: likely, investments in education, improvements in the quality of the school system (Archambault et al. 2009), as well as the teacher training (Dupper, 1993), could help to increase young people's desire for knowledge and learning. Unexpectedly GDP and SOC do not seem to have any statistically significant impact on DROP, at least in the short run. Based on the results, DROP shows a path dependence, which can have a double interpretation: the absence of programs to reintegrate young dropouts into the educational sector usually generate a negative spiral over time; on the other hand, an attenuation of the dropout phenomenon can persist over the years.

Our empirical analysis also shows that DROP and SOC have a statistically significant negative impact on GDP. In line with previous studies, the lack of adequate education and delinquent behaviour limit job opportunities (especially for young people), with negative repercussions on the wealth and well-being of the community (Freeman, 1991).

The results also highlight that an increase in EXP generates a reduction in GDP. Likely, investments in education are not productive, at least in the short run. The resources allocated to the education sector are destined to generate their (positive) effects over the years. Moreover, it is possible to underline the existence of an indirect relationship between the variables involved: as seen before, an increase in EXP generates a reduction in DROP, with a subsequent positive influence on GDP. In line with the literature (Dennison, 2022), an increase in DROP induces an increase in SOC, that is criminal involvement is associated with early school leaving; in other words, the dropout phenomenon can stimulate a worsening in social conditions, with an increase in cases of crime, violence and vandalism.

Following Lutkepohl (2005), the stability of the PVAR model was verified since the eigenvalues are strictly less than 1 (see Table 9). Stability implies that the PVAR model is invertible, thus allowing bidirectional interpretations, as well as impulse-response functions estimates and the variance decomposition analysis (Abrigo and Love, 2016). In addition, the over-identification restriction test (Hansen's J chi2) is equal to 46.89 (p = 0.518): this confirms the goodness-of-fit of the model, since the null hypothesis that the over-identification restrictions are valid is verified (i.e. instrumental variables included are valid instruments and uncorrelated with the error term, while instruments not included are correctly excluded).

Table 9: Eigenvalue stability condition

Real	Imaginary	Modulus
0.446	0.000	0.446
0.138	0.371	0.395
0.138	-0.371	0.395
-0.121	0.000	0.121

Furthermore, the Granger causality tests, which investigates the null hypothesis of absence of causality, reveal bi-directional causality and confirm the presence of endogeneity (see Table 10).

Table 10: Granger causality test

Equation Variable	Excluded Variables	Chi2	p-value
dDROP	dGDP	1.921	0.166
	dEXP	3.038	0.081
	dSOC	1.752	0.186
	ALL	6.836	0.077
dGDP	dDROP	10.164	0.001
	dEXP	8.840	0.003
	dSOC	11.267	0.001
	ALL	28.788	0.000
dEXP	dDROP	10.453	0.001
	dGDP	0.836	0.361
	dSOC	1.885	0.170
	ALL	11.459	0.009
dSOC	dDROP	15.491	0.000
	dGDP	4.483	0.034
	dEXP	1.749	0.186
	ALL	21.013	0.000

Table 11 shows the variance decomposition (following the Cholesky decomposition using 1000 Monte Carlo simulations for 10 periods), which evaluates the percentage change in a variable which is explained by the shock to another variable over time. The results show that each variable is mainly affected by its lag. Specifically, DROP is mainly stimulated by EXP, while GDP is strongly influenced by DROP and SOC, and finally SOC is heavily stimulated by DROP.

Table 11: Variance decomposition analysis

		Impulse Variable			
		dDROP	dGDP	dEXP	dSOC
Response variable	dDROP	94.76%	1.51%	1.72%	2.01%
	dGDP	7.44%	71.39%	5.19%	15.98%
	dEXP	29.07%	0.79%	68.31%	1.84%
	dSOC	10.71%	9.13%	1.34%	78.82%

Note: Variation in response variable explained by the impulse variables in the columns (10 periods ahead)

Each impulse response function in Figure 1 provides a picture of the reaction of one variable to one standard deviation shock on another variable, all other shocks being equal to zero (a Gaussian approximation based on 200 Monte Carlo simulations was used to estimate the impulse response functions, again following the Cholesky decomposition). When a shock is exerted on a variable in the current period, the response variable usually shows a remarkable response during the first years, followed by a slight fluctuation thereafter. Specifically, a shock in education spending reduces dropouts during the early periods; the effect, however, decreases quickly, indicating that the government effort should be constant to have a long-lasting reduction in the dropout rate. Moreover, positive shocks in DROP and SOC lead to a reduction in wealth and well-being, causing, among other things, a slowdown in the economy.
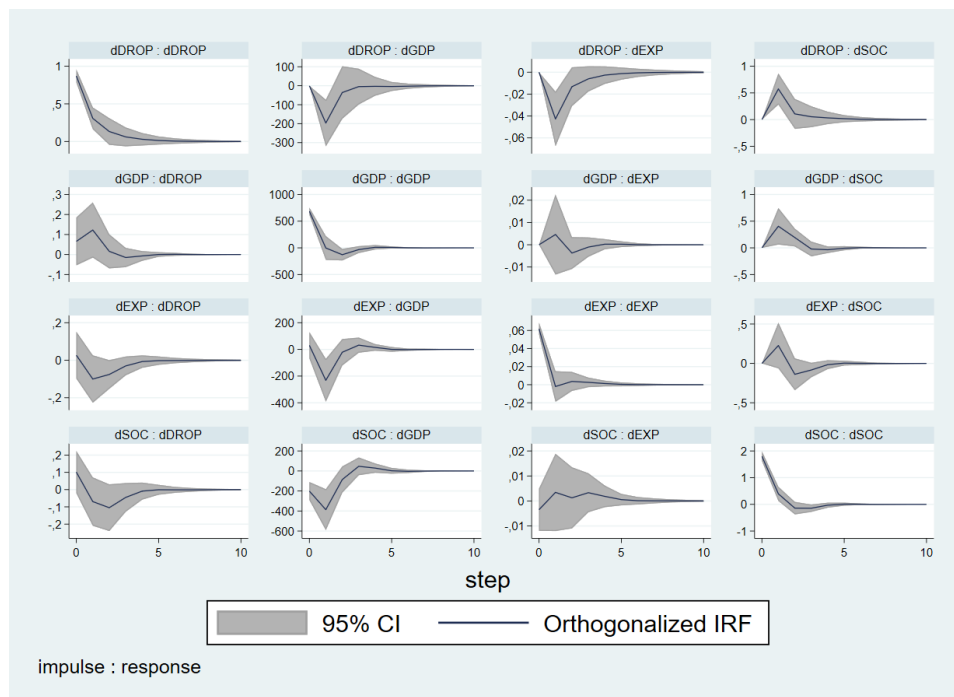
Figure 1: Impulse Response Analysis

3. Conclusions and Policy Implications

The paper tries to contribute to the literature on the determinants of the dropout phenomenon and its consequences, focusing on the role played by proxies of human capital (DROP), social capital (SOC), wealth and modernity (GDP), and expenditure in education (EXP). Specifically, we employed a PVAR model in first differences to test the relationships among the aforementioned variables, during the period 2000-2021, in 10 Eastern European countries, where the early school leaving is still a problem.

The results highlight that DROP has a path dependence over time; specifically, the absence of programs to reintegrate young dropouts into the educational sector can generate a negative spiral. Policy makers should therefore dedicate a constant effort to the attenuation of the dropout phenomenon, preventing it from persisting over the years. Specifically, one of the main drivers of DROP appears to be spending on education. Adequate resources, both financial and non (support programs, qualified personnel, etc.), should therefore be allocated in the school system to ensure full integration of young people, especially in cases of problems (disability, economic, etc.) that can limit the scholastic career.

Counterintuitively, GDP seem to have no statistically significant impact on DROP, at least in the short run. On the other hand, DROP negatively influences GDP: likely, early school leaving limits job opportunities, with negative consequences on the economic growth of a country. Again, it is therefore important that policy makers invest in education with the aim of drastically reducing the dropout phenomenon.

Finally, an increase in the dropout rate also generates an in increase in criminal involvement, with further negative consequences on the wealth and well-being of the community.

Government investments in the higher education sector are essential to tackle the dropout phenomenon, even if they negatively impact GDP in the short run. These investments, indeed, could not be immediately productive. The resources allocated to the education sector will generate their (positive) effects over the years. Furthermore, the existence of an indirect relationship between the variables involved has been highlight: an increase in EXP tends to reduce DROP, with a subsequent positive impact on GDP.

References

1. Abrigo, M. R. M. and Love, I. (2016) "Estimation of panel vector autoregression in Stata", *Stata Journal*, Vol. 16, No. 3, pp. 778-804.
2. Acheampong, A. O. (2018) "Economic growth, CO2 emissions and energy consumption: What causes what and where?", *Energy Economics*, Vol. 74, pp. 677-692.

3. Andrews, D. W. K. and Lu, B. (2001) "Consistent model and moment selection procedures for GMM estimation with application to dynamic panel data models", *Journal of Econometrics*, 101, Vol. 1, pp. 123-164.

4. Archambault, I., Janosz, M., Morizot, J. and Pagani, L. (2009) "Adolescent behavioral, affective andcognitive engagement in school: Relationship to dropout", *Journal of School Health*, Vol. 79, No. 9, pp. 408-415.

5. Arellano, M. and Bover, O. (1995) "Another look at the instrumental variable estimation of error-components models", *Journal of Econometrics*, Vol. 68, pp. 29-51.

6. Baltagi, B. H. (2008) Econometric analysis of panel data, Wiley, Chichester.

7. Bynner, J., and Parsons, S. (2002) "Social exclusion and the transition from school to work: The case ofyoung people not in education, employment, or training (NEET)", *Journal of Vocational Behaviour*, Vol. 60, No. 2, pp. 289-309.

8. Caroleo, F. E., Rocca, A., Mazzocchi, P., and Quintano, C. (2020) "Being NEET in Europe before and after the economic crisis: An analysis of the micro and macro determinants", *Social Indicators Research*, Vol. 149, No. 3, pp. 991-1024.

9. Castagna, A., Colantonio, E., Furia, D., and Mattoscio, N. (2010) "Does education play a relevant role inglobalization?" *Procedia - Social and Behavioral Sciences*, Vol. 2, No. 2, pp. 3742-3750.

10. Colombo, M. (2010) Dispersione scolastica e politiche per il successo formativo: dalla ricerca sugli early school leaver alle proposte di innovazione, Edizioni Erickson.

11. Coman, A. C., Lupu, D., and Nuţă, F. M. (2023) "The impact of public education spending on economic growth in Central and Eastern Europe. An ARDL approach with structural break", *Economic Research-Ekonomska Istraživanja*, Vol. 36, No. 1, pp. 1261-1278.

12. Dennison, C. R. (2022) "Dropping out of college and dropping into crime", *Justice Quarterly*, Vol. 39, No. 3, 585-611.

Dincă, G. (2019) "Investment in education", Bulletin of the Transilvania University of Braşov, Series V, Economic Sciences, Vol. 12, No. 61/2, pp. 79-86.

13. Dupper, D. R. (1993) "Preventing school dropouts: Guidelines for school social work practice", *Social Work in Education*, 15(3), 141–149.

14. European Commission (2015) Macroeconomic imbalances Country Report – Italy 2015, European Commission, Brussels.

15. Freeman, R. (1991) "Crime and employment of disadvantaged youth", *National Bureau of Economic Research,* Working Paper, No. 3875.

16. Gorard, S. (2010) "School experience as a potential determinant of post-compulsory participation", *Evaluation and Research in Education*, Vol. 23, No. 1, pp. 3-17.

17. Gyimah, J., Yao, X., Tachega, M.A., Hayford, I.S., and Opoku-Mensah, E. (2022) "Renewable energy consumption and economic growth: New evidence from Ghana, *Energy*, Vol. 248, 123559.

18. Grosseck, G., Holotescu, C., and Andone, D. (2020) "Open educational resources in Romania", in Current State of Open Educational Resources in the "Belt and Road" Countries, pp. 151-173.

19. Love, I., and Zicchino, L. (2006) "Financial development and dynamic investment behavior: Evidence from panel VAR", *The Quarterly Review of Economics and Finance*, Vol. 46, pp. 190-210.

20. Lutkepohl, H. (2005) New introduction to multiple time series analysis, Springer Verlag.

21. Nickell, S. (1981) "Biases in dynamic models with fixed effects", *Econometrica*, Vol. 49, pp. 1417-1426.

22. Palmisano, F., Biagi, F., and Peragine, V. (2022) "Inequality of opportunity in tertiary education: evidence from Europe". *Research in Higher Education*, Vol. 63, pp. 514–565.

23. Ripamonti, E., and Barberis, S. (2018) "The effect of cultural capital on high school dropout: An investigation in the Italian Provinces". *Social Indicators Research*, Vol. 193, No. 3, pp. 1257-1279.

24. Wehlage, G. G., Rutter, R. A., Smith, G. A., Lesko, N., and Fernandez, R.R. (1989) Reducing the risk: Schools as communities of support, Falmer Press, Philadelphia, PA.

25. Westerlund, J. (2007) "Testing for error correction in panel data", *Oxford Bulletin of Economics and Statistics*, Vol. 69, 709-748.

ECONOMIC PERFORMANCE OF THE ENTERPRISES: A BIBLIOMETRIC ANALYSIS AT THE LEVEL OF EUROPE AND THE USA FOR THE LAST 5 YEARS

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Abstract: Performance can be seen as a concept that, after six decades of studies and approaches, is still seeking clarification. Over time, the performance has been viewed from several perspectives such as: the equivalent of organizational effectiveness, adaptability, sensitivity, and productivity, up to concepts from the economic-financial sphere such as: increasing added value, profitability, productivity, indebtedness, and solvency. If we look at performance as a term, we notice that it presents a certain imprecision and is rarely defined. In DEX "performance" is represented as "the outcome (especially good) obtained by someone in a sports competition", "special achievement in a field of activity", or "the best result obtained by a technical system..." (DEX, 1998). The meaning of word performance comes from the English language from the verb "to perform" which according to the translation made by google translate means to do something regularly, to fulfil an obligation, to execute a contract, to perform in the activity you carry out, to achieve the work. If we look at the word "performance" not from the perspective of the verb but of the subject, this approach leads us to the goal and the way in which an organization achieves its proposed objectives, a fact that can be viewed from the point of view of effectiveness and productivity.
The indicators that are presented can be used to measure the economic-financial performance of the entities from a relative perspective and some of their limits have been identified in absolute size. An important trend that manifests itself in the field of measuring the economic-financial results of companies is represented by the increasing importance of intangible assets and intellectual capital, which must be reflected with the help of specific indicators. With the development of new technologies in the information field, many of the

work tools of the industrial era have become outdated. The economic entities can no longer obtain long-term competitive advantages only through the rapid assimilation of new technologies or through very good management of financial resources. The ability of an economic entity to mobilize and exploit its intangible assets has become much more important than investments in fixed assets. The difficulties in the financial evaluation of some elements of the business activity such as the ability to organize production, the knowledge and skills of employees, their motivation, flexibility, customer loyalty, available databases, care for the environment, etc., have not allowed that these assets to be recognized as such in the companies' balance sheets, although they are essential in the present and future competitive environment for the success of economic entities.

Keywords: *performance; economic performance; enterprises; bibliometric research; quantitative research; VOSviewer*

J.E.L. classification: *L 25, O 12, P 17, P47*

1. Introduction

Different definitions of economic performance are presented in the specialized literature. The performance approach in the economy is in many cases related to the activity of the enterprise. Thus, the enterprise of the future can be appreciated as a structured ensemble of functions, objectives and people, resulting in the efficient production of goods and services, its fundamental feature is that it is based on knowledge embedded in people and not only that. Thus, in a consulting agency the central element is represented by people, in their quality of support of specialized knowledge, while in a classic production company, knowledge is found not only in people, but also in technologies and systems technical, organizational, business environments, etc.

Once the creation of the European Union and the integration of the economies of the countries in the community block, the notion of European enterprise appeared, which designates all enterprises whose activity or sales market exceeds the borders of the national economy of which they are a part. So it appeared the tendency of companies to give up their national identity in exchange for a European identity.

The term performance has a high degree of complexity, in general, the specialized literature analyzes the company's performance in terms of the ability to produce profit, but for a correct approach to the content of the performance, all sides of the economic activity must be taken into account.

The concept of "sustainable development" or "sustainability" has and continues to be widely recognized and discussed. This concept appears designed to remove the conflict of the debate over environmental quality versus economic growth, which

was evident in the 1960s and 1970s, during the surge in the environmental movement (Burlaud, et al., 2011).

The performance during the '90s was defined according to the level of achievement of the objectives. Bourguignon rates performance as the achievement of organizational objectives. Other authors affirm that performance is not itself bad or good. The same performance can be appreciated as a good performance, if the objective is modest, or a bad performance, if the objective is ambitious (Badulescu, et al., 2021).

If we look at it from an economic development viewpoint, the conventional economic growth-driving practices, which are dependent on low-cost resources and factor inputs, are notably weakened (Yu, et al., 2020). As public interest has grown in recent years in terms of transparency and disclosure policies and the assessment of the influence of environmental, social and governance information has led to new configurations of reporting and performance measurement.

In terms, the performance, can be defined considering the productivity and effectiveness of the entity, theoretically an enterprise is performing if it is at the same time productive and effective (Niculescu, 2003). Productivity can be accepted as the ratio between the results obtained and the means employed, also effectiveness can be determined as the ratio between the results obtained and the expected ones; thus we can say that the economic performance is related to the two terms. Seen in depth, the performance should not be analyzed only from the perspective of the two terms because effectiveness can express the performance when the ratio is overunit, but productivity and efficiency cannot represent the performance. If we look at a productive enterprise, we cannot assume that the productivity that characterizes the production activity of the economic entity represents the performance, because efficiency is the value expression of productivity, so we can affirm that this also influences the enterprise's performance only tangentially.

The performance viewed from the perspective of P. Lorino leads to the idea that it can be defined by an increase in value, so he affirms that the performance for the enterprise represents what contributes to the improvement of the value-cost couple, and not only what contributes to the decrease of the cost or value increase (Lorino, 2000).

Armando Calabrese recommended the consistency of judgments when performing the analysis, multi-stakeholder engagement (i.e. different stakeholders' views trade-off), multidimensionality for each sustainability dimension (i.e. economic, environmental and social dimension) by considering both their impacts on the company and influence on stakeholders' decisions and evaluations, the completeness of report content, as well as avoiding subjectivisms (Fleacă et al., 1999).

The purpose of the research in this article is to determine the interest in the area of scientific research on the economic performance at the European and US level, the funding of the articles, the membership of the authors of scientific articles and the level of citation of scientific papers and correlation of citations within the selection of articles. For the analysis of the research articles, the appropriate method was considered the statistical-bibliometric analysis, which presents an objective point of view regarding the number of researches carried out in the framework of the economic performance and the bibliographic links between these researches, so is been made an analysis regarding the cooperation between researchers using different research tools.

2. Literature review

The enterprise creates an internal economic added value, which generates, after decreasing all production factors including the cost of equity capital, a positive net value, but also an external value greater than the accounting value of the assets, which can be defined as the market value of the enterprise influenced by the external factors and not by the internal decisions of the economic entity. So we can conclude that the client has a primary role in ensuring and developing the performance, which involves taking into account criteria such as market shares or customer loyalty. Thus, the company's performance depends on its ability to create value for its customers and for its owners (shareholders), employees, and the environment. (Jianu, 2007).
So, we can define performance as a state of competitiveness of the economic entity that leads to: the fulfillment of the proposed strategic objectives, to a sustainable market presence and to generate potential future positive results. A performance enterprise is one that generates value for shareholders; which is oriented towards satisfying the needs of customers taking into account their wishes and which has a friendly and sustainable business model with the environment. In the conditions of globalization and the increasingly competitive entities in the market, the economic-financial performances of enterprises generate special importance for the world economy. From the perspective of economic activity, the performance is based on the efficiency of allocating and using resources with as little impact on the environment as possible. If we look at the economic entity, the performance represents a ratio that generates the maximum result between the amount of resources used and the impact on the environment in a defined period of time, or a report that must be minimized, between the resources used, the impact on the environment and the results obtained by an economic entity in the same period of time.

In order to be able to measure the economic performance, a whole system of indicators is needed considering the complex character of the concept. An economic entity can become efficient and effective only if it manages to find a balance between internal and external sources of development. The enterprise is performing when, at the same time, it is efficient and effective, the combination of these two variables highlighting the level of performance of the company. (Niculescu et al., 1999) Since effectiveness measures the degree of fulfillment of external expectations, and efficiency reflects the degree of fulfillment of the expectations of the company's internal environment, the calculation relationship of its performance is the product of the two variables. (Andrei, 2000). We can say that an economic entity registers an optimal performance when it succeeds with the resources it has at its disposal to satisfy at the maximum level both the requirements of the external environment and those of the internal environment.

We can say that a high performance is generated and registered at the microeconomic level, this being the result of the enterprises activity and the competitive advantages of the economic entities reflects the competitive advantages of the nation. Nations succeed in those industries where they have advantages that are valuable to other nations and where their innovations and improvements meet international needs. (Porter, 1995).

At the microeconomic level, we can identify several classic indicators such as: turnover, gross profit, operating result, customer and supplier turnover, economic rate of return and financial rate of return. Along with the new studies and research carried out on the economic performance, the following indicators were identified and analyzed: Return on assets (ROA), Economic Value Added (EVA), Market Value Addet (MVA) and Internal Revenue Service (IRS).

At the macroeconomic level, from the perspective of the objectives, we can say that they represent goals or aspirations that can be expressed from an economic point of view, as the well-being of the population, or as an economic and social progress. These can materialize in different levels of macroeconomic dimensions and can express: "economic growth" identified by GDP growth rates, "full utilization of labor", a low unemployment rate, "price stability", result of inflation control through the consumer goods price index, "achieving the external balance", as a result of the external payments balance.

If the requirements of the current population are satisfied without destabilization and the capability fulfills the needs of forthcoming generations, this is considered sustainable growth. A sustainable economy depends on the mobility and externalities of resource use (Li et al., 2021).

The national economic environment, although gradually improved, he did not represent the necessary framework for enterprises to properly capitalize their productive potential. It was marked by legislative-financial instability, bureaucracy and corruption, insufficient transparency in micro and macroeconomic decisions, heavy system and unjustified barriers to the entry and exit of companies on the markets, etc. This state of the national economic environment was not favorable to the existence of a competitive advantage, which, at present, is determined by the degree of competitiveness of the companies, by the evolution of technical progress and less by the existence of natural resources. (Iancu, 2000).

The gross domestic product (GDP) is the macroeconomic indicator used to analyze the performance of the economy at a given moment, but also to make international comparisons and to know the evolution of economic growth.

From a statistical point of view, the analysis of the economic performances is carried out by using GDP or VN indicators. But in order to be able to carry out an analysis from which results can be obtained to reflect the economic performance achieved at the level of an economy, comparisons between the values of several indicators are necessary, so we can say that scientific research can be done between the GDP of some countries with equivalent economic dimensions. In order to ensure comparability of the data, it is necessary to report the GDP or VN to the population of the country that is being analyzed, the goal being that of having a unitary criterion of the economic dimension.

The goal of using these indicators in the framework of economic performance research is to ensure a relative assessment of the standard of living of the population of a country with the aim of ensuring the analysis of an international hierarchy.

The objective of studying performance from a dynamic perspective is to identify the growth rate of economic activity and of the obtained results. In such situations, the annual GDP growth rate or growth indices are calculated by studying the evolution over time, or in size relation to the values obtained at the level of other countries for the same period of time. GDP dynamics viewed as an indicator by which economic performance can be measured is of great interest from the perspective of the evolution of resources and uses by categories.

3. Research methodology

As society evolved and developed, access to research activity became permissible for a growing number of researchers from increasingly varied field and different geographical areas, modern science became an attractive field. So, science can be seen as a process that generates new information, but also a new point of research,

having a consecutive and collective character: a scientific research work has at its starting point certain ideas taken from previous works and appears as a result of their development or reinterpretation (Mansour et al, 2022).

The scientific research of this article was carried out by means of a bibliometric analysis, which used resources such as databases (Web of Science) and scientific processing and analysis procedures.

Bibliometrics can be defined as a qualitative and quantitative analysis of research that is often used to assess the impact of an individual researcher, research groups, institutions, countries or journals. The bibliometric analysis of a specific journal is important as it provides insight that goes far beyond the scope of the journal (Krauskopf et al, 2018)

The first activity was to query the Web of Science database by the tag "economic performance", we limited the searches to Arts & Humanities Citation Index (A&HCI), Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI) and we put filters on the database: All open access, publication years 2019-2023, countries of origin from Europe and the USA, Research Areas (Business Economics, and Public Administration), Web of Science Categories (Economics, Management, Business, Business Finance, Development Studies, Regional Urban Planning, Agricultural Economics Policy).

After providing the result of 404 articles, we did a statistical analysis of the articles published over the 5 years, an analysis of the word density through the word cloud, to see the association of frequently used words with economic performance, by the name of the articles, the abstract, Author Keywords and Keywords Plus.

Another analysis was carried out using the WOSviewer software to see the density of phrases used in the 404 articles in the selection. We used filters Co-occurrence, Author Keywords, fractional counting, minimum 5 occurrences.

Further, the bibliometric analysis and the density analysis were addressed, which were carried out according to the country of publication, according to the year of publication, according to the number of articles per country, according to the funding organization, the number of articles per author, according to the affiliation and according to the number of citations of the scientific articles in the selection. The Hirsch Index (H Index) for this selection is 32.

 In this part we establishing the methodology to be used, we considered appropriate to present the criteria we approached in creating bibliographic links and the situation of funding and publication density.

Also, in this part of the research, we made a statistical analysis of authors from Romania.

Through the WOSviewer software, we created a map of the density of citations between authors, using the data exported from the Web of Science database, and we selected the analysis type Bibliographic coupling and the analysis unit Authors and a minimum number of two documents per author.

4. Findings

After searching the Web of Science database and using additional filters at the European and US level, a total of 404 articles were retrieved. The publication of the articles was as follows:

Table no. 1 Distribution of the 404 articles retrieved from the Web of Science query

Year	2023	2022	2021	2020	2019
Number of items	28	83	89	109	95

Source: Web of Science database (accessed on 21.04.2023)

Figure no. 1. Distribution of the 404 articles retrieved from the Web of Science query
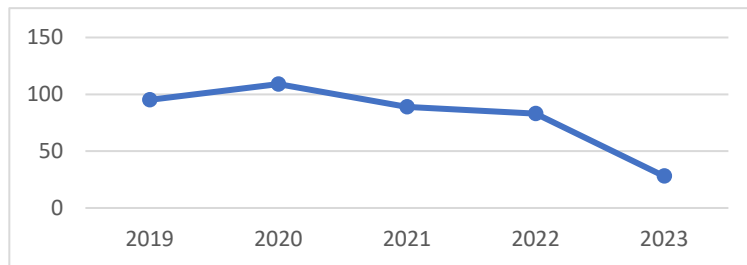
Source: Web of Science database (accessed on 21.04.2023)

There was a slight decrease in the number of articles that met the filters imposed in the search. The year 2023 is falling because only 4 months have passed since the current year. The authors will make another such query at the beginning of next year to see if the downward trend in the number of articles continues.

After the word cloud analysis of 404 articles, the words with the highest frequency of use were: Perform, Economic, Firm, Social, Effect, Develop, Model, Growth, Impact and Sustain, the graphic representation is as follows:

Figure no. 2. Word cloud of the 404 articles retrieved from the Web of Science query
Source: WOS database (accessed on 21.04.2023) made via https://wordart.com/

The second analysis was that of the phrase density through the VOSviewer software. After applying the filters, we have the following results:
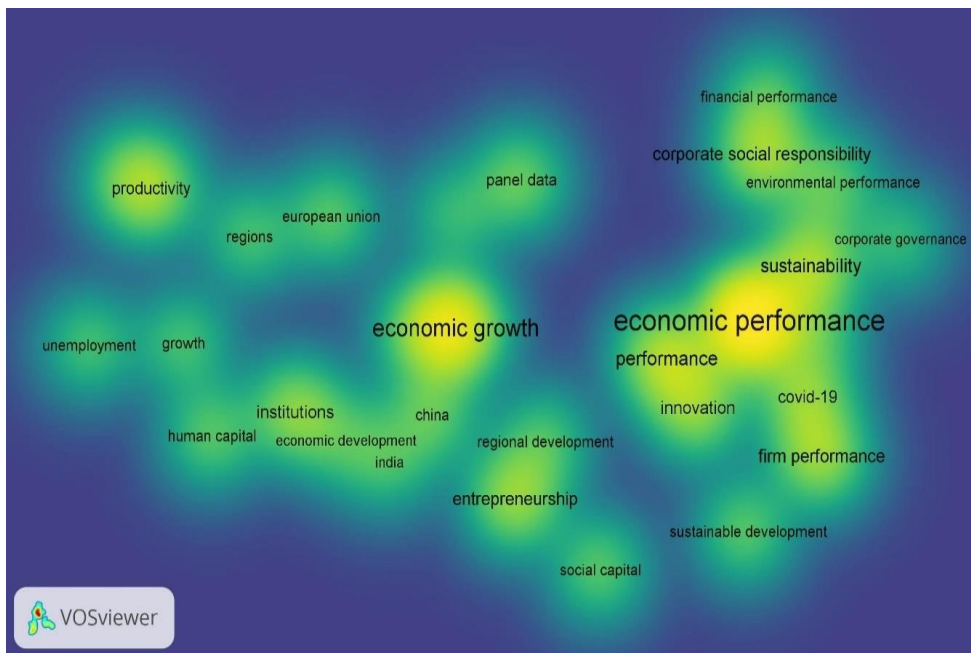
Figure no. 3. The phrase density of the 404 articles
Source: WOS database (accessed on 21.04.2023) made with the VOSviewer software

The frequency of the phrases is as follows:
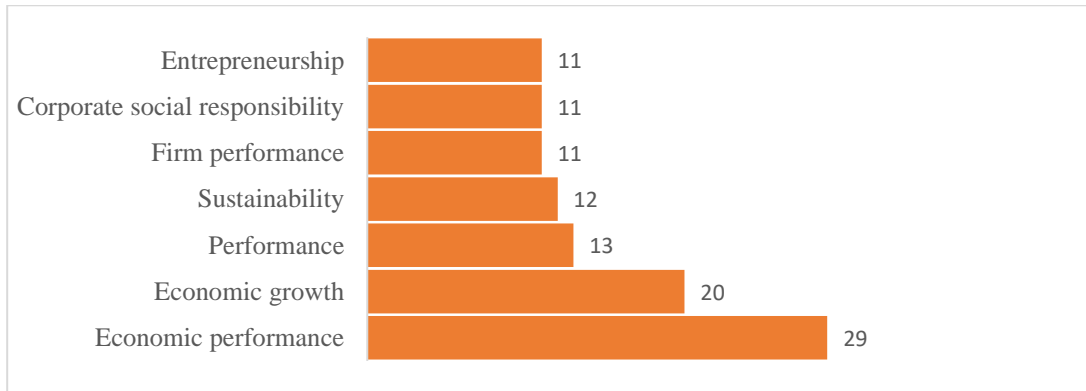
Figure no. 4 Frequency phrases
Source: Own conceptualization of WOS data with VOSviewer (accessed on 21.04.2023)

It can be seen from this words and phrases analysis that the selected articles are oriented more towards the sphere applied to the economic performance of enterprises.

Through bibliometric analysis and density analysis, the authors' origin from Europe was classified for the top 10 countries as follows:
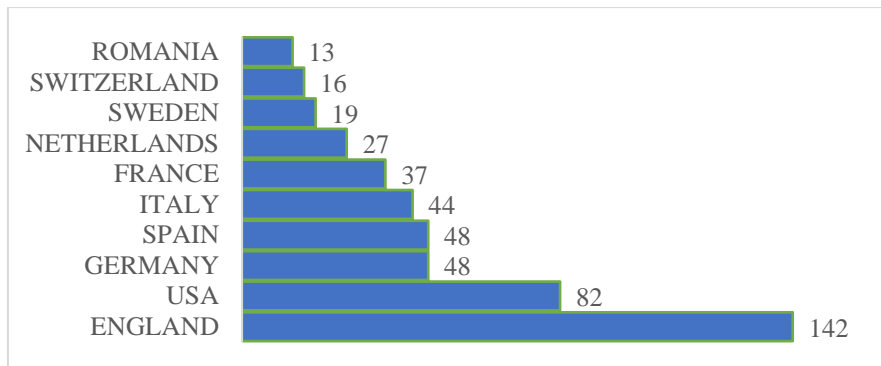
Figure no. 5 Origin of authors for the top 10 countries retrieved from the WOS query
Source: Own conceptualization of WOS data processing (accessed on 21.04.2023)

Funding for the writing of the articles, the first 5 sources for the 404 articles was:

Table no. 2 Top 5 funding sources from the Web of Science query

Funding Agencies	Publications
Uk Research Innovation	37
Economic Social Research	30
European Commission	17
Spanish Government	13
European Research Council	10

Source: Own conceptualization of WOS data processing (accessed on 21.04.2023)

It is noted that after the funding granted by the European Union through various programs (57 articles), UK Research Innovation follows with 37 funded articles and the Spanish Government with 19 funded articles.

We also analyzed the top 5 authors who have the most articles within the 404 articles included in our analysis and we have the following distribution:
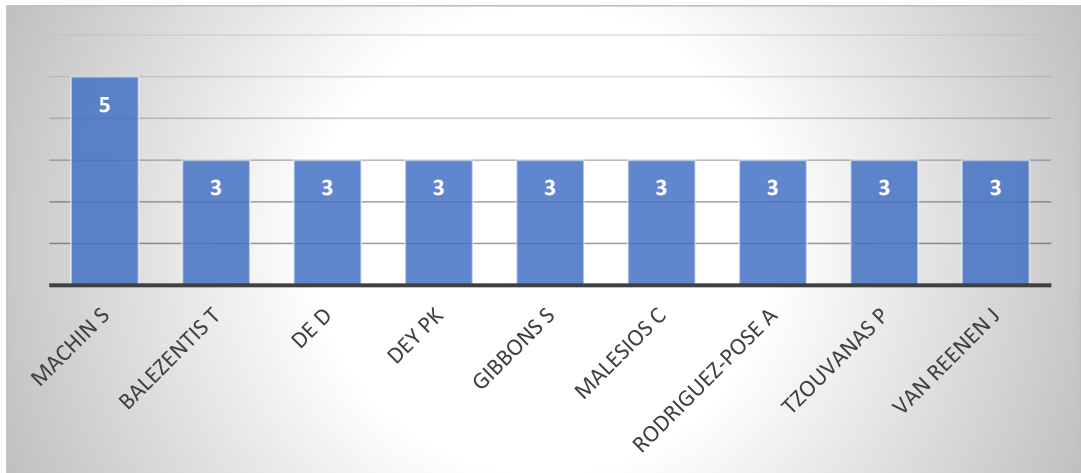
Figure no. 6 Authors with at least 3 articles retrieved from the Web of Science query
Source: Own conceptualization of WOS data processing (accessed on 21.04.2023)

By means of the VOSviewer software, we analyzed the links between the authors included in the selection of the 404 articles:
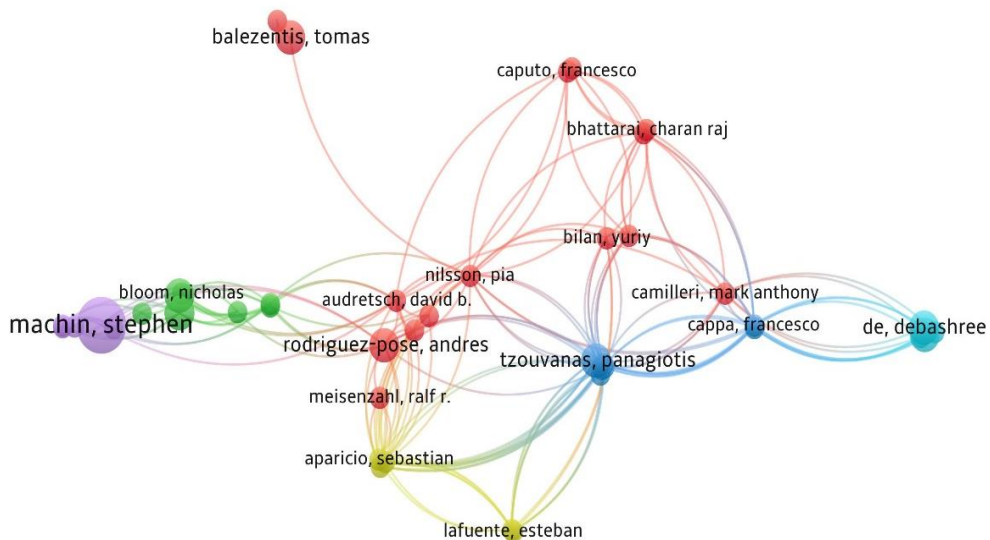
Figure no. 7. Circular references of the 404

Source: WOS database (accessed on 21.04.2023) made with the VOSviewer software

We observed that the authors with the most articles are also the most cited authors Machin Stephen, Balezentis Tomas, De Debashree, Rodriguez-pose Andres Tzouvanas Panagiotis, Aparicio Sebastian.

The 404 articles are cited 4,619 times with a Hirsch Index (H Index) of 32. The citations for the first 5 articles are as follows:

Table no.3 The first 5 articles in terms of number of citations obtained from the WOS query

No. crt	Article title	Publication year	Total citations	from which:				
				2019	2020	2021	2022	2023
Total			4.619	119	573	1274	1848	797
1	Regional inequality in Europe: evidence, theory and policy implications	2019	275	19	55	90	87	20
2	Strategic CSR: A Concept Building Meta-Analysis	2020	148	5	17	46	59	21
3	Circular economy to enhance sustainability of small and medium-sized enterprises	2020	104	0	10	17	58	19
4	Greenwashing in environmental, social and governance disclosures	2020	101	0	5	18	49	29
5	Critical dialogical accountability	2019	94	2	19	27	27	19

Source: Own concept, following the processing of data from WOS (accessed on 21.04.2023)

According to the criteria selected in Romania, there are 13 articles. The research area of these articles is Business Economics. The article's publication by calendar year was as follows:

Table no. 6 Articles published in Romania resulting from the Web of Science query

An	2022	2021	2020	2019
articole	5	3	2	3

Source: Own concept, following the processing of data from WOS (accessed on 21.04.2023)

The authors' university affiliation was as follows: Bucharest University of Economic Studies (7), 1 Decembrie 1918 Alba Iulia University (2), Babes Bolyai University from Cluj (1), Oradea University (1), Craiova University (1) and Wallachia University of Targoviste (1). All articles were written in English.

The articles were cited 75 times and had a Hirsh index of 5. Through the VOSviewer software, I analyzed the links between the authors included in the selection of the 13 articles.
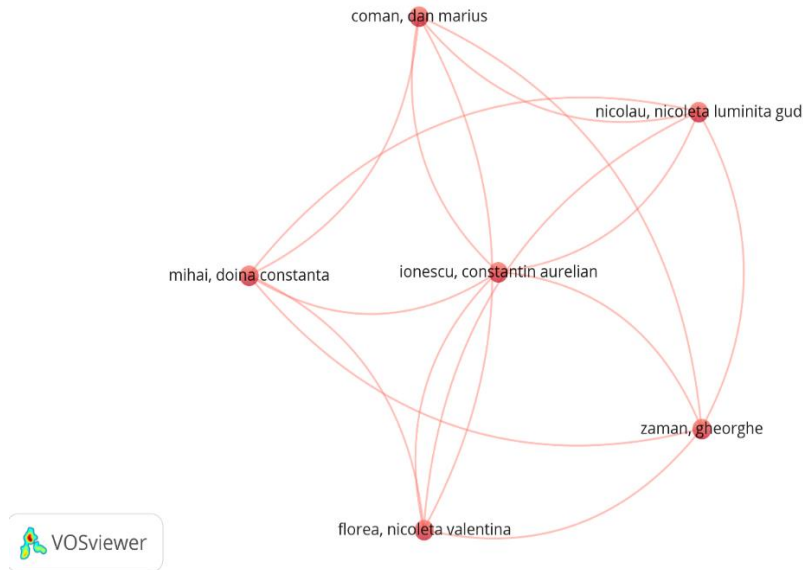
Figure no. 8. Circular references of the 13 articles from Romania
Source: WOS database (accessed on 21.04.2023) made with the VOSviewer software

5. Conclusions

We can appreciate that the evolution of the economic performance of the entities during the analyzed period of time can be appreciated with the help of the level of quantitative, qualitative and structural performances, these requiring a quantification in an appropriate way with the help of a complex system of calculated indicators, at microeconomic and macroeconomic level.

The indicators are, however, the concrete expression of some fundamental economic concepts that have various forms of manifestation. Also, they form a coherent system, which is why, for the assessment of economic performances, they were looked and analyzed in a correlated manner, a fact that generated a system of correlations, which were registered between certain coordinates to decide that the economy it is efficient and functional.

Following the analysis of the macroeconomic dynamics of the entities performance, in correlation with two major aspects: the legacy of a bad allocation of resources and institutional fragility, the conclusion is that the first one induces a strong tension in the system. So we can conclude that the two aspects are closely related to the

aversion to change and lead to the creation of systems that oppose deep restructuring, generating over time major imbalances that materialize in high inflation rates. In the absence of the strict imposition of financial discipline, the enterprises that have become inefficient should leave the circuit of the economy, because they do nothing but affect the economic performance of the environment in which they operate.

The performance at the enterprise level has a double priority: to register on the line of convergence regarding the economic resources used, at the same time ensuring a real competition for the allocated resources. The last one must be based on full transparency and the orientation of the final products towards the needs of the market. A functional system in this direction will be able to generate a learning process for both innovative enterprises and research entities, contributing to the formation of a research and innovation market.

Research and innovation entities in the technological field should ensure the updating of managerial capacities, in order to increase their ability to act in accordance with market opportunities.

In the case of private financing, it needs to develop specific skills to be able to act in the field of research and innovation, especially in terms of evaluating the chances of success of different innovation projects. Given that innovation not only offers higher productivity rates, but also that it has become a mandatory condition of long-term development, this skills upgrade is a necessary step towards the realization of an economy based on performance and competitiveness.

Based on the conclusions from the statistical and bibliometric research we can draw a series of conclusions that are defining for the research subject in mind. A first conclusion is related to the need to support research in the field of economic performance of enterprises, considering the continuous change of the economic environment at the European and world level.

The authors of the present paper commit to carrying out future research, in which to address the field of economic performance at the level of enterprises, which can have both practical and theoretical implications, to better identify the elements that influence their economic development, the approach of subjects of niche from the field of enterprises thus contributing to the improvement of knowledge and scientific literature in the field of the economic performance.

References
1. Andrei, B.C.*, 2000, *Performanţa firmei*, Editura Polirom, Iaşi.
2. Badulescu, D., Simut, R., Mester, I., Dzitac, S., Sehleanu, M., Bac, D.P. and Badulescu, A., 2021. Do economic growth and environment quality contribute to tourism development in EU countries? A panel data analysis. *Technological and Economic Development of Economy*, *27*(6), pp.1509-1538.

3. Burlaud, A. and Colasse, B., 2011. International accounting standardisation: Is politics back? *Accounting in Europe*, *8*(1), pp.23-47.

4. Fleacă, B., Fleacă, E. and Corocăescu, M., 2023. Sustainability information–analysis of current trends in sustainability monitoring & reporting. *Entrepreneurship and Sustainability Issues*, *10*(3), p.274.

5. Iancu, A., 2000, *Avantajul competitiv şi accesul în Uniunea Europeană,* în *Relansarea creşterii economice în România*, Editura Economică, Bucureşti, p. 478 – 484.

6. Jianu, I., 2007, *Evaluarea, prezentarea şi analiza performanţei intreprinderii*, Editura CECCAR, Bucureşti.

7. Krauskopf, E., 2018. A bibiliometric analysis of the Journal of Infection and Public Health: 2008–2016. *Journal of infection and public health*, *11*(2), pp.224-229.

8. Li, Q., Cherian, J., Shabbir, M.S., Sial, M.S., Li, J., Mester, I. and Badulescu, A., 2021. Exploring the relationship between renewable energy sources and economic growth. The case of SAARC countries. *Energies*, *14*(3), p.520.

9. Lorino, P., 2000.*Comptes el recits de la performance*. Editura D'Organisation, Paris.

10. Mansour, L., Spătariu, E.C. and Gheorghiu, G., 2022. Accounting Information System–A Quantitative Analyse of the Bibliometric Elements. Ovidius University Annals, Economic Sciences Series, 22(2), pp.890-900.

11. Niculescu, M., 2003. *Diagnostic global strategic*. Editura Economică.

12. Niculescu, M., Lavalette G., 1999, *Strategii de creştere*, Editura Economică, Bucureşti, p. 254-256.

13. Popa, D.N., Bogdan, V., Sabau Popa, C.D., Belenesi, M. and Badulescu, A., 2022. Performance mapping in two-step cluster analysis through ESEG disclosures and EPS. *Kybernetes*, *51*(13), pp.98-118.

14. Porter, M., 1995, „*The Competitive Advantage of Nations"*, McGraw Hill, New York.

15. Yu, S., Sial, M.S., Tran, D.K., Badulescu, A., Thu, P.A. and Sehleanu, M., 2020. Adoption and implementation of sustainable development goals (SDGs) in China—Agenda 2030. *Sustainability*, *12*(15), p.6288.

16. Web of Science Results analysis for 404 records from Web of Science Core Collection. (accessed on 21 April 2023).

DIGITALISATION OF LOCAL PUBLIC SERVICES FOR THE BUSINESS ENVIRONMENT IN ROMANIA. THE PARTICULAR CASE OF THE PUBLIC PROCUREMENT PROCESS

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Abstract: *The way in which public procurement is carried out affects the whole economy and, indirectly, the quality of people's live, as a result of public servcies, goods and works acquired. Free competition between tendering economic agents, equity and fairness of procurement tenders must to be guaranteed within the framework of digitalized business-oriented public services. These have to stimulate the development of the business environment by offering contract for supply of public goods, services and works in a framework of transparent, objective and fair competition. Digitalisation of public services offers an advantage in this respect.*
This present paper proposes an unitary architectural model of the public procurement process within local administrations, one that could serve as a basis for the design of adequate computer software aimed at providing digital formatting to this entire process. The model is unitary within each Romanian local public administration and is also applicable to any of its structures (city councils, regional councils or their subordinated public institutions, other entities financed from public funds) and has been drafted in compliance with the applicable public procurement legislation. Proposing this model is justified not only because it provides a unitary public procurement digitalization process of the contracting authority which, at the moment relies solely on the use of the SICAP national platform, but also because its implementation guarantees the compliance with the principles of free competition between tendering economic agents as well as impartiality and fairness during the tender selection process. Digitalisation provides this advantage to both the public and private sectors, enabling their interaction, an advantage that needs to be properly exploited to generate digitalised services with added value, customized for the business environment, the added value consisting in actually ensuring these principles.

Key words: digitalisation; public services; public procurement; business environment

JEL Codes:H41, H72, K12, P43

1.Introduction

The way in which the public procurement process of the local administration (communication infrastructure, roads, hospitals, schools) is carried out affects the entire economy and, indrectly, the quality of people's lives. Digital transformation of public procurement is a long-lasting and complex process that contributes to the quality increase of public services, with a major impact on national economy.

In Romania, the public procurements predecures are carried out through the SICAP electronic platform, the purpose of which is to guarantee the transparency of procedures during the public procurement process. Public authorities employ electronic means to acquire works, goods and services needed to perform their activity.

The Public Procurement Electronic System (SEAP) (www.e-licitație.ro) in Romania is managed by the National Agency for Public Procurement (ANAP), with a specific role in promoting and implementing the public procurement policies and tasks of verification control the consistent application of legal and procedural provisions. The Authority for the Digitalization of Romania (ADR), a structure with legal personality under the authority of the Ministry of Research, Innovation and Digitalization, has the task to implement the strategies and the public policies in the areas of digital transformation and information society, to coordinate their application, to guarantee the monitoring and controlling the compliance with national and international regulations in the field of digital transformation and information society.

The digitalisation of public procurement processes aims at integrating them into the national platform of public procurement (SEAP), by reconfiguring and transposing the entire process in the online environment. Thus, starting with the initiation of purchase documents, endorsement, data processing and uploading to e-procurement type digital systems, the interconnection with the national platform of public procurement will facilitate the access of all tendering agents to the procurement files-related information, thus supporting a fair competition among them. The The adoption of measures at the level of contracting authorities to move from off-line to on-line will lead to full digitalisation of the public procurement file without the need to use analogue data.

At present, each public institution employs documents whose data structure and content are developed in aparticular way, without following a unitary procedure regarding the content of documents, such as: justification notes, purchase requisitions, contracts, specifications, concept notes or other documents that are part

of the procurement file. The digitalization of the entire process of public procurement by implementing software applications with a unitary design, adopted by each public institution, will alllow data collection in a more consistent and unified strucured way and also specific to the operations included in the public procurement processes, without the need for the users to filtetr data tha is not useful in the analysis and the proceessing of information, thus providing a clearer image of the underlying data. This data collection method make it pssoble to limit the entry of useless information for the recipiend and to use digital forms that are compatible with the national platforms, therefore simplifying the entire procurement process.

The present paper proposes a model that drafts the digitizing arhitecture of the public procurement process, taking into account the legal procedures of public procurement and the internal flow of documents. The development of the model is based on a short analysis of the digitalization status of public administration services and of the actual status of the public procurement digitizaling process.

The paper is structured as follows: the second section describes the status of public administration digitalization in Romania as it emerges from the recently published analyses and reports; the third section describes the actual way in which public procurement is performed in Romania, along with all its implications; the fourth section describes the model for the rationale for the public procurement digitalization process; the last section is dicated to conclusions.

2. The status of public administration digitalisation

The European Commission monitors Member States' digitial progress through the Digital Economy and Society Index (DESI). According to the last Report published by the European Commission (DESI 2022) regarding the digitalization of the European Union, between 2014 and 2022 an irregular evolution trend of this index has been recorded, despite the fact that a high degree of accelerated digitalization was noted in many economic areas, especially in countries with the lowest ranks in 2022. The top positions in ranking are ocuupied by the same Member States, such as Finland, Denmark, Sweden and the Netherlands (Figure 1); also, an increase in the digitalisation level has been perceived for all Member States during the past three years.
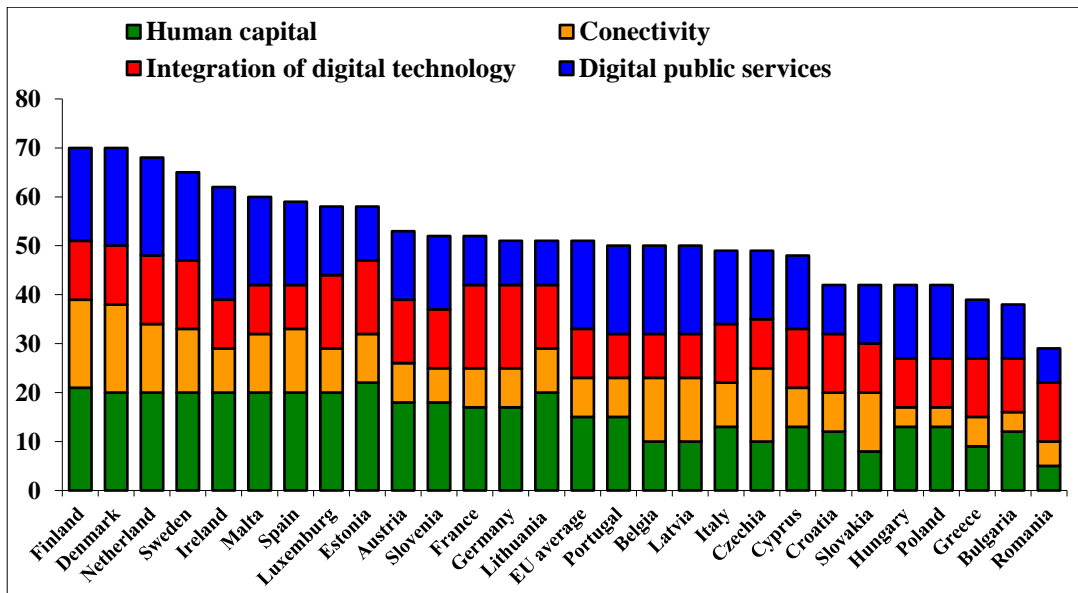
Figure 1: The ranking of European Union countries according to DESI 2022
Source: European Comission (2023) (https://digital-strategy.ec.europa.eu/en/policies/desi)

It is to be noticed that Romania ranks last in the 2022 ranking of Member States, both for the DESI index (Figure 1) and for its components: e.g., the digitalisation degree of public services (Figure 2) or the integration of digital technologies.
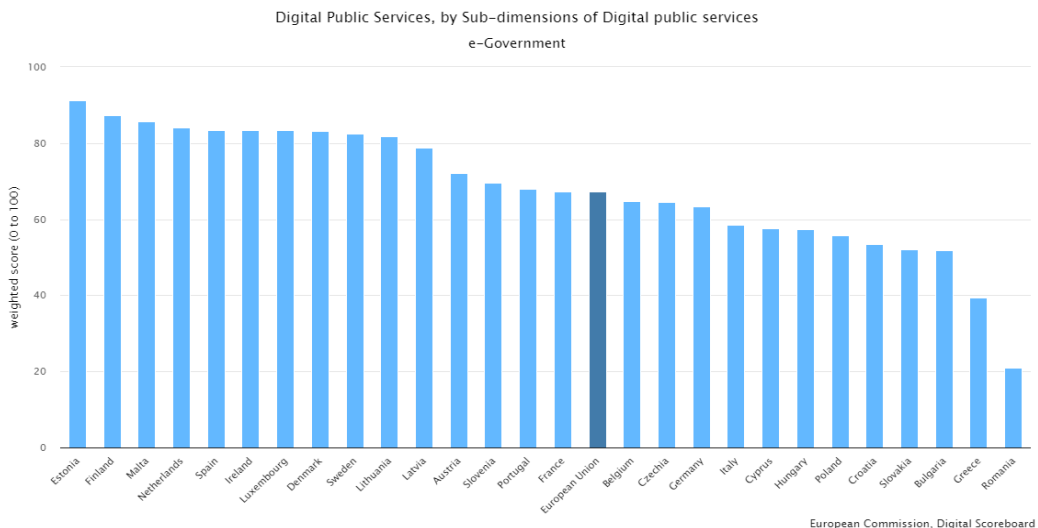
Figure 2: Digital Public Services in the European Union, 2022
Source: European Comission, 2023 (https://digital-strategy.ec.europa.eu/ro/policies/desi)

The availability for citizens of public digital services (44 points in comparison with an EU average of 75), as well as the use of services by companies (42 points in

comparison with an EU average of 82) is reduced in Romania, while only 17% of internet users employ the e-government services (European Commission, 2023 p.17). Several authors have identified also the reduce use of public electronic services by citizens and business (e.g., Tsonev, 2016). In fact, the implementation of the e-government concept is challenged by several difficulties related to data security, data interoperability, errors elimination, front-end and back-end integration of data (Tsonev, 2016, p.55-56).

One may conclude that the digital transformation of the public sector in Romania is still in its early stages (i.e., Anghel and Neagoe, 2015; ADR, 2020)

During 2022, modifications were made to the legislative framework on the tasks and responsibilities of the Authority for the Digitalization of Romania (ADR), aimed at increasing the effectiveness of this institution. The Committee for e-government and bureaucracy reduction within the Authority for the Digitalization of Romania has present in 2023 the data from the second monitoring of digitalization degree of IT systems related to life events included in the e-government Public Policy, a strategic document approved in June 2021 by the Romanian Government. **According to the published report, the digitalisation degree of the Romanian state institutions has increased by 6 percent in comparison with the year 2020.** The institutions that have advanced in the digitalization of public services during the year 2021 are: the National Trade Register Office, the National Employment Agency, the Labour Inspection Office of Romania, the National Library of Romania, the National Agency for Fiscal Administration, the National Agency for Cadastre and Land Registration, the National House of Health Insurance, the Ministry of Internal Affairs (www.adr.gov).

As a Member State, Romania is entitled to benefit from funds granted by the European Union, according to the National Recovery and Resilience Plan for Romania, that include a set of measures aimed at the digitalisation of the public sector. The digital transformation of the public sector will generate an unitary system through which public institutions can interrelate with the business environment and the citizens, a system that will work thanks to the investments in the IT infrastructure, the provision of high-speed Internet, of digital technologies and the development of advanced digital capabilities for the employees of the public sector.

3. Digitalisation of the procurement process – a short review of relevant literature

The adoption of digital technologies in public procurement can be seen as an engine for transforming the internal management of public authorities, within the general

effort meant to transform the relationship between public sector and its clients and also the public administration work (Andersson et al., 2022). As suggested by Bag et al. (2020) the procurement digitalization requires new frameworks to rebuild the internal management processes.

This means the use of digital technologies in the procurement process. Taking the example of business companies where the use of digital technologies can create value (i.e., Richey et al., 2016; Srai and Lorentz, 2019) public institutions must develop their ability to adopt and use digital technologies in procurement in order to be more effective in their relationship with their beneficiaries. The study of Kosmol et al. (2019) provide a conceptualization of digital procurement readiness consisting of technological and organisational ability of companies to develop and implement digital procurement, which is applicable also to the public sector.

Some barriers hindering the digitalisation of public procurement may consists of inappropriate managerial capacity, lack of specific skills, unsuitable hardware and software, bureaucracy and corruption (e.g., Fleming et al. (2022).

Several studies are highlighting the benefits of e-procurement for the corruption prevention and reduction.

In their study including 8,373 companies across 72 countries for 2018-2019, Jimenez et al. (2022) proved that digital procurement (i.e., e-procurement) can prevent and reduce corruption. They found also that the effect of e-procurement is stronger in countries with higher quality of institutions. The study of Jimenez et al. (2022) was developed under the hypothesis stating that" a country level e-procurement system reduce corruption to secure public contracts". This is beneficial not only for firms participating in the public procurement but also for those maintaining the supply chain in relation with tenderers (i.e., Kim and Wagner, 2021).

The study developed in 2022 by the Policy Department for Economic, Scientific and Quality Life Policies ((from General Directorate for Internal Policies of the European Commission) provides a comprehensive and extended analysis of digitalisation of the EU public sector, in light of the Digital Single Market Strategy for Europe. There are highlighted the possibilities to develop an EU GovTech Platform, with the aim of underpinning the modernisation of public sector through innovation of public procurement.   It is suggested that the public sector in the EU has" the potential to shape new markets" and for the next years it is expected an increase of importance of public procurement. The document develops the concept of procurement of innovation as well innovative procurement. Procurement of innovation refers to buy innovative goods ad services, even though the constraining principle of" more value for the same" money applies. Procurement of innovation integrates is necessary due to several changes: changing demands (from business); changing supply (new

products); changing relationship (between contracting part and suppliers); changing the public service ecosystem (including various stakeholders: agencies, economic actors). Innovation of procurement is needed in order to ensure a real and genuine competition among potential suppliers, meaning the way in which public procurement operates (i.e., a more flexible system, systemic partnerships, long-term contracts, client-specific standardisation, a balance of cooperation and competition). As suggested by Guida et al. (2023), the main benefits for public contracting authorities as a result of using digitalised procurement would be: easy fraud detection; optimal specification definition; reduced time to review and approve contracts; higher control of the procurement process; higher accuracy of the planning the procurement process; real time communication and support to suppliers.

Current analyses and reports on the digital transformation of the public sector in Romania do not focus on the digitalization of the public procurement process, specifically on the internal process and activity flow within the public contracting authorities, carried out before the registration into the SICAP platform. Thus, based on the review of relevant literature, the present paper analyzes the "state of play" and proposes an arhitectural model of public procurement digitalization.

4. Digitalisation of public procuremet in local adminsitration-State of Play

We analyse the factual situation of the digitalisation of public procurement processes seen from the perspective of their "strengths", "weaknesses", and "opportunities" to build on strenghts and mitigate the weaknesses, and also their "consequences" on the economy.

Strengths

The internal process of initiating and preparing the procurement, performed by the contracting authorities, according to the law of public procurement, is complemeted by the evaluation and award of public contracts, processes facilitated by the use of the SICAP national platform (Collaborative Information System for Public Procurement) operated by the Authority for the Digitalization of Romania (ADR).

At the moment, Romania has a national legal and institutional framework allowing the digitalisation of the public procurement processes performed by the contracting authorities. The national framework includes a set of updated laws in the area of public procurement, including the ones regarding to the online environment (electronic contracts, signatures, transactions). The institutional framework includes the Authority for the Digitalization of Romania (ADR), the National Office for

Centralized Procurement (ONAC) and the National Agency for Public Procurement (ANAP).

The key methods to ensure procurement digitalisation are: the national SICAP platform (Collaborative Information System for Public Procurement), operated by ADR, which provides a centralized public procurement information system enabling interconnection between the contracting authority and the tenderers throughout the public procurement process, including the acceptance of the electronic procurement file by the contracting authorities, the management of public procurement contracts and, additionally, the Centralized Public Procurement Electronic Platform (PEAPC) of the National Office for Centralized Procurement (ONAC), by means of which the integration of all stages of centralized procurement is pursued, starting with the planning and the supervision stages of contracts/frame contracts implementation.

Another strength is provided by the existence of the national e-government strategic and public policies framework, with reference to the digitalization of public procurement, deriving from the Digital Single Market Strategy for Europe (2015). This strategy refers to the transition of fully electronic public procurement processes in all Member States and the use of public contracts registers.

Weaknesses and barriers hindering the digitalization of public procurment

The public procurement process is partly digitalized. The procurement procedures are accomplished both on-line and off-line, the tenders are accompanied by other paper-based documents, filled out and signed by hand. Even though the use of electronic forms related to the procurement file is foreseen in the draft of the National Public Procurement Strategy (SNAP) 2023 – 2027, they only refer to the data entry stage in the SICAP electronic platform, thus digitalizing only the forms related to the publication of notices (the DUAE form, is an affidavit made by the economic agent and the procedure data sheet). The procurement initiation and preparation documents have a content that is structured in a specific way according to each separate institution, namely an inconsistent system for the elaboration of procurement documents (fact that may lead to a selection of tenderers with limited capacities to assume contractual liabilities or to perform quality services/public works). At the same time, a lack of a coherent national framework for the use of data collection and processing software is being experienced, as such software applications have a different design for each seaparate institution. Another issue that has been identified is the lack of correlation between the information included in the Annual plan of investments and the information contained by the Annual procurement plan; consequently, standardized forms may easily exclude such flaws. The main barriers identified to the digitalisation of public procurement are:

(1) the lack of operational procedures regarding the transition from the analogic to the digital system; (2) the specific inertia of the bureaucratic processes involving the exclusive use of paper-based documents; (3) the lack of a unified IT architecture and the fragmentation of computer applications and of IT systems by areas of activity (finance - accounting, budget, public procurement), without the possibility to integrate and to process data in a consistent, unified manner, in real time, with effects on the traceability of information from the various areas of the institution; (4) the lack of clear legal provisions concerning data interoperability and the standardization of the e-procurement processes; (5) the lack of a standard format of documents elaborated during the public procurement initiation and preparation stage (justification notes, purchase requisition, terms of reference, technical specifications) as well as during the assessment stage (assessment report, data sheet; (6) the lack of standardise contract forms in the procurement of public goods and services which ca reduce preparation, negotiation and management time length; (7) digital performance and professionalism gaps between the public and the private sectors, namely, a limited level of professionalism of procurement responsible staff, resulting in a high number having of rejected awarding documents and of appeals.

Benefits
Delaying the digitalisation of the public procurement process can deprive the economy of the following potential benefits: (1) ensuring the compliance with the principles of non-discrimination, equal treatment, mutual recognition, transparency, proportionality, and accountability in the process of awarding public contracts and unfair competition between economic agents; (2) eliminating opportunities to include qualification criteria that restrain the free expression of competition between tenderers; (3) transparency, efficiency, simplicity and the control to an exclusively on-line award of public contracts, eliminating unfairness in the award and preventing corruption, thus contributing to increasing the confidence of the business environment in the public procurement procedures.
The digital transformation of the procurement process will lead to:
(1) reducing the workload at operational level (no more need to filter unclear information as precise data will be introduced) and an efficiency increase of staff performance (focusing on relevant tasks); (2) eliminating, at the the tender evaluation stage, of the companies with no effective execution, performance or delivery capacity; (3) a national unitary framework for the IT infrastrucre, software applications and digital tools will ensure a higher degree of interoperability between the databases of various public institutions and compliance with a quality standard of public services they provide; (4) streamlining of public procurement procedures

(economic operators will not be forced to mobilise financial, material and human resources at high costs, until the tender assessment process is completed) and rapid and transparent resolution of disputes, appeals or litigations arising in connection to the public procurement procedures.

Opportunities

In order to reduce the weaknesses and to remove the barriers to the digitalisation of public procurement process, Romania can exploit the opportunities provided by the European Recovery and Resilience Mechanism. Thus, Romania's National Recovery and Resilience Plan includes the reform of the public procurement system, through the digitalisation (public procurement included) and the interconnection of the electronic procurement system with other IT systems and databases (of the National Trade Registry Office, the National Tax Administration Agency, the National Agency for Public Procurement, the National Council for Settlement of Disputes, the Ministry of Internal Affairs, the Ministry of Justice). It also provides funding for investment in the implementation of digital technologies, including the ones in public procurement, digital public services, digital skills, interoperability of public services, investments in human capital.

5. Proposing a model underpinning the digitalisation of the public procurement process

Based on the conclusions arising from the analysis of the actual way in which public procurement is performed by the structures of the local public administration in Romania, we propose the following design for the public procurement process.

This design takes into account the internal management processes derived from the legal procurement procedures.

The documents to be digitalized and the departments issuing these documents are being displayed (Figure 3).

The model is based on the introduction of standard forms in digital format both for the documents to be issued by the contracting authority at all stages of the public procurement process: the initiation and preparation phase of the procurement, and also during the evaluation process of tenders and the award of contracts and, further on, in the monitoring stage of contract execution.

The use of digital forms has the following advantages: (1) creation of an unitary, predefined structure of information, with sections dedicated to each specific aspect of public procurement, ensuring data interoperability; (2) elimination of the

possibility of data omission by the operator or erroneous entries, due to links with other forms/specifications, through the obligation of form validation; (3) ensuring security of data in during the processing stage, endorsement or storage; (4) efficient use of resources by designing optimized information and activity flows ("shortest path" type); (5) reduction of errors and processing times (by automating similar and repetitive tasks); (6) increasing work productivity and resilience in the public sector. One of the major consequences of the digitalisation of procurement forms is that it will ensure a unitary (at a national level) decision-making framework for the award of public procurement contracts, in which competition between performers is free, and also free and fair access to public funding resources is ensured.

The development of the standard template forms is based on an analysis of the specific legal requirements of each award procedure (flow of operations, processes, document endorsement circuit, operational procedures, standard data, specific data). A distinction is made between public forms (to be integrated into other software, platforms) and internal forms (to be used only within the framework of the contracting authority).

For the elaboration of the flow of processes proposed to be digitalised, the procedural steps to be followed, according to the methodological rules of public procurement, are detailed.

Thus, at the stage of initiating a public procurement, the technical department fills out the digital form of the Justification Note (statement od reasons). Following digital approval, the information in this document is compared to the data provided in the Annual Investment Plan, the Contracting Strategy and the Income and Expenditure Budget, within the Finance Department. The Procurement Department also performs the match with the Procurement Plan. Based on the Justification Note, the Technical Department carries out a market research, requesting tenders from potential suppliers. The request is sent online on a digital form, as are the offers received. Following the analysis of all received tenders, the digital Purchase requisition document is elaborated, along with the Estimated Offer.

Digitalized template form	Justification note (technical departament)	Digitalized approval
Digitalized template form	Annual investment plan Contracting strategy Income and expenditure budget (financial departament)	Digitalized approval
Digitalized template form	Annual procurement plan (public procurement departament)	Digitalized approval
Digitalized template form	Market research Call for tender (technical department)	
Digitalized template form	Purchase requisition Estimated offer	Approval CFP digitalized endorsement
Digitalized template form	Terms of reference Technical specifications Contract model Order Technical/ Financial offer form (technical departament)	
Digitalized template form	DATA SHEET DUAE FORM Declarations, forms (public procurement department)	Internal circuit Contracting authority
Digitalized template form	TENDERS (technical and financial) (economic agents)	SICAP public procurement platform
Digitalized template form	TENDER ASSESSMENT SHEET (public procurement department)	
Digitalized template form	PROCEDURE REPORT SUPPORTING NOTE (public procurement department)	
	CONTRACT/AGREEMENT (public procurement department)	
	Contract supervision (technical department	

Figure 3 Analytical Model for public procurement digitalization
Source: authors's own representation

These documents require approval and endorsement by the digital CFP. As a result, the Technical Department completes the Terms of Reference and Technical Specifications. The Contract Template is standardized and so are the Technical Offer and Financial Offer forms. These are uploaded to the SICAP platform. The system will generate the Data Sheet document, which is a report of the procurement data and the DUAE (Single European Procurement Document) form. The SICAP platform

will provide the documents uploaded by the tenderers within the set deadline. The system is designed in such a way that it will analyze the content of the different sections of the Tender and will automatically generate the Tender Evaluation Sheet, the document on which the contract awarding decision is based and which is recorded by the system.

As a result, the system will automatically generate the Procedure Report and its Informative Note. On the basis of these documents, the public contract with the selected operator is generated. Once it has been electronically signed by both parties, it will be registered by the system and its execution will be monitored (additional documents, minutes of receptions, payments).

6. Conclusions

The model described above can be used at the level of city and regional councils and other public institutions or entities funded from public sources, as it complies with the legal procedures for public procurement, in order to underpin the development of software and platforms needed to digitilise this process.

The use of a unitary digitialisation model of the public procurement process will benefit all parties involved: contracting authorities and tenderers/contractors.

Thus, for the business environment, the benefits are: (1) ensuring free and equal access to the award procedure, through identical rules, criteria and requirements for all economic operators; (2) avoiding the inclusion in the documentation of elements that restrict competition; (3) avoiding the inclusion in the documentation of elements likely to indicate a particular origin, source, production, specific procedure that could favour or eliminate certain economic operators; (4) inclusion of the possibility of equivalence of different standards, approval, technical regulations; (5) increased confidence given to authorities by tenderers due to reduced response times, standardisation and accuracy of information, (6) predictability and control during the monitoring and execution stage of contracts.

The benefits of the contracting authorities are: (1) reduction of the risk of omission of essential information and material errors, that may lead to the cancellation of procedures; (2) ensuring transparency of data on procurement, evaluation and award of contracts; (3) reduction of operational costs; (4) reduction of disputes, litigations and appeals related to the award of public contracts; (5) on-line communication between purchasers and contractors (reduced reaction times, predictability and control during the execution of contracts); (6) teduction of procurement document processing times (simultaneous running of procurement procedures); (7) increase of

the capacity to operate and information analysis during the public procurement /sectoral procurement procedure; (8) elimination of discrepancies at the level of digital technology efficiency employed by the various local government structures.

One may notice that the benefits are more on the side of the administration than on the side of the business environment. However, the situation should be perceived from the perspective of the efficiency and the effectiveness of the digitalised public procurement process, which have a long-term impact on the business environment, particularly in terms of ensuring a transparent, objective and fair competitive environment for all participants in the process. Moreover, the confidence of the business environment in the institutions of the state is also promoted. This refers to the vision in which that state institutions and the business environment are honest partners, engaged in a joint effort to make the economy truly dynamic, where all public goods, services and works- subjects of public procurement, lead to tangible positive effects on the living standards and life quality of the population.

References

1.Andersson, C.; Hallin, A.; Ivory, C. (2022) "Unpacking the digitalisation of public services: configuring work during automation in local government", *Government Information Quarterly* 39, 101662.

2.Anghel, M.; Neagoe, A. (2015) "The level of digitalisation of e-governent in Romania (Nivelul de digitalizare al guvernării electronice din România)", *Romanian Review of Computer Science and Automation* (Revista Română de Informatică și Automatică) Vol. 25, No.4, pp.19-26.

3.Authority for Digitalisation of Romania (ADR). (2020) *Setting the framework for the development of the e-government* tools (*Stabilirea cadrului de dezvoltare a instrumentelor de e-guvernare)* (proiect POCA).

(www. adr.gov.ro/stabilirea-cadrului- de -dezvoltare-a-instrumentelor-de-e-guvernare-egov-2/)

4.Bag, S., Wood, L.C., Mangla, S.K., Luthra, S. (2020) "Procurement 4.0 and its implications on business process performance in a circular economy", *Resources Conservation and Recycling* 152, 104502.

5.European Commission (2015) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Digital Single Market Strategy for Europe*, SWD, COM 2015, 192 final, Brussels, 6.5.2015

6. European Commission (2023). *Digital Economy and Society Index (DESI) 2022*
(https://digital-strategy.ec.europa.eu/en/policies/desi)

7.Fleming, P., Zyglidopoulos, S., Boura, M., & Lioukas, S. (2022) "How corruption is tolerated in the Greek public sector: Toward a second-order theory of normalization", *Business & Society, 61*(1), 191–224.

8.Guida, M.; Caniato, F.; Moretto, A.; Ronchi, S. (2023) "The role of artificial intelligence in the procurement process: State of the art and research agenda", *Journal of Purchasing and Supply Management* (In Press)

9.Hoekstra, M.; Chideok, C.; Bodea, G.; Cave, J.; Kokkeler,B.; Oomens,I.; Van Den Berg, A.; Van Venstra,A.F.; Alleweldt, F. (2022) *The Digital Single Market and the digitalisation of the public sector. GovTech and other innovation in public procurement*, Policy Department for Economic, Scientific and Quality Life Policies, General Directorate for Internal Policies of the European Commission (http:www.europarl.europa.eu/supporting-analyses)

10.Jimenez, A.; Hanoteau, J.; Barkemeyer, R. (2022) "E-procurement and firm corruptionto secure public contracts: The moderating role of goverance institutions and supranational support", *Journal of Business Research* 149,pp. 640-690

11.Kim, S., & Wagner, S. M. (2021) "Examining the stock price effect of corruption risk in the supply chain" *Decision Sciences, 52*(4), pp.833–865.

12.Kosmol, T.; Reinmann, F.; Kaufmann, L. (2019) " You'll never walk alone: Why we need a suplly chain practice view on digital procurement", *Journal of Purchasing and Supply Management*, 25, 100553

13.Richey, R.G., Morgan, T.R., Lindsey-Hall, K., Adams, F.G. (2016) "A global exploration of big data in the supply chain", *International Journal of Physical Distribution & Logistic Management* 46 (8), 710–739.

14. Srai, J.S., Lorentz, H. (2019) " Developing design principles for the digitalisation of purchasing and supply management", *Journal of Purchasing and Supply Management*, 25 (1), 78–98.

15.Tsonev, I. (ed). (2016) *Redesigning public services for the 21 century.Comparative analysis of e-reforms in Estonia, Bulgaria and Romania.* (*Reproiectarea serviciilor publice pentru secolul 21. Analiza comparată a reformelor electronice din Estonia, Bulgaria şi România).*The European Liberal Forum, "Friedrich Nauman" Foundation for Liberty (Forumul European Liberal, Fundația "Friedrich Naumann" pentru Libertate)

Legislation

1. Law no.98/2016 on public procurement
2. Law no.99/2016 on sectoral procurement
3. Government Decision no.394/2016 for approval of Methodological rules for application of the provisions on the award of the sectoral contract/framework agreement of Law no.99/2016 on sectoral procurement
4. Government Decision no.395 for approval of Methodological rules for application of the provisions on the award of public contract/framework agreement of Law no.98/2016 on public procurement

Government Decision 89/2020 on the organisation and functioning of the Authority for Digitalisation of Romania

Websites
https://www.adr.gov.ro/atributii/
https://www.adr.gov.ro/gradul-de-digitalizare-a-statului-roman-a-atins-27-in-2021-in-crestere-cu-6-fata-de-anul-anterior/
https://anap.gov.ro
https://www.adr.gov.ro
www.e-licitatie.ro
https://www.consiliulconcurentei.ro
https://sgg.gov.ro

WASTE MANAGEMENT IN THE CITY OF ORADEA - AN APPROACH IN THE LIGHT OF TRANSITION FROM A LINEAR TO A CIRCULAR ECONOMY

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Abstract: *Transition from the linear to the circular economy is not only a desideratum of all developed economies; it ultimately represents the chance for the world we all live in will to continue to exist. If in the first part of our paper we analysed the main characteristics of both the linear economy and the circular economy, in the light of an extensive literature, while focusing on the mechanisms that would allow a transition as smoothly as possible; in the second part of the paper, we aimed to analyse the state of play in the city of Oradea in terms of intelligent, selective waste management. Our analysis focused on two main strands: the selective collection of waste and the implementation of a recycling program for biodegradable waste.* If in the first part of the analysis we came to the conclusion that it is necessary to involve all stakeholders, including public authorities, the private sector and civil society, in the second part we needed a statistical data analysis in order to be able to deeply understand the economic mechanisms behind the population' and businesses' behaviour. In that regard, we ran a statistical analysis of the amount of waste collected in the city of Oradea using the dedicated software SPSS 24 (Armonk); all outcomes were considered significant at a significance level of 0.05, while the connection between the variables was linear and of medium intensity. The conclusion we reach is that a positive evolution can be observed in the waste management following the implementation of the management system.

Keywords: environmentally responsible behaviour, circular economy, waste management.

JEL Classification: Q38, Q53, Q55

1. Introduction

By analysing the document titled An EU Action Plan for the Circular Economy, presented in 2015, this paper aims to capture the challenges stemming from the

transition from a linear to a circular economy in the case of the waste management in city of Oradea. Traditionally, by the circular economy one understands a regenerative economic system where resources are used as efficiently and effectively as possible and waste is converted into resources. This system aims at reducing the impact on the environment and creating economic value. The Action Plan put forward by the European Commission also encompasses measures such as stimulating innovation, promoting standards for eco-design and sustainability, improving waste management and fostering the use of renewable energy. Moreover, clear objectives are set to reduce waste, as well as to increase the degree of recycling and reuse of materials. A significant focus is placed on the importance of collaboration between the EU Member States and the private sector to effectively implement the circular economy across the European Union. In addition, the use of both financial instruments and fiscal policy to stimulate investment in the circular economy is supported. Currently, at the EU level, there is a broad and detailed Action plan for the implementation of the circular economy, aiming to trigger economic and environmental benefits both through the effective use of resources and the transformation of waste into resources. However, one should analyse the extent to which this plan is to be implemented and which are the opportunities and challenges deriving from its implementation.

2. Theoretical and empirical aspects of the linear and the circular economy

The linear economy and the circular economy are two different approaches to resource and waste management.

Waste management may be a concrete example in terms of the differences existing between the linear economy and the circular economy. In the linear economy, waste is considered a by-product of the production process and is mainly disposed of by landfilling or incineration. This approach leads to soil, water and air pollution, thus negatively impacting human health and the environment. In the circular economy, waste is considered a resource and is capitalized through recycling, reuse or energy recovery. For example, instead of throwing paper waste, this waste can be collected, recycled and turned into new paper or other products such as cardboard or paper packaging. This approach reduces pollution, protects natural resources and cuts production costs by making use of available resources in an effective manner. This example illustrates how the circular economy seeks to replace the "take-make, use and throw" process specific to linear economy with a circular model where resources are made use of in a sustainable and efficient way.

The linear economy is the traditional approach to resource management, which entails extracting raw materials, manufacturing goods, using them and subsequently disposing of them as waste. In this approach, resources are considered finite and used intensively, thus leading to their gradual depletion (Stiglitz et al., 2010, Nordhaus et al., 2006, World Bank, 2018)

The empirical aspects of linear economics include:

- − Increasing resource consumption – as with the population increase and better living standards, consumption of resources has increased exponentially;
- − Waste generation - the linear economy generates large amounts of waste with negative effects on the environment and human health;
- − Resource depletion - intensive resource extraction and exploitation can lead to resource depletion.

With regard the theoretical aspects of the linear economy, they can be summarized as follows:

- − Economic rationality - the linear economy is based on economic rationality, which assumes that resources are infinite and that their consumption must be maximized;
- − Negative effects - the linear economy generates negative effects such as pollution and environmental degradation and such effects may impact the environment, human health or other aspects of social and economic life.

The circular economy is an economic model aiming at streamlining the use of resources, by reducing and eliminating waste and waste emissions, by promoting the regeneration and reuse of materials, components and products, in a never-ending cycle of production and consumption (Kirchherr et al., 2017).

The circular economy term was used for the first time by the European Commission in 2015 (Gracia, 2020) (Lakatos, 2021): a system which maintains the value of products, materials and resources in the economy for as long as possible and minimises the generation of waste (Lakatos, 2021) (Eurostat, 2019).

Empirical aspects of the circular economy encompass the following: Effective use of resources - the circular economy encourages the sustainable use of resources, thereby reducing waste; Waste reduction - the circular economy focuses on recycling and reusing materials, thus reducing the amount of waste generated; Innovation and creativity - the circular economy fosters innovation and creativity to find sustainable and effective solutions for resource management *(Ellen MacArthur Foundation, 2013; European Environment Agency, 2016).*

As far the theoretical aspects of the circular economy are concerned, they include the following: Life cycle - the circular economy is based on the concept of the life cycle

of products and services, thus encouraging the sustainable use of resource and reducing waste to a minimum; Integrated system - the circular economy approaches resource management in an integrated manner (McDonough et al., 2002; Bocken at al., 2014).

3. Need for a transition from a linear to a circular economy

The circular economy is a regenerative and sustainable economic model in which resources are used efficiently and waste is considered as a resource and reinserted into the economic cycle through recycling and regeneration processes, so as to create a closed cycle of production and consumption (Ellen MacArthur Foundation, 2015) (European Commission, 2020) (Kirchherr et al., 2017). The transition from a linear to a circular economy means the transition from an economic model based on the extraction, production, use and disposal of resources and waste to a model based on their reduction, reuse, repair and recycling, in order to mitigate the impact on the environment and optimize the use of resources (Ellen MacArthur Foundation, 2013). In the circular economy, attempts are made to minimize the loss of resources and to maximize economic effectiveness through measures such as:

- Circular design, through which products are created so that they are easy to repair and recycle;
- Circular business model, which entails systems for renting, exchanging or selling products in order to reduce the need to purchase new resources;
- Sustainable management of resources, through which resources are used efficiently and responsibly, through technologies such as renewable energies, efficient lighting and use of recyclable materials (Geissdoerfer et al., 2017) (Stahel, 2016).

This transition is a paramount change in the way the global economy works, having a high impact on the environment, society and the economy. The translation from a linear economy to a circular one can have a significant and positive impact on the environment, society and the economy, by promoting a more effective use of resources and by cutting greenhouse gas emissions and other harmful effects on the environment. (Stahel, 2016). With regard the impact on the environment, the transition to a circular economy can reduce the consumption of natural resources and greenhouse gas emissions, by promoting the sustainable use of resources, recycling and reuse of products. This can contribute to reducing carbon emissions and containing the effects of climate change, reducing pollution and protecting natural habitats.

The impact on society can also be significant, by creating jobs in industry branches such as repair/ maintenance, recycling and remanufacturing, by improving the quality of life and health of the population by means of reducing pollution and increasing the level of education and raising awareness of the population with regard the importance of the circular economy.

Considering the impact on the economy, the circular economy can contribute to increasing productivity and economic effectiveness, by cutting production costs and by increasing competitiveness in the industry. This can also trigger an increase in the number of businesses and a better public image of the companies that adopt sustainable practices.

Therefore we consider that the transition from a linear to a circular economy represents a significant shift in the way we use resources and produce goods and services. By promoting sustainable practices, such as recycling, repairing and reusing products, the circular economy can mitigate the negative impact on the environment, thus contributing to combating climate change and protecting natural habitats.

This transition can also bring social and economic benefits by creating jobs in industry branches such as recycling and repair/ maintenance, improving the quality of life and health of the population, and enhancing the competitiveness and economic productivity through more effective use of resources.
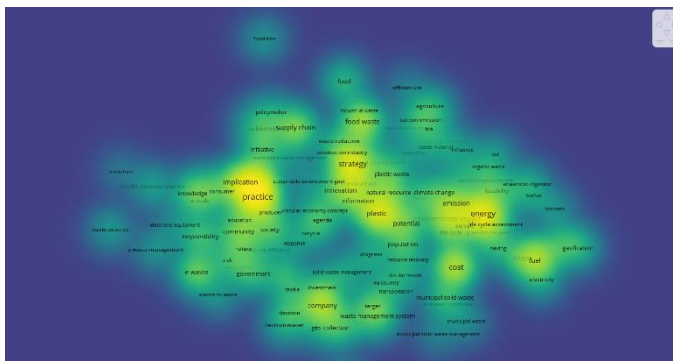
Figure 1. An analysis of the correlations between municipal waste management and circular economy
Source: the authors

As one can notice in Figure 1 above, the transition to a circular economy requires the involvement and cooperation of the entire society, from companies to consumers and public authorities, as well as significant investments in research and development. Ultimately, the transition to a circular economy can bring significant long-term benefits for the environment, society and economy, and is paramount to secure a sustainable future for our planet.

4. Implementation of some circular economy constituents in the city of Oradea: intelligent waste management

A. Selective collection of waste

An important role in achieving a circular economy is also played by an effective management of municipal waste (Ferreira, 2017), especially in view of the selective collection of waste and then in the recycling thereof, since it allows the recycling and reuse of recyclable materials, thus reducing the amount of waste that ends up in the landfill. Effective municipal waste management requires an integrated and multidisciplinary approach that combines different waste treatment options in an optimized way. This approach should include the implementation of waste reduction programs at source, the development of an adequate infrastructure for the selective collection of waste, the promotion of recycling and the use of renewable energy in waste treatment, and the improvement of waste treatment technologies to reduce greenhouse gas emissions and other negative types of impact on the environment. Moreover, in order to reach all the aforementioned objectives, it is necessary to involve all stakeholders, including public authorities, the private sector and civil society, in the management of municipal waste (Munawar, 2021). In the developing countries, multiple challenges raise in terms of municipal waste management, e.g. lack of adequate infrastructure, limited financial resources, as well as lack of public awareness and poor participation of citizens. Thus, it is claimed that the importance objective of addressing the problem of municipal waste management in developing countries should be achieved through an integrated approach and by involving public authorities and the private sector in order to develop more effective and sustainable waste management solutions (Kumar et al., 2019).

Municipal waste management is a major challenge for the cities across the world, and the related problems will worsen in the future as this problem goes hand in hand with the increase in urban population and consumption levels. To prevent this dire perspective to become reality, an integrated and sustainable approach is required, including greater involvement of the private sector and a more holistic approach to waste recovery. We believe that special attention should be given to raising public awareness of the impact of waste on the environment and public health, as well as on the role of local communities in the development and implementation of waste management policies and practices (Hoornweg et. All., 2012).

In the city of Oradea, a selective waste collection system is in place, and this system can be improved by increasing the recycling rate and waste recovery.

B. Biodegradable waste recycling program

Oradea launched a program for collecting biodegradable waste, which is transformed through an extensive process into compost. This is a classic example of a circular economy, since waste is converted into a useful resource. The sanitation company that carries out the activity of collecting and transporting waste in the city of Oradea has implemented a modern system of selective waste collection through the digitalization of the collection process, which allows the recycling of recyclable materials. Thus, special containers equipped with an RFID chip were introduced on the market in order to identify the economic agent that generated this waste in order to collect recyclable waste, such as paper, plastic, glass and metal.There are also special collection points for hazardous waste and waste electrical and electronic equipment (WEEE). In order to encourage the population to participate in the waste management process, the sanitation company has implemented a charging system based on the volume of waste *generated. Thus, families that generate less waste pay less for collection* and transport services, therefore successfully applying the *Pay-as-you-throw* principle.

Implementation of circular economy practices in the city of Oradea has led to some positive outcomes, such as: Increasing the rate of selective waste collection, Thus, in 2021, the rate of selective waste collection in Oradea increased by approximately 30%, compared to the previous year. This is a proof that citizens are more interested in participating in waste management in a more sustainable way; Reducing the amount of waste disposed of in the landfill.

Thanks to the implementation of a modern system of selective waste collection, a significant reduction in the amount of waste reaching the landfill has been achieved. Therefore an extension of the lifetime of the landfill and reduction of related costs is expected.

Through public raising awareness and information campaigns among citizens, a raised public awareness has been achieved. Therefore citizens are prone to adopt a sustainable behaviour and actively participate in waste management in a more responsible way;

BY implementing circular economy practices, a lower impact on the environment has been achieved, by reducing the amount of waste disposed at the landfill and by increasing the recycling rate (Agentia Nationala pentru Protectia Mediului, 2023).

Table 1. Statistical analysis on the amount of waste collected in 2022 in the city of Oradea

Volume m³	Valid	12
waste collected	Missing	0
Mean		34885,00
Median		39922,50
Std. Deviation		12013,668
Skewness		-1,789
Std. Error of Skewness		,637
Kurtosis		1,922
Std. Error of Kurtosis		1,232
Minimum		9625
Maximum		44167
Sum		418620

Source: the authors

C. Statistical data analysis on waste collected in the city of Oradea

According to the statistical analysis we conducted, one can notice that in 2022 a mean amount of 34,885 m³ of waste was generated every month, the minimum amount reaching 9,625 m³ in January, while the maximum volume of 44,167 m³ was recorded in May 2022. However, if we review the median value, we can state that half of the population of the city of Oradea generated an amount between 9,626 m³ and 39,922.5 m³, while the other half generated an amount of waste with volumes ranging between 39,922.50 m³ and 44,167 m³. Overall, in 2022, the municipality of Oradea collected a volume of 418,620 m³ of waste. We ran the statistical analysis in the dedicated software SPSS 24 (Armonk, NY: IBM). All results are considered significant at a significance level of 0.05, unless the considered level is mentioned.
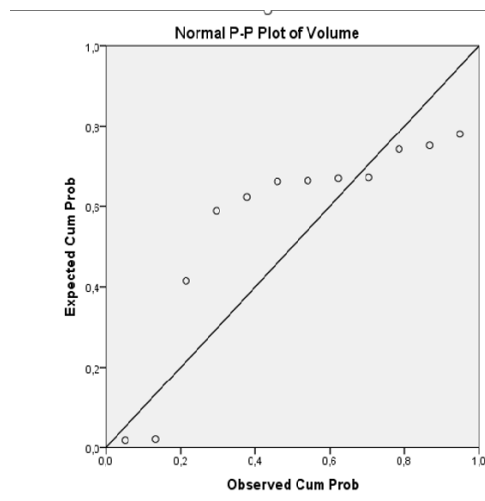
Figure 2. Analysis of the distribution of the amount of waste collected in the city of Oradea by months

throughout a year.
Source: the authors

With the help of the "Normal P-P" plot, we have tested the assumption of a normal distribution of the volume of waste collected at each month. As one can notice from the chart above, the relationship between the two variables is linear and of medium intensity.

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
	,635a	,403	,343	9736,607	,403	6,747	1	10	,027	,564

a. Predictors: (Constant), Month
b. Dependent Variable: Volume

Table 2. Analysis of the link between the amount of waste and the month in which it was collected
Source: the authors

The statistical model is significant, with a p-value<0.05. R-square suggests a medium intensity relationship among waste change over time. The Durbin-Watson statistic indicates the presence of autocorrelation in the change of waste over time, a value below 2 suggesting a positive autocorrelation.

In general, one can notice a positive evolution of waste management in Oradea, which has as main objective the adoption of circular economy practices and a more responsible and sustainable waste management.

5. Conclusions

The transition from the linear to the circular economy is an easily observable reality in all developed countries. The European Union, through the programs targeting specially this matter, manages to deliver the best results and continues to remain a model for the whole world. If from a conceptual point of view, things are broadly well clarified and at the same time accepted by all global stakeholders, in terms of the implementing these measures, certain gaps can be observed, but also different paces of implementation. Romania as an EU Members State has undertaken a firm timetable regarding the implementation of all such measures. The city of Oradea is always remembered as a positive example of how it manages to implement the newest and most effective technologies. Through this work we show not only how

the circular economy will inevitably take the place of the linear economy by mentioning in that regard the most important works from the dedicated literature, but we also give concrete example of how the implementation of the circular economy principles in waste management in the city of Oradea validates all the principles mentioned in the theoretical part of the paper.

References

1. Agenția Nationala pentru Protecția Mediului, [Online], Available: http://apmbh.anpm.ro/, [09 April 2023].

2. Bocken, N. M., Short, S. W., Rana, P., & Evans, S. (2014). *A literature and practice review to develop sustainable business model archetypes*., Journal of cleaner production, 65, 42-56.

3. Ellen MacArthur Foundation. (2015). *Towards the Circular Economy: Economic and business rationale for an accelerated transition*. [Online], Available: https://www.ellenmacarthurfoundation.org/assets/downloads/TCE_Ellen-MacArthur-Foundation_9-Dec-2015.pdf., [1 April 2023].

4. European Parliament, *Closing the Loop: An EU Action Plan for the Circular Economy"* [Online], Available: https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en, [14 April 2023].

5. European Parliament, *Circular Economy,* [Online], Available: https://ec.europa.eu/eurostat/web/circular-economy, [12 April 2023].

6. Ferreira, Fatima., Avelino, Catarina., Bentes, Isabel., Matos, Cristina., Teixeira, Carlos Afonso, (2017), *Assesment strategies for municipal selective waste collection schemes*, Waste Management, Volume: 59, pp. 3-13.

7. Garcia, A and Francisco, J., (2020) *The circular economy in environmental law*, Actualidad Juridica Ambiental, Special Issue: SI, Part: 2., pp: 225-249,

8. Geissdoerfer, M., Savaget, P., Bocken, N.M., & Hultink, E.J. (2017). *The Circular Economy – A New Sustainability Paradigm?,* Journal of Cleaner Production, 143, 757-768.

9. Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). *A Review on Circular Economy: The Expected Transition to a Balanced Interplay of Environmental and Economic Systems*, Journal of Cleaner Production, 114, 11-32.

10. Hoornweg, D, Bhada-Tata, P., (2012)., *What a Waste : A Global Review of Solid Waste Management*. Urban development series;knowledge papers no. 15. [Online], Available: http://hdl.handle.net/10986/17388, [15 March 2023].

11. Kirchherr, J., Reike, D., & Hekkert, M. (2017). *Conceptualizing the circular economy: An analysis of 114 definitions*, Resources, Conservation and Recycling, 127, 221-232.

12. Lakatos, E.S., Yong, G., Szilagyi, A., Clinci, D.S., Georgescu, L., Iticescu, C., Cioca, L.I., (2021), *Conceptualizing Core Aspects on Circular Economy in Cities*, *Sustainability* 2021, *13*(14).

13. McDonough, W., and Braungart, M. (2002). *Cradle to Cradle: Remaking the Way We Make Things*. North Point Press. p.5-35.

14. Munawar Iqbal și colab. (2021), *Efficient Municipal Solid Waste Management - A State of the Art Review*, Journal of Environmental Chemical Engineering, Volume 9, Issue 4, 105717.

15. Murray, A., Skene, K., & Haynes, K. (2017). T*he Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context*. Journal of Business Ethics, 140(3), 369-380.

16. Nordhaus, W. D. (2006). *The economics of hurricanes in the United States*, NBER Working Paper, 12813, pp. 112-149.

17. Paiho, S., Maki, E., Wessberg, N., Paavola. M., Toumi, P., Antikainen, M., Heikkila, J., Rozado, A., Jung, N., (2020), *Towards circular cities- Conceptualizing core aspects*, Sustainable Cities and Society.

18. Primaria Oradea, [Online], Available: https://www.oradea.ro/, [08 March 2023].

19. RER Vest SA, [Online], Available: https://rervest.ro/, [09 April 2023].

20. Stahel, W. (2016). *The Circular Economy*, Nature News, 531(7595), 435-438.

21. Stiglitz, J. E. (2010). *Freefall: America, free markets, and the sinking of the world economy*. WW Norton & Company, pp. 125-136.

22. Sunil Kumar, Prasad Modak, Sharad Jain și Ruchika Shiva, *Municipal Solid Waste Management in Developing Countries: An Overview*, 2019, Publisher CRC Press, pp. 57-112.

23. World Bank; Institute for Health Metrics and Evaluation. (2016), *The Cost of Air Pollution: Strengthening the Economic Case for Action*, [Online], Available: http://hdl.handle.net/10986/25013, [09 April 2023].

SUSTAINABILITY PERFORMANCE INDICATORS

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Abstract: Sustainable Balanced Scorecard (SBSC), Organizational Sustainability Performance Index (OSPI), and Corporate Sustainability Index (ISE) are all tools that help organizations measure and manage their sustainability performance. SBSC integrates sustainability considerations into traditional performance management systems, while OSPI and ISE provide sustainability performance benchmarks for organizations to assess their sustainability performance and identify areas for improvement. These indicators reflect a growing emphasis on measuring and managing sustainability performance in organizations and are likely to become increasingly important as stakeholders demand more transparency and accountability in sustainability reporting. Sustainable Management System (SMS), Environmental Management Accounting (EMA), Sustainability Management Accounting (SMA), and the Composite Index of Sustainable Development (ICSD) are all indicators that reflect the growing emphasis on sustainable practices and accounting frameworks in today's business and economic. SMS helps organizations integrate sustainability considerations into their operations, while EMA and SMA provide tools for identifying and measuring the environmental and social costs and benefits of business activities. ICSD measures a country's progress towards sustainable development based on various economic, social, and environmental indicators. These indicators suggest a growing recognition of the importance of sustainability in economic development and decision-making processes, and are likely to become increasingly important as organizations and governments continue to prioritize sustainability.

Keywords: Sustainable Balanced Scorecard (SBSC), Organizational Sustainability Performance Index (OSPI), Corporate Sustainability Index (ISE), Sustainable Management System (SMS), Environmental Management Accounting (EMA), Sustainability Management Accounting (SMA) and the Composite Index of Sustainable Development (ICSD)

JEL Classification: M14

1.1 Introduction to the main categories of indicators

Sustainable Performance Indicators (SPI) are tools that organizations use to measure and monitor their environmental, social and economic performance. SPIs

provide a way for organizations to track their progress towards sustainability goals and identify areas where improvements are needed.

An important type of SPI are environmental performance indicators (EPIs). EPIs are used to measure an organization's environmental performance and track progress towards environmental sustainability goals. Examples of EPI include energy efficiency indicators, greenhouse gas emissions, water use and waste management. Organizations can use EPIs to identify areas where they are using resources inefficiently and take corrective action to reduce their environmental impact.

Social Performance Indicators (SPIs) are another important type of SPI. SPIs are used to measure an organization's social performance and track progress towards social sustainability goals. Examples of SPIs include indicators of employee satisfaction, community engagement and human rights performance. Organizations can use SPIs to identify areas where they are not meeting stakeholder needs and take corrective action to improve their social performance.

Economic performance indicators (EPIs) are also an important type of SPI. EPIs are used to measure an organization's economic performance and track progress towards economic sustainability goals. Examples of EPIs include indicators of financial performance, such as revenue and profit, and indicators of economic impact, such as job creation and local sourcing of materials. Organizations can use EPIs to identify areas where they can improve their economic performance while maintaining a sustainable approach.

In addition to these specific types of SPI, organizations can also use composite indicators to assess their overall sustainability performance. Composite indicators are a combination of different indicators that provide an overview of an organization's sustainability performance. For example, a composite indicator of sustainability performance could include EPI, SPI and EPI.

SPIs are essential for organizations that want to achieve sustainability. They provide a way for organizations to track their progress towards sustainability goals and identify areas where improvement is needed. In addition, SPIs can also help organizations communicate their sustainability performance to stakeholders and comply with sustainability regulations and standards.

In conclusion, sustainability performance indicators (SPIs) are tools that organizations use to measure and monitor their environmental, social and economic performance. SPIs provide a way for organizations to track their progress towards sustainability goals and identify areas where improvement is needed. SPIs are essential for organizations seeking to achieve sustainability and can help organizations communicate their sustainability performance to stakeholders and comply with sustainability regulations and standards.

An important type of EPI is energy efficiency indicators. These indicators measure an organization's energy consumption and track progress towards energy efficiency goals. Examples of energy efficiency indicators include energy consumption per unit of production, energy consumption per square meter of building space, and the proportion of renewable energy in the organization's energy mix . Organizations can use energy efficiency indicators to identify areas where they are using energy inefficiently and take corrective action to reduce their energy consumption.

Another important type of EPI is greenhouse gas emission indicators. These indicators measure an organization's greenhouse gas emissions and track progress towards emission reduction targets. Examples of greenhouse gas emissions indicators include emissions per unit of production, emissions per square meter of building space, and the proportion of renewable energy in the organization's energy mix . Organizations can use greenhouse gas emissions indicators to identify areas where they emit high levels of greenhouse gases and take corrective action to reduce their emissions.

Water use indicators are another important type of PPE. These indicators measure an organization's water consumption and track progress towards water efficiency goals. Examples of water use indicators include water consumption per unit of production, water consumption per square meter of building space, and the proportion of greywater and rainwater that is reused. Organizations can use water use indicators to identify areas where they are using water inefficiently and take corrective action to reduce water use.

Waste management indicators are also an important type of PPE. These indicators measure an organization's waste generation and track progress towards waste reduction goals. Examples of waste management indicators include waste generation per unit of production, recycling rate and the proportion of waste that is sent to landfills. Organizations can use waste management indicators to identify areas where they generate high levels of waste and take corrective action to reduce waste generation.

An important type of SPI are employee satisfaction indicators. These indicators measure the satisfaction of an organization's employees with their work and working conditions. Examples of employee satisfaction indicators include employee turnover rate, absenteeism rate, and employee engagement survey results. Organizations can use employee satisfaction indicators to identify areas where employees are dissatisfied and take corrective action to improve employee well-being.

Another important type of SPI are community engagement indicators. These indicators measure an organization's engagement with the local community and track progress towards community sustainability goals. Examples of indicators of

community involvement include the number of community events organized by the organization, the number of volunteer hours contributed by employees, and the number of community partnerships established by the organization. Organizations can use community engagement indicators to identify areas where they are not meeting the needs of local communities and take corrective action to improve community relations.

Human rights performance indicators are also an important type of SPI. These indicators measure an organization's compliance with human rights standards and track progress towards human rights sustainability goals. Examples of human rights performance indicators include the number of human rights complaints received, the number of human rights audits conducted and the number of human rights training programs provided. Organizations can use human rights performance indicators to identify areas where they are not meeting human rights standards and take corrective action to improve human rights performance.

Diversity, equity and inclusion indicators (DEIs) are also an important type of SPI. These indicators measure an organization's compliance with DEI standards and track progress towards DEI sustainability goals. Examples of DEI indicators include the percentage of employees from underrepresented groups, the representation of underrepresented groups in leadership positions, and the number of DEI training programs offered. Organizations can use DEI indicators to identify areas where they are not meeting DEI standards and take corrective action to improve DEI performance.

An important type of EPI are financial performance indicators. These ratios measure the financial performance of an organization and include financial ratios such as return on assets (ROA) and return on equity (ROE). These indicators can be used to assess the profitability, efficiency and financial stability of an organization. In addition, organizations can also use financial ratios such as net profit margin, gross profit margin, and operating margin to evaluate their performance in terms of revenue and cost management.

Another important type of EPI are economic impact indicators. These indicators measure the economic impact of an organization's operations on the local community and economy. Examples of economic impact indicators include the number of jobs created, the amount of local supply of materials, and the amount of taxes paid. Organizations can use economic impact indicators to assess the economic benefits they bring to the community and ensure that their activities align with their sustainability goals.

Sustainability-related indicators are also an important type of EPI. These indicators measure an organization's compliance with sustainability standards and track

progress towards sustainability goals. Examples of sustainability-related indicators include the percentage of renewable energy in the organization's energy mix , the recycling rate, and the number of sustainability certifications the organization has obtained. Organizations can use sustainability-related indicators to identify areas where they are not meeting sustainability standards and take corrective action to improve their sustainability performance.

In conclusion these indicators are essential for organizations that want to achieve environmental, social and economic sustainability. They provide a way for organizations to track their progress towards economic sustainability goals and identify areas where improvement is needed. In addition, indicators can help organizations communicate their environmental, social and economic performance to stakeholders and comply with environmental, social and economic regulations and standards.

1.2 Global Sustainable Competitiveness Index

Global Sustainable Competitiveness Index (Global Sustainable Competitiveness Index - GSCI), published annually by SolAbility , has become established in the international professional environment. This is largely due to the rather special but illustrative methodology and structure, the multitude of measured data and the summary in composite indicators.

Although the name of the index is not sustainable development, but sustainable competitiveness, if one examines the latter definition in one of the annual reports issued by the organization, it is easy to understand that it is a completely similar idea. SolAbility describes sustainable competitiveness as follows: the ability to create and maintain prosperity that is accessible to all and that does not reduce the possibility of maintaining or increasing this prosperity in the future (SolAbility 2019) . It can be said that this is actually not different from the concept of sustainable development. SolAbility system is also multidimensional, meaning that it includes all three dimensions of sustainable development and competitiveness. Competitiveness and sustainable development are also related fields, as in addition to the business environment, both social and environmental dimensions are clearly included in the modern interpretation of competitiveness (Faur et al, 2021). The system is based on five pillars of equal importance (SolAbility 2019) :

1. natural capital and its consumption,
2. resources management,
3. social capital,
4. intellectual capital,

5. government efficiency.

Each of the pillars may be more or less familiar from previous measurements. Natural capital and resource efficiency are present in all measurement structures, as is government or environmental policy in some form in most structures. Social capital is also known, but appears in measurement systems where the social dimension, inclusion, social accessibility of development results are also present. Intellectual capital is the one that better relates to the conditions of competitiveness and development, of qualitative economic growth (that is, not to the conditions of growth based on the increase in the volume of production, but on the production of goods with higher added value). However, this can also be found among the UN Sustainability Goals, partly under point 4. Quality education 4 and under point 9. Industry, innovation and infrastructure. However, SolAbility 's spectacular innovation is that, in addition to breaking down these pillars (dimensions) into sub-domains examined with indicators, it also calculates a composite indicator for each pillar, which makes each country's performance and position in each dimension comparable. It also produces a final indicator composed of the value of the pillars. This creates a new ranking in addition to the existing "classic" competitiveness rankings (such as those of the IMD or WEF), which usually only measure economic and possibly social indicators, and then provide a good basis for analysis to see how a country stands in the competitive ranking, if sustainability considerations are also taken into account. This is a great innovation for SolAbility , as it brings sustainability closer to the economy by incorporating the concept of competitiveness. The logic, structure and content of the system are shown in Figure 1 and Table 1.
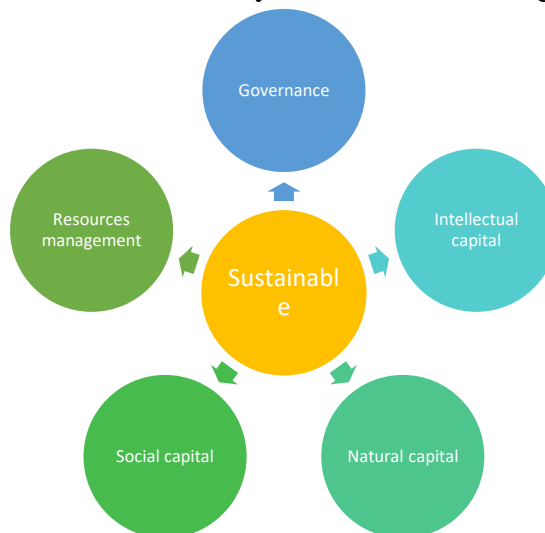
Figure 1.
The SolAbility Sustainable Competitiveness Framework

Source : edited by the author after SolAbility , 2019

Table 1.
SolAbility Global Sustainable Competitiveness Index

size	field	No. _ indicator
Natural capital	Food sources _	22
	forestry	
	The water and biosphere	
	Pollution	
The management resources	Efficiency power	24
	CHG intensity	
	The intensity USE mATERIALS	
	The intensity USE WATER	
Social capital	Services publicly	21
	Health and health care system _ _	
	criminality	
	Freedom	
Intellectual capital	Education	17
	Performance in the research and development	
	Innovation	
Efficiency GOVERNANCE	investment	28
	Corruption	
	Business environment _	
	Economic balance	

Source : edited by the author after SolAbility 2019

A total of 106 indicators are measured in the structure. The domains appear to be similar to previous measurement systems in many respects. SolAbility presents results and rankings in annual reports. The most recent report was 2021.

1.3 Composite Sustainable Development Index

The Composite Sustainable Development Index (CSID) is a tool used to measure a country's sustainable development performance. ICSD considers three pillars of sustainability: economic, social and environmental. The economic pillar includes factors such as GDP, while the social pillar includes factors such as education and health. The environmental pillar includes factors such as carbon emissions and the use of natural resources.

The ICSD provides a comprehensive picture of a country's sustainable development performance by combining a number of indicators from the three pillars. This allows decision makers and stakeholders to identify areas where progress has been made and areas where improvement is needed. The ICSD is particularly useful for comparing the sustainability performance of different countries and tracking progress over time.

ICSD has a number of advantages. First, it provides a more comprehensive view of sustainability than traditional economic measures such as GDP. Second, it helps identify trade-offs and synergies between economic, social and environmental factors. Third, it allows policymakers to prioritize actions that will have the greatest impact on sustainable development.

However, there are also limitations of ICSD. For example, the selection of indicators may be subjective, and some indicators may be more important in certain contexts than others. Furthermore, ICSD does not take into account the complexity of sustainability issues and the need for integrated approaches to address them.

Despite these limitations, ICSD is an important tool for promoting sustainable development. By providing a comprehensive and comparative view of sustainability performance, ICSD can help identify areas where progress is needed and prioritize actions to achieve sustainable development goals. Ultimately, ICSD can contribute to a more sustainable and equitable future for all.

In conclusion, the Sustainable Management System (SMS), Environmental Management Accounting (EMA), Sustainability Management Accounting (SMA) and the Composite Index of Sustainable Development (ICSD) are all important tools and systems for managing and measuring sustainability performance.

SMS provides a comprehensive framework for managing an organization's social, environmental and economic impact in a way that is sustainable over the long term. EMA helps organizations integrate environmental considerations into decision-making and management processes through financial and non-financial information. SMA builds on traditional management accounting practices by including sustainability-related information such as environmental and social data, providing a more holistic view of an organization's sustainability performance. ICSDs are used to measure and track the sustainability performance of countries, regions or other entities by combining a variety of indicators into a single score or ranking.

Each of these tools and systems has its own unique strengths and limitations and can be used together to provide a more comprehensive picture of sustainability performance. By integrating these tools into decision-making and management processes, organizations can identify opportunities for improvement, reduce environmental impact, improve social outcomes, and enhance long-term economic

viability. Overall, these tools and systems are essential to achieving sustainable development and creating a better future for all. The differences between ICSD, SMA, EMA, SMS performance indicators are shown in table 2.

Table 2. Differences between performance indicators ICSD, SMA, EMA, SMS

Factor	ICSD	SMA	EMA	SMS
Definition	It measures a country's performance in terms of sustainable development	Integrates sustainability principles into accounting methods	Integrates environmental factors into accounting methods	Integrates sustainability principles into supply chain management
Focus	Country level sustainability performance	Organizational sustainability performance	Environmental organizational performance	Supply chain sustainability performance
objection	Economic, social and environmental sustainability	Ecological, social and economic sustainability	Environmental sustainability	Ecological, social and economic sustainability
BENEFITS	It provides a comprehensive view of sustainability performance and enables cross-country comparisons	Identifies opportunities to improve sustainability performance and demonstrates commitment to sustainability	It helps organizations identify environmental costs and resource efficiency opportunities	Help organizations integrate sustainability into supply chain management and build trust with stakeholders
challenge	Indicators may be subjective, and some may be more important in certain contexts	It requires specialized knowledge and expertise, and data can be difficult to collect	It requires changes to accounting and information systems, and data may be incomplete or inaccurate	It requires collaboration and coordination between supply chain partners, and data can be difficult to collect and standardize

Source: processed by the author

1.4 Organizational Sustainability Performance Index (OSPI)

The Organizational Sustainability Performance Index (OSPI) is a tool designed to help organizations measure and improve their sustainability performance. OSPI assesses an organization's sustainability performance through a range of indicators, including environmental, social and economic factors. This index was developed to help organizations track their sustainability performance over time and identify areas for improvement.

The OSPI is designed to be a comprehensive tool that measures sustainability performance through a range of indicators. It includes both quantitative and qualitative measures such as greenhouse gas emissions, waste reduction, community involvement, employee satisfaction and ethical business practices. OSPI also considers the organization's specific context, such as industry, size and geographic location.

OSPI provides a score for each organization based on its sustainability performance. The score is based on a number of factors, including the organization's performance compared to other organizations in its industry or sector, the extent to which the organization's sustainability performance aligns with global sustainability goals, and the organization's ability to innovate and drive sustainable change .

One of the key benefits of OSPI is that it provides a way for organizations to benchmark their sustainability performance against other organizations in their sector or industry. This can help organizations identify areas for improvement and best practices that can be shared across the industry. OSPI can also help organizations communicate their sustainability performance to stakeholders such as investors, customers and employees.

However, there are also some limitations of OSPI. One limitation is that it is based on self-reported data, which may not always be accurate or complete. Another limitation is that it may not capture all aspects of an organization's sustainability performance, as there may be factors that are difficult to measure or quantify.

Despite these limitations, OSPI is a useful tool for organizations seeking to improve their sustainability performance. By providing a comprehensive assessment of sustainability performance through a range of indicators, OSPI can help organizations identify areas for improvement and drive sustainable change. OSPI also provides a way for organizations to communicate their sustainability performance to stakeholders, which can help build trust and reputation.

The Organizational Sustainability Performance Index (OSPI) is a valuable tool for organizations seeking to improve their sustainability performance. By providing a comprehensive assessment of sustainability performance through a range of indicators, OSPI can help organizations assess their performance, identify areas for

improvement and drive sustainable change. Although there are limitations to OSPI, its benefits make it a valuable tool for organizations engaged in sustainable development.

1.5 Corporate Sustainability Index (ISE)

The Corporate Sustainability Index (ISE) is a tool developed to help companies in Brazil measure and improve their sustainability performance. The index was launched in 2005 by B3, the Brazilian stock exchange, and is considered one of the most important sustainability indices in the world. ISE assesses companies based on their sustainability practices, including environmental, social and governance (ESG) factors.

The ISE is based on a set of criteria that are updated annually to reflect changes in the sustainability landscape. Companies that meet the criteria are included in the index and are evaluated based on their performance across a range of sustainability indicators. These indicators are grouped into five categories: corporate governance, social responsibility, environmental responsibility, economic sustainability and innovation.

The ISE has several benefits for companies participating in the index. For example, companies that are included in the ISE are seen as leaders in sustainability, which can help improve their reputation and attract investment. The ISE also provides a framework for companies to assess their sustainability performance and identify areas for improvement. In addition, ISE promotes transparency and accountability by requiring companies to disclose information about their sustainability practices.

However, there are also some challenges associated with ISE. For example, companies must meet strict criteria to be included in the index, which can be difficult for smaller companies. In addition, some critics argue that the ISE does not go far enough in promoting sustainability because it does not address some of the most pressing sustainability issues, such as climate change.

Despite these challenges, ISE has had a significant impact on sustainability practices in Brazil. Companies participating in the index have made significant improvements in their sustainability performance, including reducing greenhouse gas emissions, improving worker safety and increasing transparency. In addition, the ISE has helped raise awareness of sustainability issues among companies and investors in Brazil and encouraged other countries to develop similar indices.

ISE has had a significant impact on sustainability practices in Brazil and has helped raise awareness of sustainability issues around the world.

In conclusion, Sustainable Balanced Scorecard (SBSC), Organizational Sustainability Performance Index (OSPI) and Corporate The Sustainability Index

(ISE) are all valuable tools that can help organizations assess and improve their sustainability performance. Although each tool has its own focus and unique assessment methodology, all three are designed to promote sustainability and encourage organizations to adopt sustainable practices.

The SBSC provides a comprehensive framework for organizations to measure their performance from financial, customer, internal and learning and growth perspectives. OSPI focuses on sustainability parameters in the social, environmental, economic and governance dimensions and is designed for use by internal stakeholders. The ISE assesses sustainability performance for Brazilian listed companies through environmental, social and governance indicators and is used to identify leaders in sustainable practices.

By using these tools, organizations can increase their transparency and accountability, improve their sustainability performance and position themselves as sustainability leaders. However, it is important to note that these tools can also present challenges such as resource constraints, strict criteria and difficulty of implementation.

Ultimately, the use of these sustainability indices highlights the growing importance of sustainability in business operations and the need for organizations to continuously measure, evaluate and improve sustainability performance in order to remain competitive in a rapidly changing business landscape. Table 3 shows the differences between Sustainable Balanced Scorecard (SBSC), Organizational Sustainability Performance Index (OSPI), Corporate Sustainability Index (ISE)

Table 3. Differences between Sustainable Balanced Scorecard (SBSC), Organizational Sustainability Performance Index (OSPI), Corporate Sustainability Index (ISE)

Criterion	Sustainable Balanced Scorecard (SBSC)	Organizational Sustainability Performance Index (OSPI)	corporeal Sustainability Index (ISE)
Purpose	Strategic management tool	Measure organizational sustainability performance	Evaluate sustainability performance
Key areas of focus	Financial, Customer, Internal, Learning and Growth	Social, environmental, economic, governance	Environment, Social, Governance
Metrics and indicators	Financial and non-financial measures	Sustainability metrics and indicators	Sustainability metrics and indicators

Criterion	Sustainable Balanced Scorecard (SBSC)	Organizational Sustainability Performance Index (OSPI)	corporeal Sustainability Index (ISE)
Aplication domain	Internal and external stakeholders	Internal stakeholders only	Listed companies in Brazil
Evaluation methodology	Self-assessment and external audit	Self-assessment and external audit	Selection and evaluation of companies
Benefits for companies	Improved strategic planning and decision making	Improved sustainability performance and reputation	Improved sustainability performance and reputation
Stakeholder benefits	Increased transparency and accountability	Improved sustainability performance of the organization	Improved sustainability performance of the organization
challenge	It can be resource intensive and difficult to implement	May not be suitable for smaller organizations	The criteria may be too strict for some companies

Source: processed by the author

Conculsion

It can be concluded that there is a growing emphasis on sustainable management practices and accounting frameworks in today's business and economic landscape.

The Sustainable Management System (SMS) is a management framework that helps organizations integrate sustainability considerations into their business operations. This indicates that businesses are becoming more aware of the impact of their operations on the environment and society and are taking steps to reduce their negative impact.

The Environmental Management Accounting (EMA) framework is a tool for identifying and measuring the environmental costs and benefits associated with a company's activities. It helps businesses understand the financial implications of their environmental impact and make more informed decisions about their operations.

Sustainability Management Accounting (SMA) is a management accounting approach that integrates environmental and social considerations into financial decision-making. This approach recognizes that financial success is not the only

indicator of a company's success and takes into account the broader impacts of its operations.

The Composite Index of Sustainable Development (ICSD) is an index that measures a country's progress towards sustainable development based on various economic, social, and environmental indicators. This indicates that there is a growing recognition of the importance of sustainability in economic development, and countries are taking steps to measure and track their progress towards sustainable development goals.

In conclusion, the above indicators suggest that there is a growing recognition of the importance of sustainable management practices and accounting frameworks in today's business and economic landscape. This trend is likely to continue as businesses and governments increasingly prioritize sustainability in their decision-making processes.

It can be concluded that there is a growing emphasis on measuring and managing sustainability performance in organizations.

The Sustainable Balanced Scorecard (SBSC) is a framework that helps organizations measure and manage their sustainability performance. This framework integrates sustainability considerations into traditional performance management systems, emphasizing the importance of considering social and environmental impacts alongside financial performance.

The Organizational Sustainability Performance Index (OSPI) is a tool that measures the sustainability performance of organizations based on various environmental, social, and governance factors. This index allows organizations to assess their sustainability performance against industry benchmarks and identify areas for improvement.

The Corporate Sustainability Index (ISE) is an index that measures the sustainability performance of companies listed on the Brazilian stock exchange. This index helps investors identify companies that are committed to sustainable practices and encourages companies to improve their sustainability performance.

In conclusion, the above indicators suggest that there is a growing recognition of the importance of measuring and managing sustainability performance in organizations. This trend is likely to continue as organizations increasingly prioritize sustainability in their decision-making processes and as investors and other stakeholders demand more transparency and accountability in sustainability reporting. The use of sustainability performance indicators like SBSC, OSPI, and ISE can help organizations benchmark their sustainability performance, identify areas for improvement, and demonstrate their commitment to sustainability to stakeholders.

Bibliography

1. BATTEN, John (2016): *Sustainable Cities Index 2016. Arcadis.* Disponibil la: www.arcadis.com/ sci2016
2. BODA: A tudástıke kialakulása és hatása a vállalati menedzsmentre, Infor- mációs Társadalomért Alapítvány, 2008.
3. CRUCIANA, Caterina - F GrOV 5, Silviab RINAR, Mehmet - SoSTERO, Matten (2019%: uconstructing the FEEM Sustainability Index: A Choquet Interal Appilication. Ecological indicators, Vol. 39. 189-202. DOl: https://doi.org/10.1016/;.
4. *EUROPEAN COMMISSION (2017): Annual Report on European SMEs 2016/2017. Final Report.*
5. *EUROPEAN COMMISSION (2019): 2019 SBA Fact Sheet Hungary.*
6. European Commission Eurostat (2020): EU SDG Indicator Set 2020 – Result of the Review in Preparation of the 2020 Edition of the EU SDG Monitoring Report.
7. Eurostat (2019) Sustainable Development in the European Union. 2019 Edition
8. GREEN GROWTH KNOWLEDGE PLATFORM (2016): Measuring Inclusive Green Growth at the Country Level. Working Paper 02, Genf, GGKP Research Committee on Measurement &Indicators. www.greengrowthknowledge.org/sites/default/files/down-loads/resource/Measuring_Inclusive_Green_Growth_at_the_Country_Level.pdf
9. GREEN GROWTH KNOWLEDGE PLATFORM (é. n. a): GGKP Data Explorer. www. greengrowthknowledge.org/data-explorer#/line?startYear=2000&endYear=2015
10. GREEN GROWTH KNOWLEDGE PLATFORM (é. n. b): Knowledge Partners. www.greengrowthknowledge.org/partners
11. KAPLAN – NORTON: A Balanced Scorecard, mint stratégiai menedzsment-
12. KAPLAN – NORTON: A menedzsmentrendszer kézben tartása, 2008. május,
13. OECD (2008): Handbook on Constructing Composite Indicators - Methodology and User Guide.
14. OECD (2008): Handbook on Constructing Composite Indicators - Methodology and User Guide. www.oecd.org/sdd/42495745.pdf
15. OECD (2016): Better Policies for 2030 - An OECD Action Plan on the Sustainable Development Goals. OECD Council, 2016. 12. 13.
16. OECD (2016): Better Policies for 2030 - An OECD Action Plan on the Sustainable Development Goals. OECD Council, 2016.12.13.www.oecd.org/dac/Better%20Policies%20for%202030.pdf
17. OECD (2017): Green Growth Indicators 2017. Paris, OECD Green Growth Studies, OECD Publishing.

18. OECD (2017): Green Growth Indicators 2017. Paris, OECD Green Growth Studies, OECD Publishing. https://read.oecd-ilibrary.org/environment/green-growth-indi-cators-2017_9789264268586-en#pagel

19. OECD (2017): *OECD Skills Outlook 2017: Skills and Global Value Chains.* Paris, OECD Publishing. Available at: https://doi.org/10.1787/9789264273351-en

20. OECD (é. n.): OECD and the Sustainable Development Goals: Delivering on Universal Goals and Targets. www.oecd.org/dac/sustainable-development-goals.htm

21. OECD: OECD and the Sustainable Development Goals: Delivering on Universal Goals and Targets.

22. PORA Gyula - KORO MIA: Attila (2001): A természeti ersforrasok gazdaságtana és foldraiza. Budapest, Aula.

23. UNITED NATIONS (2015): Transforming Our World: The 2030 Agenda for Sustainable Development. United Nations General Assembly, 2015. 10. 21. www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang-E

24. United Nations (2019): Sustainable Development Report 2019. New York (US-NI) United Nations Publications.

25. UNITED NATIONS (2019): Sustainable Development Report 2019. New York (US-NY), United Nations Publications. https://unstats.un.org/sdgs/report/2019/The- Sustainable-Development-Goals-Report-2019pdf

26. UNITED NATIONS DEVELOPMENT PROGRAMME (2015): *Sustainable Development Goals.* Available at: https://open.undp.org/sustainable-development-goals

TAX HEAVENS: THEORETICAL GUIDELINES

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Abstract: *The main purpose of this paper is to study the concept and aspects of tax havens and the attempt of companies with significant revenues to avoid taxation, their causes, trends and effects in the European Union (EU) resulting from tax avoidance or tax evasion behavior. These phenomena were triggered by several factors. The purpose of this study is to identify the major determinants of tax havens in the current economic context. In recent years, the international and European tax policy debate has focused on tax avoidance strategies. Attempts and cases of tax evasion have become more frequent. The development of tax havens has been favored by some macroeconomic factors, but also by the tax non-compliance behavior of companies and individuals looking for different ways to avoid taxation. We examine the theoretical implications of tax haven operations on the actual tax burdens of companies based in Europe. One of the factors that has a major contribution to the development of the orientation trend of multinational and national companies with significant revenues made on the territory of the EU is the degree of taxation. Although this level of taxation differs from one country to another, it is a significant one and is the main pillar on which tax havens are based. This expansion of the phenomenon of avoiding taxation by transferring income to tax havens generates negative effects in the European economy, which leave their imprint on the economy more and more. Since the phenomenon of tax avoidance by directing companies to tax havens cannot be eradicated, it is very important to find measures to limit it. In this context, at the level of the European Union, concerns have arisen for the development of a conceptual, institutional and legislative framework to mitigate these phenomena as much as possible. This phenomenon occurs both within the European Union and globally.*
The European Union together with the Member States must work more and collaborate internationally to limit the orientation of companies towards tax avoidance by transferring profits to tax havens. In the general context of the globalization of the world economy, the governments of countries that want to increase their tax revenues hit a significant obstacle called "tax havens". The main finding of this approach is that the EU together with other OECD member states are making diplomatic and legislative efforts to limit as much as possible the tendency to avoid taxation.

Keywords: tax heavens, tax avoidance, offshore, jurisdictions black list, tax fraud.

JEL Classification: A1, A14

1. Introduction

Due to the creation of the European Union and the expansion of international economic cooperation, as well as the development of relations between states with different tax systems and with a different degree of taxation, tax avoidance is manifested not only as a national phenomenon, but has become an international one. International tax evasion is facilitated by the existence of "tax havens" around the globe, which are taken advantage of by companies looking for tax optimization by avoiding taxation.

The end of the Second World War is the time that marks the increase in the importance of tax havens, when the number of subsidiaries of a parent company multiplied.

The Organization for Economic Co-operation and Development (OECD) has carried out an analysis of the jurisdictions of states and/or territories that represent true tax havens, and identified four main (and common) factors that can constitute fairly accurate criteria for determining and delimiting these "fiscal zones" where a privileged tax system is practiced.

The first criterion refers to the fact that, in any tax haven, tax and duty legislation is either absent or insignificant. This criterion taken individually is not sufficient to qualify, on its basis, a jurisdiction as a "tax haven", since any state is entitled to establish its own tax policy and the manner of its application in accordance with the development strategy that and establishes it.

The second criterion is the degree of transparency or even the lack of transparency vis a vis the way in which tax legislation is applied to certain categories of taxpayers in a certain territory. The less transparent the application method is and the less information necessary to determine the level of tax owed by some taxpayers, the less the tax authorities are, the closer we are to or even "in the jurisdiction of a tax haven".

The third criterion, specific to tax havens, refers to a certain "general secrecy", an opacity embodied in the lack of communication and the refusal to exchange information with other tax administrations.

The fourth criterion for the identification of tax havens is the lack of substantial economic activities to be carried out in the jurisdiction of a state considered a tax haven.

The OECD asked states to adopt a system of information exchanges "on request" that would allow them to eventually, on the basis of a special bilateral agreement, request and provide the specific information needed for tax audits. This exchange of

information must have as an essential element, the confidentiality of fiscal statements, as well as the protection of taxpayers' rights.

Where are the "Tax Havens"? They are all over the world.

Some are independent countries such as Panama, the Netherlands and Malta. Others are in countries, such as the US state of Delaware, or are territories, such as the Cayman Islands. Some tax havens, such as Niue and Vanuatu, have improved their practice under international pressure, while others, such as Dubai, are emerging as sources of illicit wealth.

The reason why a country decides to become a tax haven is money. They derive significant revenue from taxes paid by companies and individuals who create and use companies domiciled in their jurisdiction. Tax havens also create jobs for service providers such as lawyers, accountants and secretaries.

2. Definitions, Components, Trends and Effects

2.1. Definitions and Components

The term "tax haven" is loosely defined. There is no universal definition, but tax havens or offshore financial centers are generally legal entities (countries or only part of the territory of a state), with zero or low corporate taxes, on all or only some categories of income, a certain level of banking or commercial secrecy, minimal requirements from the central bank and no restrictions on currency exchanges, allowing outsiders (companies or individuals) resident in their territory to easily set up business there.

Tax havens typically limit public disclosure about companies and their owners. They almost always deny that they are tax havens.

A company established in a tax haven is called a "shell" company. They usually exist only on paper, without employees and without an office. A single office building in a tax haven can house thousands of "shell" companies. These companies are also called "offshore companies". The rules for registering these companies may differ from one jurisdiction to another but generally the beneficial owners of these companies are not named in the company's registration documents. Offshore companies can hold money, luxury homes, intellectual property, businesses and other shares. They play a vital role in facilitating the flow of licit and illicit money across the globe.

Top 10 European tax havens

These havens have attracted large companies along with wealthy private investors seeking to avoid being taxed as a result of the tax policies of their home countries. Tax evasion has led to losses of up to $32 billion in banking systems worldwide. Europe is home to many tax havens that offer favorable environments for capital gains taxes, income taxes and corporate taxes.

1. England. London is Europe's tax haven for capital (income taxes or capital gains taxes on investments) held by non-UK people outside the country. The city's well-established banking systems are reliable and are used by foreigners from almost every country in the world. Corporate tax is a relatively low 20% regardless of company size.Funds and trusts are typical tax haven vehicles used by foreigners to provide a protective package with no tax or reduced wealth tax charges.

2. Germany. Foreign investors are not taxed on interest income earned in Germany. The country maintains the privacy of account holders. Foreign income is exempt from taxation, regardless of whether it is in the form of dividends from foreign subsidiaries or income earned in foreign branches. Corporations' capital gains are taxed at 5% of dividends.

3. Ireland. It charges a fee of 12.5% of turnover, and artists enjoy a tax-free income.

4. Jersey. It is an important tax haven for England. Incomes earned in England are transferred here. Income ownership information is not made available to the public, nor is information about the company's financial accounts. Jersey is known for its banking secrecy procedures as well as general secrecy in judicial and government matters.

5. The Netherlands. Business taxes in the Netherlands are very low, as are interest taxes and license income. A staggering 48% of Fortune 500 companies have created at least one limited liability company in the Netherlands. There are tax breaks called participation exemptions to eliminate the taxation of dividends and capital gains that are accumulated outside the country.

6. Switzerland. It still serves as a popular tax haven because the country maintains secrecy in its banking practices. Russia has also identified Switzerland as an offshore jurisdiction that refuses to share banking information on account holders. The Financial Secrecy Index ranked Switzerland as the world's number one tax haven based on its banking secrecy procedures and the value of its offshore activity.

7. Sweden, Although Sweden has traditionally not been seen as a tax haven in Europe, changes to the tax codes and the introduction of Kapitalförsäkring have helped change the perception of the country's potential as a tax haven for foreign investors. This eliminated a number of taxes, including inheritance and gift taxes. Insurance bonds called Kapitalförsäkring serve as unique investment vehicles that

can be used by Swedish residents and foreigners living in Sweden. The account allows individuals to avoid taxes on capital gains.

8. Denmark. Tax havens in Denmark can function because of the low transparency of information exchanges between tax authorities and banks. The beneficial owner of a corporation or foundation can be difficult to distinguish in Denmark, as is the case with limited partnerships.

9. Austria. Account holders in Austria are given privacy in exchange for their funds, and Austrian bank accounts are popular with Germans. Austria's bond market is popular with foreign investors. Strict banking secrecy placed the country 24th in a financial secrecy index ranking.

10. Luxembourg. German banks take advantage of Luxembourg's tax environment, as dividends from many companies are not taxed. Long-term capital gains on shares are tax-free unless a majority stake of 10% or more is held.

2.2. Trends and Effects

2.2.1. Trends
Given the global nature of unfair tax competition, it also involves addressing the external challenges facing the tax systems of EU countries. Both within the EU and internationally, the EU works to promote and strengthen the mechanisms of tax good governance, fair taxation and tax transparency worldwide to combat tax fraud, tax evasion and tax avoidance. For this purpose the EU has drawn up the list of non-cooperative jurisdictions for fiscal purposes. The list is made up of countries that have not fulfilled their commitments to comply with the criteria of good fiscal governance within a certain time frame and of countries that have refused to do so. The purpose of this list, of non-cooperative jurisdictions, which is published as an annex to the conclusions adopted by the EU Council for Economic and Financial Affairs - ECOFIN (annex I), is not to denounce and stigmatize countries, but to encourage a positive change in legislation and their tax practices, through cooperation.

The reference point at which the list was compiled is November 2016. The Council mandated the Working Group on the Code of Conduct (Business Taxation), a special working group established by the Council, to carry out the preparatory work for the compilation of the list.

The Code of Conduct Working Group began by examining 92 jurisdictions chosen based on:
• their economic ties with the EU
• their institutional stability

• the importance of the country's financial sector

The panel's review and assessment report was submitted to the Council and, based on the report, the first EU list was adopted on 5 December 2017. The list (annex I to the Council conclusions) included 17 non-EU countries or territories. These jurisdictions had not made sufficient commitments in response to EU concerns. A status document (annex II) listing jurisdictions that have made sufficient commitments accompanies the list. These jurisdictions were to take concrete steps by the end of 2018 or, in some cases, 2019 to avoid being listed in the future.

The list of non-cooperative jurisdictions for tax purposes, since its first compilation in 2017, has been regularly updated and revised as a result of the dynamic monitoring of measures put in place by jurisdictions to comply with their commitments.

This is a continuous process that includes:

• updating the criteria in accordance with international fiscal standards

• examining countries according to these criteria

• dialogue with countries that do not comply with the criteria

• listing and delisting countries as they undertake (or do not undertake) reforms

• monitoring developments to ensure that jurisdictions do not revert to previous reforms

The monitoring process follows a set of procedural guidelines, agreed in February 2018. Without changing the dynamic monitoring process, the Council decided in March 2019 to limit the list updates to twice a year from 2020, in order to give Member States of enough time for the EU to amend domestic legislation where necessary.

To be considered cooperative for tax purposes, jurisdictions are examined based on a series of criteria:

Tax transparency

• jurisdictions should exchange tax data with all EU Member States through the Automatic Exchange of Tax Information (AEOI), either through the Common Reporting Standard (CRS) established by the OECD or equivalent agreements

• jurisdictions should also be able to exchange tax information on request (EOIR)

• jurisdictions should be parties to the OECD Multilateral Convention on Mutual Administrative Assistance in Tax Matters or have a network of exchange agreements covering all EU member states

• the actual property aspect will be included at a later stage

Fair taxation

• jurisdictions should not have harmful preferential tax measures

• jurisdictions should not facilitate offshore structures or mechanisms that aim to attract profits without any actual economic activity

Anti-BEPS (Base Erosion and Profit Shifting) measures
• jurisdictions should commit to implementing the OECD's anti-BEPS minimum standards, which cover harmful tax measures, treaty shopping, country-by-country reporting and dispute resolution
• jurisdictions should receive positive peer reviews for effective implementation of the anti-BEPS country-by-country reporting minimum standard
Practically, it is observed that the EU has two lists. A black one with non-cooperative jurisdictions, and a gray one with those jurisdictions that are cooperating to a certain extent or have made a commitment that they will cooperate.

2.2.2. Effects

The Council considered that: The EU and Member States could apply effective and proportionate safeguards, both in the non-fiscal and fiscal fields, against non-cooperative jurisdictions as long as they are included in the list.

Protection measures in the non-fiscal field
Regarding non-fiscal areas, the Council invited EU institutions and Member States to consider the EU list in:
• external politics
• cooperation for development
• economic relations with third countries
In addition, certain EU funding rules now explicitly refer to the list. Funds from several EU instruments cannot be channeled through entities from countries on the list, including those from:
• European Fund for Sustainable Development (EFSD)
• European Fund for Strategic Investments (EFSI)
• the mandate to grant external loans
• the general framework regarding securitization
In its conclusions of 12 March 2019, the Council welcomed that "the European Commission takes into account the list for the implementation of EU financing and investment operations".

Tax protection measures
EU Member States have a wide margin of appreciation in terms of the type and scope of the protective measures they apply in the tax field. These are highly dependent on national tax systems. However, there is some degree of coordination.
National measures
EU Member States agreed in December 2017 to apply at least one of the following administrative measures:
• *consolidated monitoring of transactions*

• audits of increased risk for taxpayers who benefit from the regimes entered on the list

• increased risk audits for taxpayers using tax systems involving listed regimes

On December 5, 2019, the Council approved guidelines for the continuation of coordination. The Member States have also committed themselves, starting from 1 January 2021, to use the EU list when applying at least one of the following four specific legislative measures:

• non-deductibility of costs incurred within a listed jurisdiction

• foreign controlled company (SSC) rules to limit artificial tax deferral to low-tax offshore entities

• withholding tax measures to combat improper exemptions or refunds

• limitation of the exemption of income obtained from participations in dividends to shareholders

Currently, 26 Member States apply or have taken steps to apply at least one of the four safeguards agreed in the 2019 guidelines. Of these 26 Member States, 16 apply at least two of the four measures.

To date, 21 Member States have applied both administrative and legislative safeguards for EU-listed jurisdictions, while three Member States have applied safeguards in accordance with their domestic listing process, which includes currently all or nearly all jurisdictions listed in Annex I to the Council conclusions establishing the EU list of non-cooperative jurisdictions for tax purposes.

Thus, on February 14, 2023, the list of countries that have refused to cooperate with the EU or to address the shortcomings of good fiscal governance ("black list") is composed of the following 16 jurisdictions:

• American Samoa, Anguilla, Bahamas, British Virgin Islands, Costa Rica,

Fiji, Guam, Marshall Islands, Palau, Panama, Russia, Samoa, Trinidad&Tobago, Turks&Caicos, US Virgin Islands, Vanuatu

The list of countries that have decided to address tax good governance deficiencies (the "grey list") consists of the following 18 jurisdictions:

• Albania, Armenia, Aruba, Belize, Botswana, Curaçao, Dominica, Eswatini, Hong Kong, Israel, Jordan, Malaysia, Monserrat, Qatar, Seychelles, Thailand, Turkey, Vietnam.

3. Conclusions

The EU is preparing to block the way of billions to tax havens, in this sense the union intends to impose on multinational companies a minimum tax of 15% in the countries where they obtain their profits, which means that they will no longer be able to hide

their earnings in tax havens. This measure begins to take shape after the European Parliament approved the report of the MEPs from the Committee for Economic and Monetary Affairs regarding the introduction of this tax. Contrary to the initial proposal of the European Commission, MEPs have also introduced a clause that provides for the review of the annual income threshold above which a multinational corporation would be subject to the minimum tax rate. The deadline for the introduction of this profit tax is December 31, 2022. This EU commitment represents a historic agreement. The EU will be among the first legal entities to implement the OECD agreement on tax reform.

The Council Directive, which will be adopted by the Council by written procedure, includes a common set of rules on how to calculate the effective minimum tax rate of 15%, so that it is applied properly and consistently across the EU. The minimum tax rate of 15% has been agreed worldwide by 137 countries.

The rules will apply to multinational groups of companies and large EU national groups with combined financial revenues of more than €750 million per year. The proposed rules will apply to any large group of companies, both national and international, with a parent company or subsidiary located in an EU member state. If the minimum effective rate is not imposed by the country in which a subsidiary is established, the Member State of the parent company must apply a complementary tax. The directive also ensures effective taxation in situations where the parent company is located outside the EU in a low-tax country that does not apply equivalent rules.

Member States must implement the new rules by 31 December 2023.

In a first approach, Romania would have nothing to lose from a financial point of view, with the application of the new measure, but analyzing the level of taxation in the countries with which we are in direct competition for attracting investors, this could it costs us Canceling the advantage of a lower tax rate will be a blow to Romania, considering that we cannot offer investors other opportunities, such as a good transport infrastructure, a sufficient and qualified workforce, an administration dedicated to public service , legislative stability and predictability, etc. However, if the possibility of multinationals to move their profits to tax havens will be cut, taxation will be closer to reality, and this would mean more money for the state budget. The state budget has been damaged for years by the fiscal behavior of many of the multinational companies.

Currently in Romania there are corporations that resort to the transfer of profits to tax havens or apply an optimization scheme, such as transfer pricing, an operation that is on the border between aggressive tax planning and tax evasion. Although

transfer prices are regulated in Romanian legislation, they represent a very thin line between legal and illegal, as the legislation that regulates them still has gaps.

Transfer pricing manipulation is one of the most used methods by multinationals to avoid taxation. Financial engineering consists of rigging the prices at which its subsidiaries purchase each other's own products or services so that the resulting profit is transferred to a tax haven.

As far as the European Union is concerned, corporate tax avoidance and aggressive tax planning by large multinational companies deprives it of more than 50 billion euros of revenue per year. An analysis carried out in 2021 by the consulting company Deloitte showed that the states of the world lose more than 427 billion dollars annually from moving profits and personal assets to tax havens. The states that lose the largest amounts are the USA (nearly 90 billion dollars per year), Great Britain, Germany, France and Brazil. Of the $427 billion, the State of Tax Justice 2020 report, based on country-by-country reporting data published by the OECD, pointed out that $245 billion is lost directly to corporate tax evasion, with the difference being of taxes related to personal assets. Although most of the losses are recorded by rich countries, these tax practices affect lower-income countries more. The latter lose the equivalent of 5.8% of the total tax revenue they typically collect due to tax avoidance practices, while the losses of high-income countries amount to only 2.5% of the total. According to the study, rich countries are also responsible for these losses (98%), and the main favoring jurisdictions are the Cayman Islands (generate 16.5% of global tax losses - the equivalent of 70 billion dollars), Great Britain (10%), the Netherlands (8.5%), Luxembourg (6.5%) and the USA (5.53%).

In Romania, there are no public data on the damages caused to the state budget by this fiscal behavior of multinational companies, because the authorities in Bucharest do not publish them in order not to come into conflict with the world's rich. There is an analysis prepared by ANAF in 2018 and published in the press by "sources" which showed that in 2017 the large retail chains achieved a turnover of 11.35 billion euros, but had reported a gross profit of only 394 of millions of euros. The reported profit ranged from 0.21% to a maximum of 6.65%, with only one network reporting this. Things did not look better on the telecom market either. The three biggest phone companies had reported profits as low as 1.62% of turnover. This meant that with a turnover of 3.65 billion lei, the said multinational had reported a gross profit of only 59.3 million lei. Things did not look different in the oil sector either, a sector that runs a lot of money and that for years has been complaining about the overtaxation of the state. At that time, the highest profit, as a percentage of turnover, was only 3.62%, and the lowest, 1.45%, while the largest oil company on the Romanian market, OMV, reported a profit that represented only 2.13% of the turnover.

Under these conditions, it is easy to understand why the state always complains that it has no money, but puts tax pressure on honest taxpayers. It is a period when the Government, due to the poor collection of taxes to the state budget, promotes the idea of tax resettlement. Something that, by the way, has already happened through the large number of normative acts that modify the Fiscal Code, and which do nothing but increase the fiscal pressure on the same honest taxpayers.

Reference:

1.Adrian, R. (2021). *Multinationals, obliged to transparency. European authorities want to ensure that they pay the right taxes in the states where they operate.* [online]. Ey.com. Aveilable from: https://www.ey.com/ro_ro/tax/multinationalele-obligate-la-transparenta-tarii-unde-platesc-tax. [accessed 7 April 2023].

2.Adriana, S.(2022). *The EU is preparing to block the path of billions to tax havens* [online].Jurnalul.ro. Aveilable from: https://jurnalul.ro/bani-afaceri/economia/ue-se-pregateste-sa-blocheze-drumul-miliardelor-spre-paradisurile-fiscale-901224.html. [accessed 7 April 2023].

3.Alexandra, L. (2021). *The European Parliament presented its priorities for reforming EU policy on harmful tax practices* [online]. Caleaeuropeană.ro. Aveilable from: https://www.caleaeuropeana.ro/parlamentul-european-si-a-prezentat-prioritatile-pentru-reformarea-politicii-ue-privind-practicile-fiscale-daunatoare/ [accessed 7 April 2023].

4. Ana, H. (2019). *Top tax havens around the world. The islands where the world's rich hide their money* [online]. Libertatea. Aveilable from: https://www.libertatea.ro/stiri/topul-paradisurilor-fiscale-din-intreaga-lume-2808179. [accessed 7 April 2023].

5.Claudiu, Z. (2021). *The European Union obliges multinationals to publicly declare the amount of tax they pay in each member country* [online]. Startup Cafe. Aveilable from: https://www.startupcafe.ro/meetyourmep/uniunea-europeana-obligatie-multinationale-declarare-impozit-meetyourmep.htm [accessed 7 April 2023].

6. European Council, Council of the European Union (2023). *EU list of non-cooperative jurisdictions for tax purposes* [online]. Aveilable from:https://www.consilium. europa.eu/ro/policies/eu-list-of-non-cooperative-jurisdictions/ [accessed 7 April 2023].

7. European Commission, Taxation and Customs Union (2011). *Taxation trend in European Union, Focus on the crisis, The main impact on EU tax system* [online]. Aveilable from: https://ec.europa.eu/eurostat/documents/3217494/5730669/KS-EU-11-001-EN.PDF/fec0c5ff-e858-481c-904c-c291cf9804b8?version=1.0 [accessed 7 April 2023].

8. European Parliament (2018). *Listing of tax havens by the EU* [online]. Aveilable from: https://www.europarl.europa.eu/cmsdata/147404/7%20-%2001%20EPRS-Briefing-621872-Listing-tax-havens-by-the-EU-FINAL.PDF [accessed 7 April 2023].

9. Gabriela-Nicoleta, M-D.(2011). *Tax havens in Europe* [online]. Aveilable from: https://proceedings.univ-danubius.ro/index.php/eirp/article/viewFile/1040/959 [accessed 7 April 2023].

10. HotNews.ro (2021). *The EU removed the Seychelles from the blacklist of tax havens / The decision, taken in the midst of scandal Pandora Papers* [online]. https://economie.hotnews.ro/stiri-finante_banci-25084965-scos-seychelles-cel-mai-cunoscut-paradis-fiscal-din-lume-lista-neagra-paradisurilor-fiscale-decizia-luata-plin-scandal-pandora-papers.htm [accessed 7 April 2023].

11. Incotokenfund.com (2023). *Top 10 European tax havens* [online]. Aveilable from: https://ro.icotokenfund.com/top-10-european-tax-havens [accessed 7 April 2023].

12. NoMoreTax (2020). Seven EU countries were accused in being tax havens [online]. Aveilable from: https://nomoretax.eu/seven-eu-countries-were-accused-in-being-tax-havens [accessed 7 April 2023].

13. Oana Maria I.N.(2020). *Doctoral thesis - European cooperation for countering the phenomenon of economic-financial criminal activities* [online]. Lege5.ro. Aveilable from: https://lege5.ro/Gratuit/ha3tknbsg43a/teza-de-doctorat-cooperarea-europeana-pentru-contracararea-fenomenului-activitatilor-infractionale-economico-financiareoana-maria-i-neagu/7. [accessed 7 April 2023].

14. OECD (2015). *Measuring and monitoring BEPS, Action 11 - 2015 final report* [online]. Aveilable from: https://www.oecd.org/ctp/measuring-and-monitoring-beps-action-11-2015-final-report-9789264241343-en.htm [accessed 7 April 2023].

15. Răzvan, D. (2017). *ECOFIN announced the blacklist of the 17 tax havens outside the European Union* [online]. Cursdeguvernare. Aveilable from: https://cursdeguvernare.ro/ecofin-a-anuntat-lista-neagra-a-celor-17-paradisuri-fiscale-din-afara-ue-frecventate-de-companiile-si-personalitatile-europene.html [accessed 7 April 2023].

16. Răzvan, D. (2019). *ECOFIN / The list of tax havens has been updated. Politico: Eugen Teodorovici took EU finance ministers by surprise* [online]. Cursdeguvernare. Aveilable from: https://cursdeguvernare.ro/ecofin-lista-paradisurilor-fiscale-a-fost-actualizata-politico-eugen-teodorovici-i-a-luat-prin-surprindere-pe-ministrii-de-finante-ai-ue.html. [accessed 7 April 2023].

17. Sanda, R. (2022). *Tax havens in Europe. States with the lowest corporate income taxes* [online]. Infofinanciar. Aveilable from: https://www.infofinanciar.ro/paradisuri-fiscale-in-europa-statele-care-au-cele-mai-mici-impozite-pe-profit-pentru-companii.html [accessed 7 April 2023].

RESEARCH ON THE DISTRIBUTION OF AIRBNB ACCOMMODATION IN MAJOR EUROPEAN DESTINATIONS

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Abstract: *The Airbnb platform, one of the most popular platforms of its kind, is present worldwide, with a variety of accommodations, depending on the type of accommodation it offers (single room, whole apartment, etc.). In this article, we set out to analyse the spatial allocation of accommodation and the density of Airbnb listings in comparison with hotel establishments in Europe. For the spatial analysis of Airbnb accommodations we used data from the Inside Airbnb website and QGIS, an application used for geographic information systems (GIS) that supports visualization, editing, and analysis of geospatial data. In this way, we created a geospatial database that helped us better understand the dynamics of each location. After analysing the data we concluded that a consequence of the concentration of Airbnb accommodation is that life in these areas has become more expensive and more crowded for locals. Airbnb accommodation has caused inconvenience not only to hotel owners but also to locals. In addition, Airbnb is having a strong impact on the rental market by increasing rental prices. Another trend that can be seen from the distribution of Airbnb accommodation is that in cities with a seafront location, accommodation is located close to beaches and most accommodation is of the entire home/apartment type. Differences in the frequency of use and prices of listings highlight the geographical inequality in the benefits and impact of Airbnb's activity. The Airbnb offer is not a uniform segment of tourist accommodation and its effects on destinations are important and should therefore be analysed in relation to the territorial context.*

Keywords: distribution; Airbnb; platform; GIS.

JEL Classification: O35

1. Background

Airbnb is present in many of Europe's iconic cities, but that doesn't mean these are the only cities where it operates. Nationally and internationally, there is not much research showing that the distribution of Airbnb's accommodation supply generally expresses the distribution of tourism demand and conventional accommodation capacity (Adamiak et al., 2019; Domènech et al., 2019; Strommen-Bakhtiar & Vinogradov, 2019). In terms of how Airbnb accommodations are distributed at the city level, as well as what the platform's accommodation supply is, a cartographic representation of them would help to form a pertinent picture of how accommodation units are arranged in cities. A comparison between cities in terms of the number of Airbnb accommodations and their structure (e.g. share of tourist rentals, business rentals, etc.) will allow to assess the importance of Airbnb for each tourist destination. At the same time, it can help to generalise the results of the study to the respective area.

An overview of these issues may help to improve the results related to Airbnb accommodation in different cities and may also mean a clarification of these factors in relation to Airbnb accommodation. As a result, we aimed to perform an analysis of Airbnb accommodations in several representative European cities in terms of tourism. We looked at how Airbnb accommodations are distributed at city level and what the platform's accommodation offer is. We made a cartographic representation of them to form a relevant picture of how accommodation units are arranged in cities. An overview of these aspects helps to improve the results related to Airbnb accommodations in different cities and can also mean a clarification of these factors in relation to Airbnb accommodations. Next, we make a comparison of Airbnb accommodations in different cities in Europe in terms of the number of different types of offers (private room, shared room, entire apartment/house, etc.), their distribution in relation to tourist resources, the growth of Airbnb bookings, the frequency with which Airbnb accommodations are booked, customer satisfaction, prices.

2. Cartographic analysis of the Airbnb listings in the main cities of Europe

2.1. Methodology

For the spatial analysis of Airbnb accommodations we used QGIS. This is an application used for open-source desktop geographic information systems (GIS) that supports visualization, editing, and analysis of geospatial data in addition to map

composition and export. We also used data from the Inside Airbnb website. In this way, we created a geospatial database that will help us better understand the dynamics of each location. In the data exposition, the cities were presented in alphabetical order.

The datasets contain the geographic coordinates of Airbnb listings, information on property types (entire home/apartment, private room, shared room or hotel room).

The analysis includes two main indicators:

a) spatial allocation of accommodation and

b) density of Airbnb listings.

Results

Below we present the distribution of Airbnb accommodations according to the type of accommodation they offer (single room, entire home/apartment, etc.) in different European cities.

Legend:

-Private room

-Blue - whole house/apartment

-Yellow - hotel room

-Green - shared room

2.2. Cartography of Airbnb listings in major cities

Barcelona is an emblematic city for Spain, both in terms of tourism and culture. The very high, even excess, demand for bookings in this city has led to the emergence and development of a large number of Airbnb accommodations. In fact, there have been times when hotels could no longer meet the demand for accommodation services, and in such a context, Airbnb has benefited. It can be seen from Figure 1 below, the layout of Airbnb in this city. Most accommodation is located in the city centre, close to tourist attractions and public transport, and along the Mediterranean coast. The types of accommodation offered by Airbnb are mostly apartments or entire houses, followed by single-room rentals. Hotel rooms and shared rooms are insignificant compared to other types of accommodation.
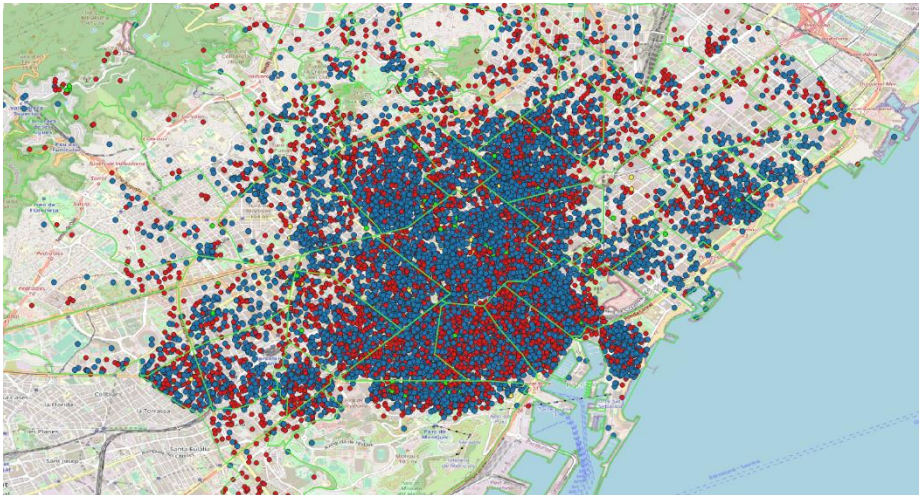
Figure 1: Distribution of Airbnb accommodations by accommodation type in the city of Barcelona (Spain)
Source: Made by the authors with QGIS geospatial analysis software based on data retrieved from Inside Airbnb

Crete is a popular and desired tourist destination. It can be seen from the figure below that the trend of distributing Airbnb accommodation along the coast continues, as in the case of Spain. Most accommodations are concentrated in the northern part of the island, near the capital Heraklion and the town of Chania, this is also due to the fact that they are closer to the airport and tourists do not have to travel a long distance between the airport and the accommodation. Entire apartments/houses predominate in Crete, which is understandable given that it is a tourist destination visited mostly in summer.

Figure 2: Distribution of Airbnb accommodations by accommodation type on the island of Crete (Greece)
Source: Made by the authors with QGIS geospatial analysis software based on data retrieved from Inside Airbnb

Rome is a city where rates for a night's accommodation are high, especially in its central area. Airbnb offers affordable accommodation for those on average incomes. The highest concentration of Airbnb accommodation is in the centre of Rome, where the offer includes both entire apartments/houses and single rooms. In the central area there are also a few "shared room" accommodations, which means that the price is quite high for accommodation and in this situation people prefer to share a room.
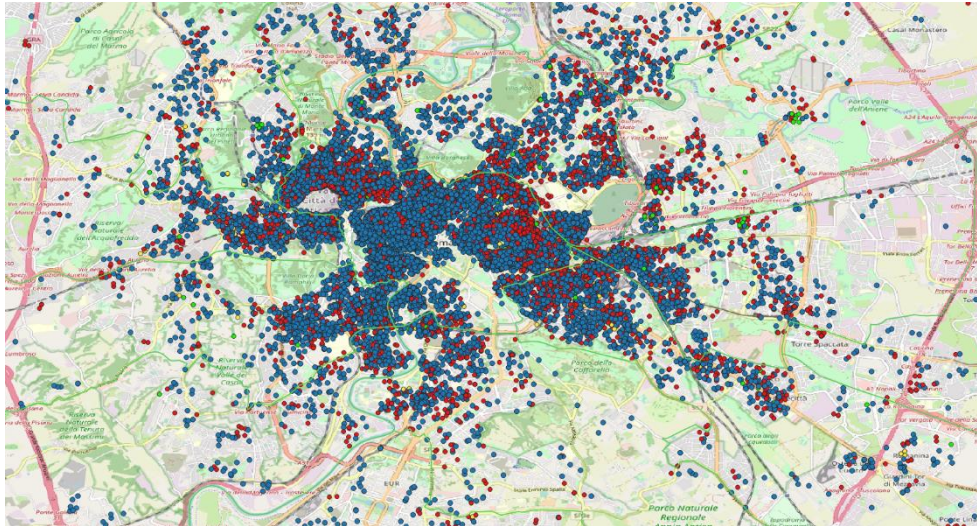
Figure 3: Distribution of Airbnb accommodations by accommodation type in the city of Rome (Italy)
Source: Made by the authors with QGIS geospatial analysis software based on data retrieved from Inside Airbnb

Europe's most visited city, Paris, also has a large number of Airbnb accommodations. It is somewhat expected that the city centre will have the most Airbnb accommodation, as this is also where most of the tourist attractions are. In Paris we find 56,726 Airbnb accommodations, of which 85.2% are entire homes/apartments (Inside Airbnb, 2023). In general, tourists are looking to find accommodations in close proximity to the sights in order to avoid using private or public transportation. One reason could be the cost of transport, and another could be traffic congestion, which is very high in the French capital. People prefer not to waste time looking for transport and sitting for a long time in transport. Whole houses or apartments also predominate in the Paris accommodation market. Single rooms are few and far between, and shared rooms are even fewer. Airbnb accommodation is sporadic on the outskirts of the city, but all types of accommodation are present.
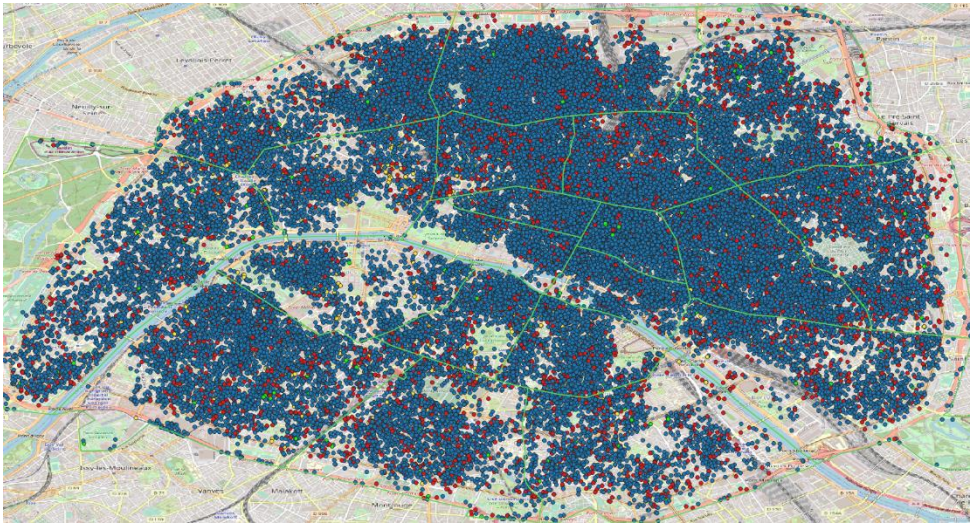
Figure 4: Distribution of Airbnb accommodations by accommodation type in the city of Paris (France)
Source: Made by the authors with QGIS geospatial analysis software based on data retrieved from Inside
Airbnb

There are 41,501 Airbnb accommodations in Istanbul, of which 66.7% are entire homes/apartments. The rule is the same as for the cities presented above. Thus, the accommodations are arranged in the central area of the city and along the Mediterranean Sea and less in the peripheral areas. Most of the accommodations are entire houses, followed by private rooms, and then shared rooms. Airbnb accommodations are also distributed in the peripheral areas, but not as many and evenly spread. Istanbul is a dynamic city, with an oriental yet modern feel, and the monuments, historic buildings, various organised fairs will continue to attract tourists from all over the world, which is beneficial for existing Airbnb accommodation. Istanbul is not a cheap city, but through Airbnb you can visit it even on an average budget. Another advantage of accommodation booked through the Airbnb platform can be its central location.
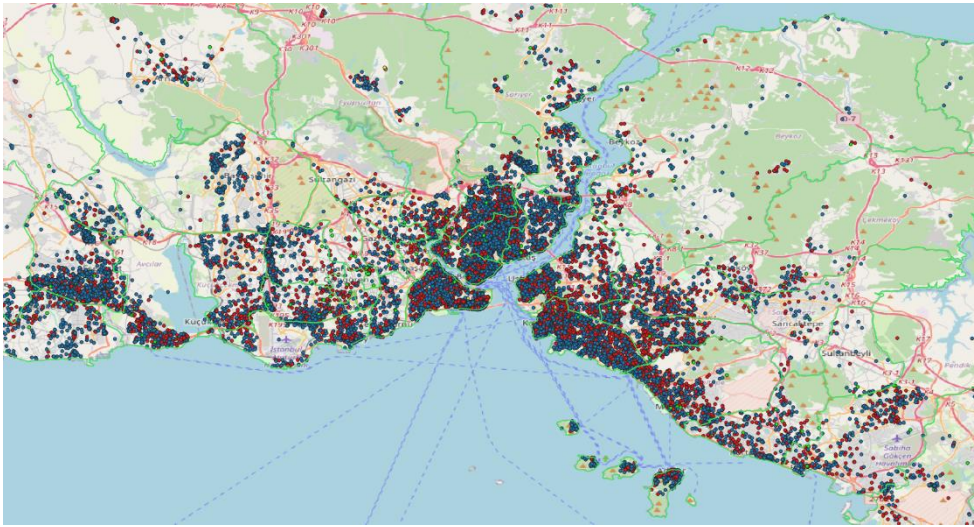
Figure 5: Distribution of Airbnb accommodations by accommodation type in the city of Istanbul (Turkey)
Source: Made by the authors with QGIS geospatial analysis software based on data retrieved from Inside Airbnb

3. Geographical variation in the supply and use of Airbnb accommodation

There is also a clear trend of geographical dispersion within the cities analysed. There is a spread from the centre of the cities, where they are most concentrated, to the periphery. At the same time, it can be said that Airbnb has moved away from the large metropolises towards the tourist areas and smaller towns. Airbnb's mature markets, the number of Airbnb listings outside the big cities is growing faster than in these cities. Airbnb's offering is becoming more professional and more tailored to the needs of consumers.

Comparing Airbnb offerings in different European countries, however, shows differences in the size and structure of the housing stock. Mapping of Airbnb accommodations shows that Airbnb is more popular in large cities such as Paris, Rome, Vienna and in tourist destinations, especially in Mediterranean Europe.

We could also observe that in iconic tourist destinations entire houses/apartments predominate in the ad structure, while in smaller cities we find relatively more rooms available for rent. Of course, the Airbnb offer differs from one city to another. The most important Airbnb markets in Europe are in Paris (France), London (UK), Rome (Italy), Barcelona (Spain).

It can also be seen that across Europe, entire properties outperform private rooms. Apartments, entire houses, rooms in houses, followed by rooms in apartments and rooms in guesthouses are the most common offers on the platform. It is not enough to simply give a descriptive overview of the numbers, prices, multiple

accommodation activity and reviews, but it is important to note the link between the socio-economic characteristics of the cities with the location characteristics within each city.

Most studies published in the literature on Airbnb often use case studies from North America and Western Europe, as they are considered the largest marketplaces and the first of their kind (Ginindza & Tichaawa, 2019; Guttentag, 2019). The impact of the platform and the way it is developed differs from city to city and from region to region, due to fluctuations in the characteristics of the real estate market, but also of the tourism industry in that area. For example, in Mediterranean and southern European countries, Airbnb is thought to be a tool for increasing the use of second homes or those owned in rural or tourist areas (Adamiak, et al., 2019; Belotti, 2019). Regarding Central and Eastern Europe, the high concentration and professionalisation of holiday rentals through Airbnb and other platforms is related to the unregulated housing market (Ključnikov, et al., 2018; Roelofsen, 2018).

In economically developing countries in Europe (Romania, Hungary, Bulgaria), renting through Airbnb is part of the local traditions of hosting, home-stay and informal tourist accommodation services, and the platform provides a marketing tool to attract international tourists (Bandara, 2019; Kagermeier, Amzil, & Elfasskoui, 2017; Ruiz-Correa et al., 2018).

It should be taken into account that the activity of platforms is closely related to the regulatory methods of countries' legal systems and local competition, whether from the collaborative or classic hospitality industry. In Europe, as in North America for that matter, regulations on short-term rentals are, as a rule, set locally (Nieuwland & van Melik, 2018; Oskam, 2019).

Although not part of Europe, we will recall Japan as an example of a country that introduced a nationwide law on private accommodation, forcing the platform to control the official registration of offers, which led to a reduction in the number of ads by 80% in summer 2018 (Matsui, 2019; Nikkei Asian Review, 2018).

Airbnb has more competitors in the global market (Hajibaba & Dolnicar, 2018), than in the European market. Very important is the competition from Chinese platforms, due to their very large size of the tourism market. Despite the fact that Airbnb has implemented Chinese regulations regarding the internet and considers China as the main market for future expansion (Jing & Soo, 2019), it still faces fierce domestic competition from platforms (Xiang & Dolnicar, 2017).

While until a few years ago, the growth of Airbnb platform was exponential, recently there has been a slowdown in Europe. Possible causes could be market saturation or lack of precise regulations, leading to the blocking or reduction of Airbnb supply in many of Europe's major cities. According to AirDNA (2019), between Q3 2017 and

2019, the number of active Airbnb and HomeAway listings decreased by 19% in Paris. On the other hand, Airbnb offerings continue to expand in other parts of the world: over the same period, the number of active listings increased by 150% in Beijing, 135% in Nairobi and 71% in Bogota. It is therefore particularly important to investigate the dynamics and impact of the platform in developing markets.

By presenting maps of different European cities we wanted to provide a comprehensive picture of geographical variation in the supply and use of Airbnb accommodation. Across Europe, Airbnb's main accommodation offerings are full accommodations, with people who have more than one listing on the platform providing more than half of the platform's accommodation offerings. Airbnb is present in most major European cities and on most islands. In addition, according to Inside Airbnb (2021) half of Airbnb's total offer is located in Europe. Even so, the platform's popularity is higher in Western, Northern and Mediterranean Europe than in the rest of Europe. The majority of people booking accommodation through Airbnb are travelling for tourism and not for business.

The total number of Airbnb listings in cities is influenced by their tourism and economic development. The size of the tourist flow is a factor influencing the number of accommodation listings by "professional" hosts (experienced hosts who have more than one listing on Airbnb).

The location of offers within each city, especially professionally oriented ones, depends on the distribution of its main tourist attractions. There are also differences in the frequency of use of these services and the prices of listings between and within cities. There are no systematic differences in the rating of rooms and accommodation, but, for example, in Paris rooms are rated higher, while in Prague they are rated lower.

Single rooms are relatively more frequently used than entire homes in Northern and Western Europe, while in Central and Eastern Europe (e.g. the Czech Republic) entire homes are most often used. This shows differences between parts of Europe, with Iceland, for example, being more likely to use accommodation whose hosts have more accommodation listed on the platform.

In general, accommodation in large metropolitan areas is more frequently rented than in other areas. In global terms, they are also slightly cheaper than accommodation outside the big cities. In Spain, listings on the coast are more numerous than offerings in big cities, but the relationship is the opposite when looking at the number of reviews per year.

Accommodation capacity is lower in Central and Eastern European cities than in Western, Northern and Mediterranean Europe. These differences seem to result from the average living space in homes, but also from the different perception of living

comfort. The difference in capacity between rooms and homes further exaggerates the dominance of the latter in accommodation capacity.

The structure of listing types differs from location to location. In general, the share of rooms is somewhat higher in large metropolitan areas and smaller towns than in the main tourist leisure destinations (coastal or ski areas). This can be explained by differences in the availability of accommodation and by the difference in the needs of short-stay urban tourists and long-stay coastal or mountain tourists respectively.

4. Conclusion

The research results illustrate that there are certain similarities between the destinations analysed when it comes to Airbnb spatial behaviour. Airbnb accommodations are concentrated in central areas in most of the cities studied, competing strongly with nearby hotels. At the same time, we can say that Airbnb listings focus on attractions and sights in the area close to the accommodation. Therefore, in terms of location, Airbnb wins over hotels because it has more listings available in that area. Given the large number of Airbnb accommodation units, which are basically nothing more than locals' homes, it can be said that the number of long-term rentals by locals, especially in tourist areas, has decreased significantly. Another consequence of the concentration of Airbnb accommodation is that life in these areas has become more expensive and more crowded for locals. Airbnb accommodation has caused inconvenience not only to hotel owners but also to locals. In addition, Airbnb is having a strong impact on the rental market by increasing rental prices.

References
1. Adamiak, C., Szyda, B., Dubownik, A.,& García Álvarez, D. (2019). Airbnb offer in Spain – Spatial analysis of the pattern and determinants of its distribution. *ISPRS International Journal of Geo-Information*, *8*(3), pp. 155.
2. Bandara, J. S. (2019). Tourism in post-conflict development: Making use of new opportunities in Sri Lanka. In D. Weerakoon & S. Jayasuriya (Eds.), *Managing domestic and international challenges and opportunities in post-conflict development,* pp. 173–194. Singapore: Springer.
3. Belotti, S. (2019). 'Sharing' tourism as an opportunity for territorial regeneration: The case of Iseo Lake, Italy. *Hungarian Geographical Bulletin*, 68(1), pp. 79–91.
4. Domènech, A., Larpin, B., Schegg, R., & Scaglione, M. (2019). Disentangling the geographical logic of Airbnb in Switzerland. *Erdkunde*, 73(4), pp. 245–258. doi: 10.3112/erdkunde.2019.04.01.

5. Ginindza, S., & Tichaawa, T. M. (2019). The impact of sharing accommodation on the hotel occupancy rate in the kingdom of Swaziland. *Current Issues in Tourism*, 22(16), pp. 1975–1991.

6. Guttentag, D. (2019). Progress on Airbnb: A literature review. *Journal of Hospitality and Tourism Technology*. Advance online publication. doi: 10.1108/JHTT-08-2018-0075.

6. Hajibaba, H., & Dolnicar, S. (2018). Airbnb and its competitors. In S. Dolnicar (Ed.), *Peer-to-peer accommodation networks: Pushing the boundaries,* pp. 63–76. Oxford: Goodfellow Publishers.

7. Inside Airbnb (2023). Disponibil la: http://insideairbnb.com/get-the-data.html (Accessed at: 28 March 2023).

8. Kagermeier, A., Amzil, L., & Elfasskoui, B. (2017). *Touristification of the Moroccan oasis landscape: New dimensions, new approaches, new stakeholders and new consumer formulas*. Disponibil la: http://wordpress.kagermeier.de/wp-content/uploads/2017/09/Kagermeier-Amzil-Elfasskaoui_Colloque-Ait-Hamza_Tourisme-Oasis-Maroc_26-09-2017.pdf (Accessed at: 28 March 2023).

9. Ključnikov, A., Krajčík, V., & Vincúrová, Z. (2018). International sharing economy: The case of Airbnb in the Czech Republic. *Economics and Sociology*, *11*(2), pp. 126–137.

10. Matsui, S. (2019). Is law killing the development of new technologies?: Uber and Airbnb in Japan. *Boston University Journal of Science & Technology Law*, *25*, pp. 100–144

11. Nieuwland, S., & van Melik, R. (2018). Regulating Airbnb: How cities deal with perceived negative externalities of short-term rentals. *Current Issues in Tourism*, pp. 1–15. doi: 10.1080/13683500.2018.1504899.

12. Nikkei Asian Review (2018). *Airbnb removes 80% of Japan home-share listings*. Disponibil la: https://asia.nikkei.com/Business/Airbnb-removes-80-of-Japan-home-share-listings (Accessed at: 14 March 2023).

13. Oskam, J. A. (2019). *The future of Airbnb and the 'sharing economy': The collaborative consumption of our cities*. Bristol: Channel View.

14. Roelofsen, M. (2018). Exploring the socio-spatial inequalities of Airbnb in Sofia, Bulgaria. *Erdkunde*, *72*(4), pp. 313–327.

15. Ruiz-Correa, S., Ruiz-Correa, I., Olmos-Carrillo, C., Rendón-Huerta, F. A., Ramirez-Salazar, B., Son Nguyen, L., & Gatica-Perez, D. (2018). Mi Casa es su Casa? Examining Airbnb hospitality exchange practices in a developing economy. *ACM Transactions on Social Computing*, *2*(1), pp. 1–24.

16. Strommen-Bakhtiar, A., & Vinogradov, E. (2019). The adoption and development of Airbnb services in Norway. *International Journal of Innovation in the Digital Economy*, 10(2), pp. 28–39.

17. Xiang, Y., & Dolnicar, S. (2017). Networks in China. In S. Dolnicar (Ed.), *Peer-to-Peer accommodation networks,* pp. 148–159. Oxford: Goodfellow Publishers.

OCCUPATIONAL STRUCTURE OF POVERTY

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Abstract: *The main objective of this paper is to present the relationship between poverty, unemployment and education reaching the occupational structure of poverty. In order to understand the interdependence of the three concepts, I have started with the review of the definitions given by renowned specialists in the study of poverty. Afterwards, I have analysed the causes, determinants and types of poverty. Subsequently, I have brought in the foreground the statistical data regarding the Romanian population in the period between 2018 and 2021, which reflect the extent to which the citizens of our country are exposed and especially the children of the scourge of poverty. I wanted to highlight the interdependence between the level of education, unemployment and poverty rate. I have reviewed the ongoing plans and strategies undertaken by the Romanian Government having as objective the eradication of poverty by ensuring a quality education, which is considered an effective instrument for breaking the vicious circle of poverty.*

Introduction

Poverty is a complex concept that is researched by different branches of science: economics, sociology, psychology and political science. The final purpose of the poverty analysis is a common one, that is to identify and put into practice methods of reducing, but at least eradicating it, which is not an easy endeavour.

If explaining and measuring poverty is a matter of sociology, finding solutions to reduce this scourge is largely a matter of economics and politics.

Poverty and its causes. Preventing poverty through adequate education

In order to find solutions that lead to combating poverty, it is necessary to define it, to know the proportions of the phenomenon, the causes and the factors that generate it. The concept itself is associated with various expressions, most of them having negative connotations: material deprivation, exclusion, malnutrition, famine, subsistence and marginalization.

The definitions used internationally have a common characteristic, which is that they associate individual needs or living standards with an indicator of well-being.

According to the UN, poverty is the condition characterized by a severe deprivation of basic human needs such as access to food, drinking water, sanitary facilities, health, housing, education, as well as information. Ragnar Nurske states that underdeveloped countries cannot eradicate the scourge of poverty: "A country is poor, because it is poor." or "Because it is poor, the country does not develop; because it does not develop, it remains poor." (Nurske, 1953, p.898)

In 1965, Bauer formulated the theory of the "vicious circle of poverty" consisting of determining the relationship between the following: low incomes that lead to a reduced consumption, which makes saving impossible or very low, which leads to low investment due to which the productivity is also reduced, which generates low income and so on.
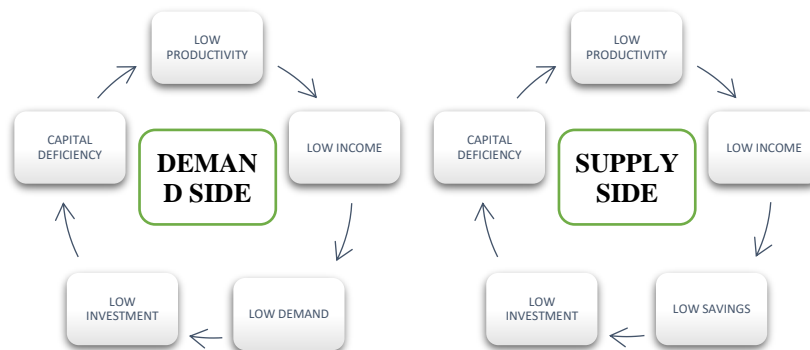
Figure.1 The vicious circle of poverty (Bauer, 1965)
Source: created by the author

Bauer considers that breaking the vicious circle, presented in Figure 1, is possible by changing the attitude and the competences. This change can be achieved by increasing investment in education, investment that can be recovered with the increase of the active life period of the population (due to life expectancy and increased health) and by increasing competitiveness on the labour market (due to the

increase in the quality of the offered products and services). A better education, as a result of additional investment in the education system, means better human capital, capable of making individual decisions (expansion of individual choices) facilitating the access to a better labour market with higher incomes. These would represent economic prosperity for people and their families, especially for their children who would also benefit from higher education that would lead to an improvement in the human capital of the region (Bauer, 1965).

If initially poverty was defined only from an economic point of view, today, it is associated with a person's ability to lead a decent living, but also with that person's freedom, dignity, respect or self-dignity (Ștefănescu, 2016). In the Dictionary of Sociology (1998), poverty is described as a phenomenon that affects families and social groups who do not have the material resources necessary to buy goods and services considered to ensure the standard of living agreed at a certain time (Zamfir, Vlăsceanu et. al.,1998). Other specialists consider that each society determines its own standards against which poverty is measured. And if there is at least one person who does not reach that minimum level of economic well-being, it can be said that there is poverty in that society (Dinculescu, Chirca et. al., 1999).

The National Institute of Statistics (INS) (2021) describes poverty as the situation of people whose incomes are so low that it is impossible for them to achieve a standard of living considered to be acceptable in the society in which they live, who face multiple disadvantages related to unemployment, low incomes, poor housing conditions, inadequate health care and barriers for accessing education, culture, sports and leisure (INS, 2020).

Types of poverty

The complexity of the poverty phenomenon is also highlighted by the different forms and degrees in which it manifests itself.

Depending on the satisfaction degree of human needs in the published literature (Zamfir and Vlăsceanu, 1998), absolute poverty is distinguished, meaning the situation in which an individual does not have the incomes necessary to ensure the minimum subsistence and lacks the necessary means to maintain human life (Zidărescu, 2007). Relative poverty is described as the situation in which the person's standard of living is above the minimum subsistence, but does not succeed in meeting the social and cultural needs that allow the individual to participate in community life. These authors also make the distinction between individual poverty, which affects a part of the population, and collective or generalized poverty, which is specific for underdeveloped societies. The Dictionary of Sociology (1998, p.518)

distinguishes primary and secondary poverty according to the income earned by a person.

Paraschiv (2008) studied consumption poverty and the multidimensional one, concluding that consumption poverty, meaning the one estimated according to household consumption, is deeper in rural areas than in urban areas. Paraschiv considers that the consumption deficit is only "the entry ticket through the door of poverty" (Paraschiv, 2008, p.428). If consumption poverty can be remedied by economic growth, the multidimensional one is deeper, chronic and its eradication needs a much more complex plan. In published literature, it appears under the name of "the new poverty" (Stănculescu and Berevoescu, coord., 2004, Péter, 2015) and studies show that it is especially generalized in the urban area.

Determinants of poverty

Studies on the causes of poverty have taken a particular scale. Bartle (2013) identified five factors that contribute to the maintenance of poverty: ignorance, disease, apathy, dishonesty and dependence, and in order to overcome these factors, he considers that education has a critical role, that is, the transmission of those pieces of information and knowledge within the group that contribute to the eradication of the poverty of a community.

Zamfir (1998) identified multiple factors as determinants of poverty such as: the level of economic development, the situation of the labour market, the degree of employment and unemployment, the characteristics of jobs, the type of control over material resources, inflation, the way of distribution and redistribution of income, demographic, social and cultural characteristics and lifestyle.

In a study about poverty conducted for the Bucharest area, Paraschiv (2008) demonstrated that employment and education are the determinants of poverty, regardless of the residence environment or the type of poverty. As such, any anti-poverty strategy must focus on developing and diversifying the labour market, facilitating access to the labour market for disadvantaged groups and improving the situation of the education system.

The studies conducted by Ștefănescu and Pop (2016), performed among the rural population of the Bihor – Hajdú-Bihar cross-border area (Hungary), have shown that the lack of jobs, poor education and poor infrastructure are the main factors that generate the perpetuation of poverty.

Starting from the results of the above-mentioned researches (Ștefănescu, Paraschiv) I would like to analyse the occupational structure of poverty in the post-pandemic period.

Occupational structure of poverty

The latest Eurostat data available on the incidence of risk of poverty for the population of the EU Member States highlight the seriousness of this problem among the Romanian population. Research shows that Romania has had every year, since 2017, over 30% of the population at risk of poverty or social exclusion and, in the last five years, it occupies the leading places in this ranking competing for the first and second place with Bulgaria. The data presented in Table 1 shows how considerable is the difference between the data recorded in Romania (32.8-35.7%) compared to the EU average (21.1-22.4%), and if we relate to the countries with the lowest percentages of people at risk of poverty or social exclusion, such as the Czech Republic (11%), Slovenia (13%) and Finland (14%) the situation is even more worrying.

Table 1: Rate of people at risk of poverty or social exclusion in Romania and EU

Year	People at risk of poverty or social exclusion in Romania	People at risk of poverty or social exclusion in EU	Romania's position
2017	35.7 %	22.4%	II.
2018	32.8 %	21.7 %	I.
2019	32.5 %	21.1 %	I.
2020	35.6 %	21.9 %	I.
2021	34.4 %	21.7 %	I.

Source: Created on the basis of Eurostat data

Expert studies (Townsend 1979, Zamfir 2001, Ștefănescu 2016, INS, Eurostat) show that employed people are more protected from the danger of poverty than those unemployed or inactive, but also within these two categories a variety of situations can be noted.

The scourge of poverty haunts Romania although studies conducted by the European Commission (2022) show that the labour market has had good results despite the COVID-19 pandemic. The employment rate has increased from 65.2% in 2020 to 67.1% in 2021.

Table 2: Poverty rate by people's occupational status in Romania

OCCUPATIONAL STATUS (persons aged 18 years and over)	YEAR	TOTAL	MALE	FEMALE
Employed person	2017	17.4	20.1	13.6
	2018	15.3	17.9	11.4
	2019	15.7	18.5	11.6

	2020	14.9	18.1	10.4
	2017	25.9	21.8	28.3
Inactive person	2018	28.4	24.5	30.6
	2019	29.3	23.9	32.4
	2020	29.6	24.5	32.6
	2017	51.6	56.2	38.0
- unemployed	2018	48.0	51.2	37.0
	2019	48.9	51.3	42.8
	2020	62.9	66.2	52.3
	2017	16.1	12.4	18.8
- pensioner	2018	19.5	15.6	22.3
	2019	21.5	16.9	24.8
	2020	22.3	18.0	25.4
	2017	40.8	40.0	41.1
- other inactive person	2018	41.9	43.4	41.5
	2019	41.9	40.9	42.2
	2020	41.3	38.1	42.2

Source: Created on the basis of Eurostat data *http://ec.europa.eu/eurostat/en/web/income-and-living-conditions/data/database*

According to the studies performed by the European Commission, the estimated poverty rate for employed persons was 9.2% in 2020, above this value being 8 states including Romania (15.7%). Unemployed persons in the European Union are below the poverty threshold at a rate of 48.5% and, as seen from Table 2, in Romania, unemployed persons are the most affected because 62.9% of them are below the poverty line. A person's occupational status plays a crucial role in terms of their standard of living.

As presented above, education is a decisive factor in eradicating poverty and the level of schooling is an important factor influencing a person's probability of becoming unemployed and at risk of poverty or social exclusion. Statistics based on the data from 2021, which were collected by the Ministry of Labour and Social Solidarity and presented in Figure 2, show that the persons who have at most secondary education are more likely to become unemployed. There are considerably fewer unemployed persons among people who have completed at least 12 classes. Those with higher education or post-secondary education are a minority among the unemployed persons. From this data, it can be deduced that at risk of poverty rate and social exclusion decreases as people have a higher educational level.
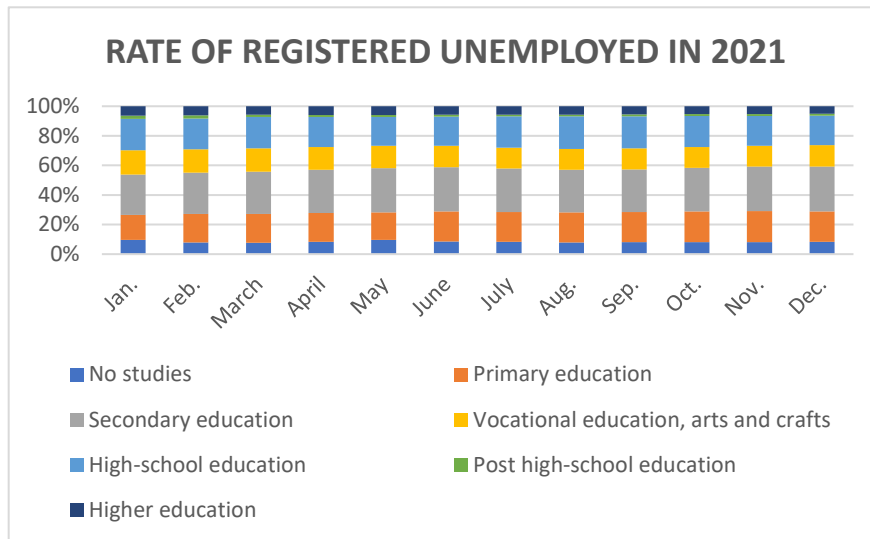
Figure 2: Rate of registered unemployed in 2021
Source: Created on the basis of the data from the Ministry of Labour and Social Solidarity Available at:
http://www.mmuncii.ro/j33/index.php/ro/transparenta/34-statistica/statistici/6237-statistici-somaj-20212

The weight of children at risk of poverty or social exclusion is even higher than that of the total population of the country at the same risk. According to Eurostat, 41.5% of Romanian children, compared to the 24.4% of the EU population, were also at risk of poverty and social exclusion in 2021. The high percentage of young people at risk of poverty or social exclusion is correlated with the high rate of early school drop-out.

Table 3: Rate of children at risk of poverty or social exclusion in Romania and EU

Year	Children at risk of poverty or social exclusion in Romania	Children at risk of poverty or social exclusion in EU	Romania's position
2017	41.7 %	24.5%	I.
2018	38.1 %	23.4 %	I.
2019	35.8 %	22.5 %	I.
2020	41.5 %	24.2 %	I.
2021	41.5%	24.4 %	I.

Source: Created on the basis of Eurostat data

School and vocational orientation of young people and the adaptation of the educational offer to the requirements of the labour market
The first step for completing the compulsory education and acquiring basic competences is the participation in early childhood education because it greatly

influences the subsequent school direction, decreasing the probability of dropping out of school and the likelihood of being below the poverty threshold when leaving the system (Van Belle, 2016)

In Romania, there are still children who have never gone to school, and the percentage of young people without a relevant education for the labour market is extremely high. According to data from OECD's Programme for International Student Assessment (PISA) in 2018 approximately 4 out of 10 students, aged 15 years old, who are in the school system, are functional illiterates. From this point of view, the poor results recorded at schoolchildren in Romania are approximately twice as high as the European average: 22.5% for reading, 22.9% for mathematics and 22.3% for science (Education and Training Monitor, 2021)

The COVID 19 pandemic has aggravated this situation by closing schools and switching to distance learning over a long period of time.

Combating poverty and social exclusion requires an approach to the people's needs throughout their lifetime, but also to correlate them with the requirements of the labour market.

In order to achieve this objective, it is necessary to ensure several activities of school and vocational orientation of young people, but also to adapt the educational offer to the requirements of the labour market. In accordance with the Ministerial Order 6552/2011 School and vocational orientation is the set of norms, methods and techniques that ensure quality education and training, in accordance with the physical, physiological and psychological specificities of the individual. The purpose of the school and vocational orientation aims at capitalizing on the aptitude potential, interests, aspirations, knowledge, abilities, skills and other psycho-behavioural specificities, as well as advising on the way of adequate social and professional integration in order to ensure equal opportunities (Ministerial Order 6552/2011, art. 29, 30).

In this respect, the Romanian Government formulated and put into practice multiple strategic actions at national level in order to reduce poverty and promote social inclusion by improving the occupational structure and increasing the quality of education. The specific objectives and directions for action on the eradication of poverty are set out in the following documents:

- National Strategy for Employment 2021-2027;
- National Strategy for Social Inclusion and Poverty Reduction for the Period 2021-2027;
- National Strategy for Sustainable Development of Romania 2030;
- "Educated Romania" Project.

Conclusions

Both the studies of the specialists and the data published by national and international institutions have proven that Romania needs to do a great deal more in the fight against poverty and social exclusion. In order to achieve the targets and objectives set by the European Commission and domestic institutions, the phrase 'think globally and act locally' must be followed.

In order to reduce or eradicate poverty, in the long-term, it is not enough to simply transfer funds to the victims of the scourge of poverty, because these will only improve the symptoms in the short-term but will not solve the problem at hand. An anti-poverty strategy must be developed by means of a close collaboration of all the decision-makers in charge of ensuring the economic development, well-being and health of the population.

The objectives of the strategies developed at national level will be reached only if the local needs of the vulnerable groups are identified and the taken actions will be correlated with them. The actions must be aimed at developing and diversifying the labour market, to help the access to the labour market of disadvantaged groups, as well as to ensure a quality education (Paraschiv, 2008) because, besides the infrastructure, the lack of jobs, education is among the main determinants responsible for the reproduction of poverty (Ștefănescu, 2016), education being one of the instruments through which one can break the vicious circle of poverty (Bauer, 1965).

Bibliography

Bartle, P. (2013) *The Big Five-Factors of poverty* [online] Available: https://cec.vcn.bc.ca/cmp/modules/emp-pov.htm [25.10.2022]Bauer, P.T (1965) *The Vicious Circle of Poverty: Reality or Myth?* [online] Available: https://www.panarchy.org/bauer/viciouscircle.htm [15.10.2022]

Dinculescu V., Chirca C. (et.al) (1999) *Sărăcia în România. Dimensiuni şi factori*, în: Sărăcia în România. 1995-1998, București.

Nurkse,R. (1953) *Problems of Capital Formation in Underdeveloped Countries.* By.Capital in The Economic Journal, Volume 63, Issue 252, 1 December 1953, pp. 897-899 Available: https://academic.oup.com/ej/article-abstract/63/252/897/5258742 [02.09.2022]

Paraschiv, E. (2008) *Problema sărăciei în comunităţile urbane şi rurale din România* in Revista Română de Sociologie, serie nouă, anul XIX, nr. 3–4, p. 423–451, București. Péter, L. 2015, *Új szegények túlélési stratégiái* in Erdélyi társadalom [PDF] 1.(1), p.25-50, Available: https://www.erdelyitarsadalom.ro/files/et01/et-bbu-01-02.pdf [02.09.2022]

Stănculescu, M.S., Berevoescu, I. (et.al) (2004) *Sărac lipit, caut altă viaţă! Fenomenul sărăciei extreme şi al zonelor sărace în România 2001*, Ed. Nemira, București

Ștefănescu, F, Pop A.P. (2016) *The process of poverty reproduction in rural areas. The case of youth from the Romanian-Hungarian cross border region*, in Journal of Social Research

and Policy [online] 7 (1) Available: https://www.researchgate.net/publication/317935948_The_process_of_poverty_reproduction_in_rural_areas_The_case_of_youth_from_the_Romanian-Hungarian_cross_border_region [12.10.2022]

Townsend, P. (1979) *Poverty in the United Kingdom*, *A Surveu Household Resources and Standards of Living*, University of California press, Berkeley and Los Angeles [online] Available: https://books.google.ro/books?hl =hu&lr=&id=weGYy_-czvsC&oi =fnd&pg=PA17&dq=townsend+1979&ots= 4HCwEAFv3g&sig=x2zGbl6wO9S43zCk-k7jyB8N2mk&redir_esc =y#v=onepage&q=townsend%201979&f=false [20.10.2022]

Van Belle. (2016) *Early Child hood Education and Care (ECEC) and its long-term effects on educational and labour market outcomes, Research Report*. RAND Europe,. [online], Available: https://www.rand.org/pubs/research_reports/RR1667.html, [05.11.2022]

Zamfir, C. (2001) *Situația sărăciei în România dimensiuni, surse, grupuri de risc iunie 2001* in România socială – Revistă de cultură și anală social, 2001/2, [PDF] p. Available: https://adatbank.ro/html/cim_pdf385.pdf [20.10.2022]

Zamfir, C., Vlăsceanu, L. (1998) *Dicționarul de sociologie urmat de indicatori demografici, economici, sociali și sociologici,* Ed. Babel, Bucuresti

Zidărescu, M. (2007), *Sărăcia în comunitățile de romi din România*, Ed. Lumen, Iași

European Comission (EC) (2022) *2022 Country Report – Romania* [PDF] Available: https://ec.europa.eu/info/sites/default/files/2022-european-semester-country-report-romania_en.pdf [20.10.2022]

EC, (2021) *Education and Training Monitor 2021* [online] Available: https://op.europa.eu/webpub/eac/education-and-training-monitor-2021/ro/romania.html [20.10.2022]

Ministerul Muncii și Solidarității Sociale (MMSS)/ Ministry of Labor and Social Justice (MLSJ) „*Strategia Națională pentru Ocuparea Forței de Muncă 2021-2027,* [PDF], Available: http://mmuncii.ro/j33/images/Documente/MMPS/SNOFM_2021-2027.pdf [20.10.2022]

MMSS / MLSJ, *Strategia Națională pentru incluziunea socială și reducerea sărăciei pentru perioada 2021-2027/ National strategy on social inclusion and poverty reduction* 2021-2027, [PDF], Available: https://mmuncii.ro/j33/images/Documente/MMPS/Transparenta_decizionala/20201222-proiecthg-sn incluziune-sociala21-27_anexa1.pdf [20.10.2022]

MMSS / MLSJ, *Statistici șomaj* 2021 Available: http://www.mmuncii.ro/j33/ index.php/ro/transparenta/34-statistica/statistici/6237-statistici-somaj-20212 [20.10.2022]

Ministerul Muncii Familiei, Protecției Sociale și Persoanelor Vârstnice / Ministry of Labor Family, Social Protection and Elderly, *Strategia națională privind incluziunea socială și reducerea sărăciei 2015-2020 România/ National Strategy on Social Inclusion and Poverty Reduction 2015-2020 Romania*, [PDF], Available: http://www.mmuncio/j33/images/Documente/Familie/2016/StrategyVol1RO_web.pdf [20.10.2022]

***Strategia Națională pentru Dezvoltarea Durabilă a României 2030, [PDF], (2018) Ed. Paidea, București Available: https://www.edu.ro/sites/default/files/Strategia-nationala-pentru-dezvoltarea-durabila-a-Rom%C3%A2niei-2030.pdf [06.11.2022]

*** *Dimensiuni ale incluziunii sociale în România în anul 2020* [PDF], Editat de Instituția Națională de Statistică, București Available: https://insse.ro/cms/sites/default/files/field /publicatii/dimensiuni_ale_incluziunii_sociale_in_romania_2020.pdf [20.10.2022]

*** Monitorul oficial al României, 12 aprilie 2022, Anul 190 (XXXIV) — Nr. 359, pp. 2-112

*** Ordin Administrație Publică 6552/2011, Monitorul Oficial Nr.45 din 19 ianuarie 2012, [PDF] Available: https://www.edu.ro/sites/default/files/_fi%C8%99iere/Invatamant-Preuniversitar/2016/special/ORDIN%206552_2011evaluarea_asist_psihoeducationala_ori entare_scolara_profesionala_CES.pdf [06.11.2022]

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Employment_annual_ statistics

https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220915-1

https://ec.europa.eu/eurostat/databrowser/view/ILC_PEPS01N__custom_3337149/bookma rk/table?lang=en&bookmarkId=0460cf2c-6a09-4773-be7a-db0513f4db8b

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:People_at_ risk_of_poverty_or_social_exclusion

https://www.pesnetwork.eu/ro/2019/09/05/lmb3-educational-attainment/

https://www.consilium.europa.eu/ro/policies/education-economic-growth/

https://ro.economy-pedia.com/11040501-poverty#menu-3

https://www.un.org/development/desa/socialperspectiveondevelopment/issues/poverty-eradication.html

https://insse.ro/cms/en/content/romanian-labour-force-employment-and-unemployment-2021

ASPECTS REGARDING LABOR PRODUCTIVITY IN THE ROAD TRANSPORT OF GOODS

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Abstract
Freight transport is certainly the most important branch of transport and certainly one of the most important branches of the economy in general. There is a close link between transport and the evolution and development if mankind, which is why the field of transport has always been of great interest and has undergone a multitude of changes throughout the history. The development of the freight transport sector varies from country to country, with significant differences from one country to another. Freight transport in Romania has not been an area of great interest, and this lack of interest is reflected in the lack of investment needed to operate properly and to make this area attractive and economically efficient.

Key Words: transport, productivity, evolution, indicators.

JLE Classification: A1

1. History and General Facts About Freight Transport

There is no clear date for the emergence of freight transport, as this type of activity has always been present in human history, since people have always had the need to transport goods and not only from one destination to another.

Throughout its history, transport has undergone dramatic changes, from transport using horse-drawn wagons to the present day where there are a multitude of means by which goods can be transported, including trucks, trains, ships and planes.

An important point in the development of freight transport was when the first railways appeared. With the advent of the railways, people were able to transport goods much faster and in much larger quantities, enabling many countries to develop economically.

The Industrial Revolution played a very important role in the development of transport because it created a huge demand for goods to be transported, which pushed transport companies to adapt and evolve in order to keep up with the growing demand.

1.1.   Definition of Freight Transport

There are many definitions that experts in the field recommend to describe the activity of transport, the most appropriate from my point of view being the following: transport is an activity whereby goods are moved or moved from one location to another location. This definition focuses only on the activity itself and does not take into account the complexity and the many branches that this sector of activity encompasses (Woxenius,1998, p.63).

Transport can be seen in terms of two different dimensions, namely: transport as an economic dimension in that it makes it possible to move goods to geographic areas much further away from where they are obtained, thus helping the economic development of companies or geographical areas that benefit from this activity.

The second dimension through which transport can be viewed is the social dimension in that it provides jobs, according to EUROSTAT in 2020 the total number of people employed in transport was 10.8 million, accounting for 5% of Europe's working population population (www.ec.europa.eu/eurostat, 2021).

1.2.   The Importance of Freight Transport

Freight transport as an activity is considered to be one of the most closely linked to the economic development of civilization, people have always needed to consume certain goods, goods that were not readily available in their surroundings and had to be brought in from other geographical areas.

Transport is of great historical importance because it was able to make available certain raw materials or materials that favored the construction and expansion of certain cities that without the possibility of bringing the necessary materials would have had a much slower evolution.

Transport is also historically important through its involvement in the agricultural and food sectors. The high perishability of some foods made it impossible to transport them by conventional means of transport, thus limiting traders' ability to sell them since they had to limit themselves to customers and markets in their immediate vicinity (Garrison and Levinson, p.375).

Thus transport by modern and much more advanced means such as ferries and trucks opened up new horizons and opportunities for both traders and those who wanted to buy those foodstuffs.

2.   Transport Efficiency Indicators and Work Productivity

Freight transport is an activity of great interest to people's daily lives because all the goods and services a society consumes need to be transported. Transportation cost is

an influential factor in the final cost of a good or service, which is why experts in the field are always looking for ways to make freight transportation more efficient (www.bts.gov, 2016).

To this end, a number of efficiency indicators should be taken into account, namely:
- Transport price;
- Transport productivity;
- Logistics cost;
- Transport capacity.

The transport price is the cost paid by customers for the transport service. This indicator is very volatile and is influenced by a number of factors such as:
- Mode of transport;
- Specifics of the transport and goods transported;
- Weight and volume of the consignment;
- Distance, place of loading and place of unloading.

Mode of transport, which refers to the method and vehicle of transport used. This may include rail transport and the use of trains, water transport and the use of ships, land transport and the use of trucks and air transport and the use of aircraft.

The specifics of the transport and the goods transported, depending on the goods transported the transport must be adapted, which means using certain vehicles or means of transport or using certain specific routes and ways to carry out the transport. In this respect, freight transport is divided as follows:

- Full load transport, this specific type of transport is defined by the fact that a customer hires and uses a complete transport vehicle and not just part of the transport capacity.
- Less-than-full-load transport, this transport specification is defined by the fact that a customer rents only part of the transport fleet. This type of transport serves more than one customer at the same time as opposed to the above-mentioned specific.
- Oversized load transport, this specific is defined by the fact that it carries so-called „special load" which exceeds the transport capacity and dimensions of a means of transport. This type of transport is also more costly than other types of transport because it includes additional costs such as police escorts.
- Intermodal rail transport. This type of transport is carried out by rail and is considered the most economical in terms of transport cost and the most environmentally friendly due to the very large capacity of goods that can be carried in a single transport.

▪ Ocean transport, this type of transport is used for the intercontinental transport of goods and is a very cost-effective mode of transport as it has a high transport capacity.

▪ Air transport is the fastest way of transporting goods, but it is also the most inefficient in terms of cost and pollution because only small quantities can be transported.

The weight and volume of the transport is an influential factor in calculating the cost of transport because this factor determines the transport route, the means of transport and the transport specification used. There is a clear cost difference between these paths, means and specifics and therefore the weight and volume of the transport can influence the transport cost radically.

Distance and place of loading and unloading is the last factor influencing transport cost. Because every means of transport has a cost in terms of fuel used, the longer the distance of transport, the higher the cost of transport. Depending on the place of loading and the place of unloading, the cost of transport varies considerably because if the place of unloading is in a different country from the place of loading, there are new costs for road charges from the country of unloading or transit countries to the place of unloading.

Transport productivity defines the output per unit of transport. The simplest method and the one most often used by transport companies is the relation tones per kilometer travelled by a transport vehicle. Another method of calculating transport productivity is the ratio of daily haulage per driver or transport vehicle. It is very important to take transport productivity into account to find out the correct and profitable cost per transport unit.

The logistics cost includes all costs from the production and storage of goods to transport to the final consumer. Logistics costs can be divided into two categories: fixed costs and variable costs.

Fixed costs refer to costs that do not differ from one unit of time to another and are not influenced by the volume of goods. Fixed costs are rent costs or tax costs. Variable costs are those that differ from one time unit to another and are influenced by the volume of goods.

Logistics costs are as follows: procurement logistics costs, production logistics costs, sales logistics costs and logistics relocation costs.

Transport capacity utilization is defined as the process of using each transport vehicle to its full potential. Utilization at full capacity of each transport vehicle translates into increased efficiency and high profitability for the transport company. In addition to the full potential use of the transport vehicle, the distance travelled by the vehicle to its destination, the weight and volume of the goods, and the value of the goods

transported may also be included in the calculation of transport capacity use (www.ops.fhwa.dot.gov/FREIGHT, 2022).

2.1. Work Productivity and Factors Influencing the Work Productivity

Productivity can be defined as the value and level at which certain factors are used in the economy. The relationship by which labor productivity is determined is that between goods and services and factors of production.

Given the very high competition in the road haulage sector, for companies operating in this field understanding, knowing in detail and mastering the factors that influence labor productivity is very important because they have to offer a very competitive price, but at the same time they have to make a profit that makes this activity profitable (Pascual, et al, 2021, p.45).

Transport specialists have always looked for new methods of analysis to make work productivity more efficient, attaching great importance to discovering and analyzing the factors that influence labor productivity in road freight transport.

The most important factors influencing labor productivity in freight transport are (Pascual, et al, 2021, p.45):

- Pre-planning the route from loading to unloading point;
- Time of delivery of goods;
- Distance travelled from place of loading to place of unloading;
- Number of breaks taken by the driver;
- Age of the means of transport;
- Number of deliveries made per transport;
- Collection and timely delivery of goods transported.

3. Evolution of Freight Transport in Romania From 2006 to 2019

Romania in the period before joining the European Union can be classified as a country with a poor transport infrastructure in terms of quality but also in terms of distance coverage at national level. With the entry into the European Union, which came with a number of advantages but also opportunities in terms of development of the transport industry, Romania was faced with the fact that it could not take advantage of all these opportunities without a concrete investment plan to redress this situation.

While Romania had a poorly developed transport infrastructure, which made the transport sector unattractive for transport companies because it was not profitable, generating high costs in terms of fuel consumption and delivery times of goods and even generating costs for the repair of means of transport due to the poor

infrastructure which progressively deteriorated the means of transport, Romania did not experience any significant growth after joining the European Union.

Figure 1: Amount of Freight Transported by Road in Romania From 2006-2019

Source: (www.statista.com/statistics/romania-tonne-kilometers, 2022)

An analysis of the first years after accession to the European Union shows a very slight increase in 2007 compared to 2006, with 57.278 million tonnes per kilometre transported in 2006 compared to 59.517 million tonnes per kilometre in 2007. In 2008 and due to the World Economic Crisis there was a slight decrease of about 3 million tonnes compared to 2007.

Since 2009, the year in which the effects of the crisis have a major effect on Romania, there has been a dramatic drop in the number of tonnes transported compared to the previous year. In 2009 only 34.256 million tonnes were transported, a difference of about 22 million tonnes. Subsequent years show an increasing year-on-year increase, but still below the level of 2006-2008.

The years 2010-2012 show no significant growth, with an average increase of only 4 million tonnes. It is only in 2013 that we can really speak of a significant increase compared to 2009, which was the point of maximum decrease in transport volume.

The year 2012 recorded an increase of 9 million tonnes compared to 2009, the years 2014-2015 were marked by a period of small but stable growth, with a volume of 35.135 million tonnes per kilometre in 2014 and a total volume of 39.022 million tonnes transported in 2015. A really significant increase for Romania can be observed again in 2016 where we have again a significant jump compared to the previous year, the difference in 2016 compared to 2015 being about 9 million tonnes. The years 2017-2018 also see a significant gradual increase, with 2017 registering 54,704 tonnes transported and 2018 also seeing a jump of around 10 million tonnes

compared to 2016. The year 2019, being the last year taken into consideration, is really the first year after the entry into the European Union and after the World Economic Crisis, so after more than a decade, in which we can talk about an increase in transport volumes. The volume of shipments in 2019 was 61.041 million tonnes.

After analysing these statistics, it is clear that Romania has failed to prepare its transport infrastructure to take advantage of its entry into the European Union and has failed to attract international transport companies to grow this sector. One can also see the devastating effect of the World Economic Crisis and the fact that Romania took a long period of time to recover and get back to a normal level of transport volume.

The conclusion we can draw from this analysis is that Romania could have benefited a lot from an economic point of view after joining the European Union and could have passed much more easily and quickly through the crisis period if the government had put more emphasis on the importance of transport infrastructure and if it had come up with concrete investment plans in this field.
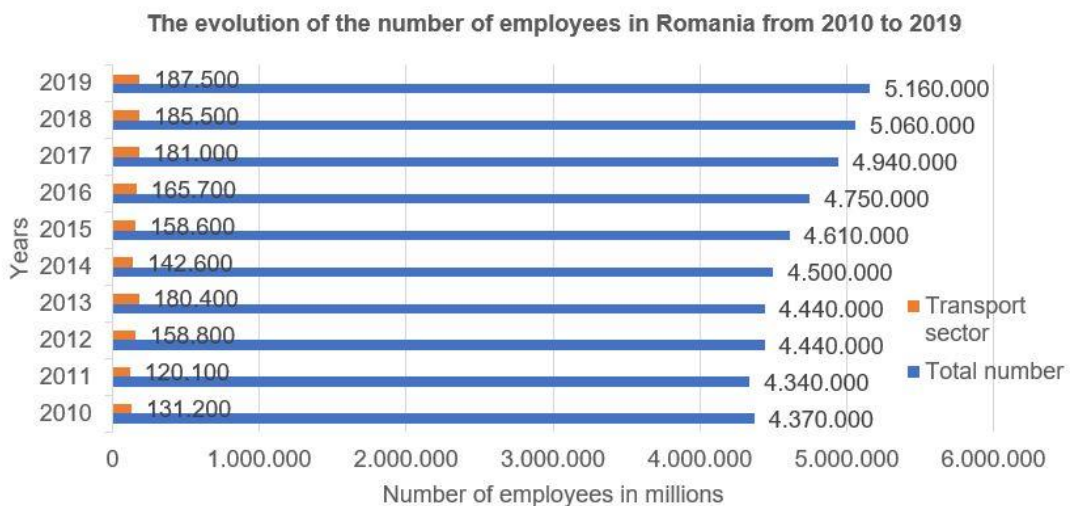
Figure 2: The Evolution of the Number of Employees in Romania From 2010 to 2019
Source:(www.zf.ro//suplimente/cati-oameni-lucreaza-in-romania-19757218 and
www.keyfins.com/transportul-local-de-marfuri)

4. Evolution of the Number of Employees in Romania From 2010 to 2019

In 2010, a total of 4.37 million employees were active on the Romanian labor market in all fields of activity, of which a total of 131.2 thousand employees were active in the transport sector, representing 3.02% of the total active labor force in Romania.

The year 2011 compared to 2010 shows a decrease of approximately 10,000 in the number of employees, this decrease is also associated with a decrease in the total number of employees in Romania, the total number in 2011 being 300,000 thousand less than in 2010.

The years 2012 and 2013 were marked by a considerable increase compared to 2011, with an increase of 38,000 thousand employees and 60,300 thousand employees in 2012 and 2013 respectively.

Analyzing the period 2014-2016, a fluctuation in the road haulage labor market can be observed. The year 2014 recorded a decrease in the number of employees to a total of 142,600 thousand employees, followed by a considerable increase in 2015 and 2016 but without exceeding the value recorded in 2013.

 It was only in 2017 that the labor market in Romania reached a constant and higher level than in 2013, with 181,000 thousand employees out of a total of 5.06 million employees. The upward trend continues in the last two years under review, with 185,500 thousand employees in 2018 and a total of 187,500 thousand employees in 2019 out of a countrywide total of 5.16 million employees.

Throughout the period under analysis, a constant trend can be observed, albeit with slight fluctuations in the period 2012-2015, with the average number of employees in the road haulage sector standing at approximately 150,000-160,000 thousand employees. Moreover, the analysis also shows that the number of employees in the transport sector represented an average of about 3.50% of the total active workforce in Romania.

Conclusions

Transport was and still is an activity of great importance to mankind, and mainly the transport of goods. Without this sector of activity mankind would not have developed at the accelerated rate at which it is now developing and many geographic areas of the globe, which are naturally devoid of resources and goods, could not have developed without freight transport.

Given the importance of this sector of activity, road haulage companies attach particular importance to studying the factors that influence labour productivity, the most important of which are: the delivery time of the goods, the number of deliveries made per consignment, the age of the means of transport and the distance travelled from the place of loading to the place of unloading. Only by studying these factors and finding solutions or improving them can a company be competitive in the market and maximise its profits. A company that does not take into account the impotence

of factors that influence labour productivity is a company that will never be competitive and will make much lower profits.

In Romania, a lack of governmental interest in road freight transport has been observed over time. This lack of interest can be deduced from the lack of an efficient infrastructure and the lack of investment in this field. Romania did not take advantage of the benefits of joining the European Union either, remaining in, or even decreasing during the World Economic Crisis the level and volume of freight transport.

In Romania, the level of personnel working in the freight transport sector, following the analysis, shows a constant level, without considerable increases or decreases over the period under analysis, with the freight transport sector having an average of approximately 3.5% of the total active workforce at national level.

References

Garrison, W., and Levinson, D., (2006), *The transportation experience*, Oxford University press, p. 375;

https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210923-2 , *Almost 29 transport workers per 1000 people in the EU*, Eurostat, viewed 25.10.2022;

http://ops.fhwa.dot.gov/FREIGHT/freight_analysis/faf/index.htm , *Freight analysis Framework,* Bureau of Transportation Statistics, viewed 26.10.2022;

https://www.bts.gov/archive/publications/transportation_economics_trends_and_measurement_concepts/chapter_5/index , *Transport Productivity, chapter 5,* Bureau of Transportation Statistics, viewed 26.10.2022;

https://www.statista.com/statistics/435459/romania-tonne-kilometres-of-freight-transported-by-road/, *Amounts of freight transported by road in Romania from 2006 to 2019*, Statista, viewed 20.10.2022;

Pascal, F., Partida, D., Flores, J., Cano, P., (2021) ,,*Factors influencing transport productivity of a freight transport company*", Advances and Applications in Statistics;

Woxenius, J., (1998), *Development of small-scale intermodal freight transportation in a system context*, Chalmers University of technology, Goteborg;

THE INFLUENCE OF VARIOUS COLLABORATIVE ASPECTS OF LARGE AND MEDIUM COMPANIES ON REGIONAL PERFORMANCE

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Abstract: *In this paper we investigate a modern topic in the regional economics literature, namely the concept of microeconomic competitiveness. Particularly, we investigate the influence of the collaborative activities of the large and medium firms, as a regional prerequisite for cluster formation and development, and the relationship with various regional level performances. For years already, scholars debated within the economics literature if the regional clusters drive the regional performance. Therefore, we contribute to this stream of research through investigating if the specific conditions in the regional context, in our case the collaborative aspects of the companies operating in the region, influence the regional performance. Through a statistical analysis of the data provided by 40 best performers medium and large companies, operating in three regions for economic development in Romania, we found significant associations between the proposed variables. Specifically, we found that the regions in which the companies reported higher scores for proactivity regarding collaboration identification and formation, higher commitment for collaboration participation, respectively higher scores for their collaborative competences and abilities are the regions which also reported higher regional level performances. The results from our study are valuable for the regional economics literature since underline the fact that in order to build regional competitiveness, respectively to accelerate the economic growth and development, the existent companies operating in the regions also need to take some specific actions. The companies and firms play an important and active role in the regional economic development. In contrast to a 'orthodox' top-down approach for economic development, the paper brings support to the stream of research on regional economics which militates for collaboration between the public and private sector, and for regional development through microeconomics competitiveness building, local and regional.*

Keywords: *regional economics; spatial economics; regional performance; medium and large companies; strategic alliances; microeconomics competitiveness*

JEL Classification: *O18; R11*

1. Introduction

Regional economics or regional science as it is broadly known in the economics literature (Barna, 2008; Chen & Schintler, 2023; Milne, 1993; Moller, 2019) continue to be an important subject for research and for the economic practice (Antonescu, 2019; Kitson, Martin & Tyler, 2004). Regional scholars developed over the years many theories and models for the explanation, prediction and understanding of regional development phenomena in order to influence the economic practice and the public policies (Antonescu, 2019; Bogdanski, 2012; Chen & Schintler, 2023). In general, regional economics – which is the concept we prefer for this paper – and the constituent subdisciplines tried to provide answer to the specific question: why some regions develop better, faster and obtain a better quality of life for its citizens in comparison with other regions? (Kitson, Martin & Tyler, 2004). Most of the existent theories and models also include a performance component such as an output for their proposed causality. For example, the gross domestic product growth per capita (Alesina *et al*., 1996; Jula et al., 1999), or the regions' resistance to shocks (Sutton & Arku, 2022).

What we argue in this paper is that many of the existent theories in the regional economics literature discuss the economic development phenomena from a top-down approach – model broadly known in the economics literature such as the regional model or the top-down economic development model (Bogdanski, 2012; Riddle, 2014). A topic less debated in the regional economics literature – for example as resulted from the bibliometric analysis conducted recently by Chen & Schintler, 2023 – is that of microeconomic competitiveness to which we refer in this paper.

Microeconomics competitiveness reflects the regional economic growth and development through a bottom-up approach/model considering or placing in the main attention for economic development the needs of the companies and firms in the region to compete and obtain success in the national and/or international markets (Porter, 1990, 2003). According to Porter *et al.* the regional or local competitiveness is determined by the particular conditions in each specific location, conditions which are important for both productivity and innovation (Furman, Porter & Stern, 2002; Porter, 1998; Porter & Stern, 2001). According to this view, the microeconomic competitiveness is determined by three conditions in the regional context, conditions which explain why some regions obtain better performances in comparison with

other regions: (1) a more favourable local business environment, (2) the state of cluster development, and (3) advanced strategies and operations of companies operating in the region (Delgado *et al*., 2012; Porter, 1990). From these three determinants of regional/local competitiveness in this paper we focus our attention on clusters (such as a specific form of collaboration). In fact, we investigate a very narrow aspect of cluster identification, formation, and development, namely that of the collaboration aspect of clusters. Any cluster depends for its success on a successful collaboration (Lehene, 2020).

There is a continuous debate in the regional economics literature if the regional clusters developed within regions or cross-regions influence the regional performance (Delgado, Porter & Stern, 2011; Delgado, Porter & Stern, 2014; Porter, 2003) or firm performance (Grahof, 2020). In this paper, we imagine a cluster such as a specific form of collaboration just like any other strategic alliances, strategic partnerships, or strategic networks, but in the clusters' case given a spatial consideration. Thus, a regional cluster reflects a form of collaboration developed between various firms and even public organizations, organizations pertaining to different industries, both vertically and horizontally connected, collaboration developed in specific product or service segments in specific regions. A cluster might include suppliers, manufacturers, distributors, complementors such as universities or financial institutions and even might involve the local authorities (Porter, 1998).

A prerequisite for regional cluster formation and development is the collaborative competences and the abilities the firms in one region possess, competences and abilities developed in their own company (Lehene, 2020). The main assumption is that the regions in which the companies possess more advanced competences and abilities for inter-organizational collaboration manifest a higher predisposition for cluster formation and development. In these regions, clusters can develop faster and more effectively since the regional companies possess already the necessarily competences and abilities for collaboration building and development. The same assumption might be true for proactivity in cluster formation and for commitment to cluster participation. In this line of thinking, the regions in which the companies are proactive regarding cluster identification and formation (e.g. companies might scan continuously the local environment for cluster formation and/or for participation opportunities) or they are more committed to participation in local clusters, are the regions in which the regional clusters might form faster and better. Thus, in this paper we try to investigate if the collaborative aspects mentioned above – proactivity, commitment, collaborative competences and abilities – also influence the various regional level performances. Therefore, we try to find answers to

questions such as: The regions in which the companies are more proactive regarding collaboration formation and development obtain better regional performances as well? What about the collaborative competences or the collaborative commitment of the companies in the region? Are these variables also associated with the superior regional performances? Do the regions in which the medium and large companies operating there are more proactive, committed or possess advanced collaborative competences obtain also better regional level performances? Are these variables associated?

2. Literature review

2.1. Theories of regional economic development
Regional economic development such as a scientific domain pertains to the regional science, regional economics (Barna, 2008; Chen & Schintler, 2023; Milne, 1993; Moller, 2019) or urban economics (Clipa, 2016; Mills, 1967; Romer, 1986). There is an increasing interest to study regional problems both in academia and in the economic practice (Chen & Schintler, 2023). Such as an independent discipline regional economics, formally established in 1954 by the American economist Walter Isard (Chen & Schintler, 2023) is preoccupied with studying economic problems such as the spatial localization of industries and firms (Krugman, 1991; Porter, 1998; Rastvortseva, 2022; Weber, 1929), assurance of economic equilibrium or political stability (Alesina *et al*., 1992), spatial economic growth and development (Cheshire & Duranton, 2005; Moeller, 2019), factor of production mobilization across spaces and the relationship with the governmental policies (Rickard, 2020), regional economic resilience (Martin & Sunley, 2014; Sutton & Arku, 2022), or regional competitiveness (Borozan, 2008; Kitson, Martin & Tyler, 2004; Pelinescu *et al*., 2015). And these are just few areas of inquiries which normally preoccupied the regional scholars during the field's evolution over time. A brief review of the existent subjects, topics and subdisciplines in the regional science is presented to readers by Chen & Schintler (2023) and of existent theories by Bogdanski (2012) and Moeller (2019).

From a historical point of view, the existent regional theories in the regional economics literature can be broadly classified in three categories (Antonescu, 2019): (1) classical regional development theories (e.g. Hotteling's 1929's or Weber's 1929's classical location theory); (2) neoclassical regional development theories (e.g. the demand driving theory/the Keynesian model of economic growth of Hartman & Seckler, 1967); and (3) modern or recent regional development theories (e.g the New Economic Geography of Krugman, 1991).

From other perspective, all the regional development theories proposed by regional scholar over the years can be classified in two categories: (1) exogenous theories of regional development and (2) endogenous theories of regional development (Barna, 2008; Bogdanski, 2012). From a historical perspective, first developed the exogenous theories (Bogdanski, 2012). The exogenous theories put at the center for their explanation of economic growth and development the factors which reside outside the region. The exogenous factors are factors which are not influenced by the region, are factors developed outside the region which are transferred in the region from other regions (Antonescu, 2019). Examples of exogeneous theories are the demand driving theory/the Keynesian model of economic growth (Hartman & Seckler, 1967), the theory of economic growth through exports (Myrdal, 1967), the theory of growth poles (Perroux, 1955) *apud* Antonescu (2019) or the theory of core and periphery developed by Krugman in (1991).

On the other hand**, t**he endogenous theories are more recent economic developed theories (Bogdanski, 2012). In contrast with the exogenous theories and models, in the endogenous theories researchers put at the center for their explanations and descriptions regarding the economic growth and development factors/determinants developed inside the region (Antonescu, 2019; Barna, 2008). Theories considered endogenous are the theory of economies of agglomerations (Clipa, 2016; Porter, 1998), the theory of economies of localization (Jula *et al*., 1999), the industrial districts theory (Marshall, 1920), **t**he theory of Teritorial Systems of Production (e.g. industrial park, scientific and technological park, strategic networks) [Tanțău, 2011)], or the more recent developed cluster theory (Porter, 1998).

Most of the theories presented above, as mentioned in a previous paragraph, are top-down models for regional development or regional models. Next, we are going to briefly review a modern model for regional development – a bottom-up regional development model – a model which puts at the center for its explanation, prediction and understanding of economic growth and development the needs of the companies and firms to be competitive in the national and/or international arena. Of course, is not the only one model existent in the economics literature which militates for a bottom-up regional development approach but for sure is a model supported by evidence and for this reason it is called also the data-driven regional development model (Porter, 2003).

2.2. Microeconomics competitiveness – a modern data driven model
A modern paradigm for regional development is that of competitiveness determined at the microeconomic level. As mentioned in the pages above, competitiveness historically has been studied and has been associated almost exclusively with a top-down paradigm (Bogdanski, 2012), or with the regional model particularly when

contrasted with the corporate model (Riddle, 2014). A modern approach with which we align our view of competitiveness and of regional economic growth and development is that of microeconomic competitiveness. First, we should mention that in this paper we refer to the concept of 'competitiveness' associated with that of productivity. For example, a location is more productive than other location if the output/value obtained per day of work overcomes the output/value obtained by the rival location in the same period of time (Porter, 1990).

According to this view, the competitiveness of a country or region is determined by three national/regional level factors: (1) *the endowments* the country or region had inherited from its past/from previous generations or simple from its geographical location in the world; (2) *the stability of the macroeconomic system and political institutions* (e.g a low level of inflation), aligned with *the social progress of the resident people in the region;* and (3) the *microeconomic competitiveness* determined by regional firms and companies which need to be competitive in the national and/or international competition. Narrowing down our discussion, the competitiveness at the third level – the microeconomic level – is determined by three dimensions/conditions existent in the specific location: (1) the quality of the regional/local business environment; (2) the state of the cluster development; (3) advanced firms' operations and strategies (Delgado *et al*., 2012; Porter, 1990).

In this paper, from the three microeconomic determinants of regional/locational performance we are going to put our attention to investigate some particular aspects regarding the cluster formation. One important aspect of cluster formation and development is the collaborative aspect/collaborative activities conducted by the firms in the specific location. As mentioned in the introduction section as well (1) the collaborative competences and abilities of the firms and companies operating in one region, (2) the proactivity regarding collaboration identification, and (3) the commitment to enter and stay in a relationship, all constitute a prerequisite for cluster formation and development in one region. Based on the assumptions above, we argue that these aspects are also associated with the regional performance enhancement, in the sense that the regions in which the companies are more proactive, committed and possess more advanced collaborative competences are also the regions characterized by higher regional level performances. Thus, we formulate the following hypotheses for statistical testing:

H1. The regions in which the companies operating in the region possess higher levels of collaborative competences, thus permit better cluster formation and development, are the regions obtaining better regional performances.

H2. The regions in which the companies operating in the region are more proactive regarding collaboration formation, thus permit better cluster formation in the region, are the regions obtaining better regional performances.

H3. The regions in which the companies operating in the region manifest higher levels of commitment for collaboration participation, thus permit better cluster formation in the region, are the regions obtaining better regional performances.

3. Research Methodology

3.1. Research strategy

For the purpose of this paper, for the independent variables we used some items from a questionnaire implemented in a previous project which we conducted at our institution but for other purpose. In survey-based empirical studies the answers provided by the respondents might be biased and influenced depending to the goal of the specific study (Bhattacherjee, 2012). The main advantage of the research strategy implemented in this paper is that it permitted us to analyse the answers provided by the respondents, no matter/independently the goal of the present research. Thus, in this study perhaps the answers analysed were less biased, providing us the opportunity to identify more objectively the proposed associations between variables. On the other hand, for the dependent variables the data are quite objective since we used data collected by the Romanian National Institute of Statistics (RNIS, 2018).

We collected the survey data in 2018. We administered the questionnaire through the email, between October 2017 – March 2018. We have contacted the best performers 785 medium and large companies operating in Romania, depending to their revenues, from which decided to participate 46 companies, leading to a participation rate of 5.85%. We used two sources in order to obtain the data regarding the best-performers companies operating in Romania: *Top 500 Business Magazine* (2016) and *Top 1000 Piața Financiară* (2017). The final sample contains the answers provided by 29 large companies and organizations (more than 250 employees) and by 17 medium-size firms (between 50 and 249 employees). We have included two companies less than 50 employees in the medium-size category (34, respectively 31 employees). 30 executives (e.g. President, CEO, General Manager) participated in the study. In addition to the executive suite, we have analysed the answers provided by 10 middle managers (e.g. marketing manager), 5 first-line managers/operations managers (e.g. team leader), and one marketing specialist.

3.2. Independent variables

The main goal in this study is to test some aspects of modern microeconomic competitiveness, particularly the collaborative aspects regarding the formation and development of local clusters and the relationship between these collaborative aspects and the regional and county performances. Thus, we considered the following independent variables: Regional Proactivity (proactive regions are considered the regions in which the existing firms are proactive), Regional Commitment (committed regions to cluster formation are considered the regions in which the investigated firms reported better scores for commitment), Regional Collaborative Competences (collaborative regions are considered the regions in which the studied companies reported higher scores for their collaborative competences). (Figure 1 and Table 1.)

We measured all the independent variables mentioned above using a 5-point Likert scale ranging from 1 to 5 with the following meaning "1 = Strongly Disagree and 5 = Strongly Agree" We kindly asked the managers to appreciate the degree the statement in the questionnaire fit the situation in their company, according to the scale mentioned above.

3.3. Dependent variables

In order to measure the dependent variables, we resorted to data collected by the Romanian National Institute for Statistics (RNIS). Thus, we considered the absolute values (the evolution of the variables) for the period 2010-2016 for the following variables: Region Median Salary (REGSALARY), Region Unemployment (REGUNEMPLOY), Region New Business Formation (REGNBF), Region R&D Personnel (REGRDPERS), Region Employees (REGEMPLOYEES), Region Revenues (REGREVENUES), Region Exports (REGEXPORTS). (Table 1.) The most recent publication/report issued by RNIS regarding the regional performances is the edition published in 2018. For all the variables considered in our study the most recent period reported in *Statistică Teritorială* is 2010-2016. For the goals of our study, we considered appropriate this period since the managers in our questionnaire also needed to evaluate the situation in their company, regarding their collaborative activities, during a five-year period, period which fit/overlaps with the data collected by RNIS.
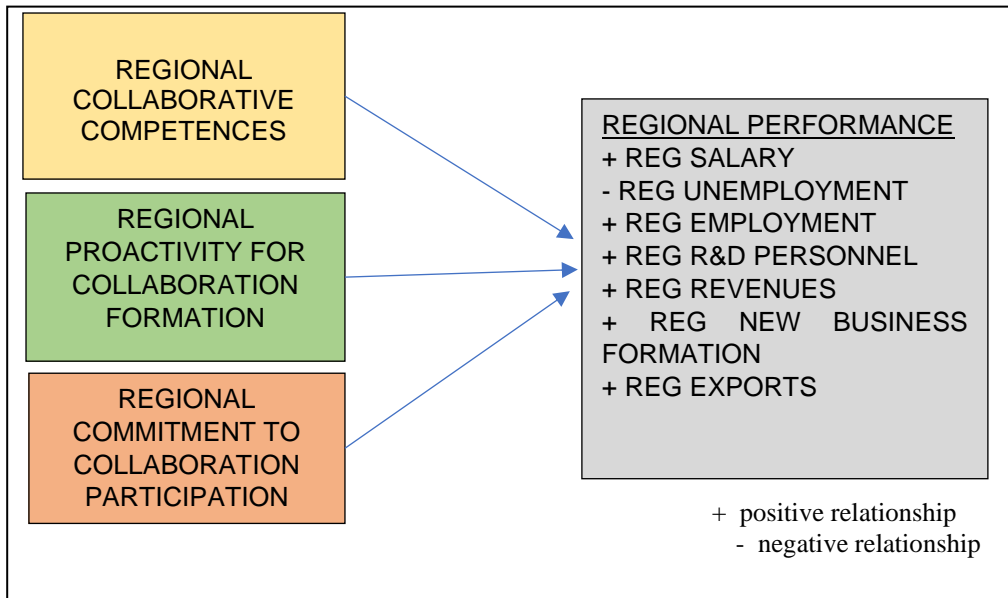
Figure 1: Theoretical model

Source: authors own elaboration

4. Data analysis

We start the data analysis section aiming to investigate the topic of our study at the county level. More specifically we aimed to investigate the impact of various collaborative aspects of the companies operating in the Romanian regions – county level – on regional performances such as median salary or unemployment. We conducted the correlation analysis, and we did not find significant associations for the variable we studied. (Table 2.)

Table 1: Variable measurement

Variable	Number of items	Measurement	Cronbach Alpha (standardized)	Definition
REGCOMPE (IV)	51	Likert scale 1→5	0.956 (0.961)	The degree the companies in the region possess collaborative competences for cluster development
REGPROA (IV)	6	Likert scale 1→5	0.858 (0.862)	The degree the companies in the region are proactive in

				cluster or collaboration formation
REGCOMMIT (IV)	5	Likert scale $1 \rightarrow 5$	0.795 (0.814)	The degree the companies in the region are committed to collaboration or cluster formation
REGSALARY (DV)	1	Absolute value	-	Region Median Salary (2010-2016) $\Delta REGSALARY = SALARY_{2016} - SALARY_{2010}$
REGUNEMPLOY 2010 (DV)	1	Absolute value	-	Region Unemployment 2010
REGUNEMPLOY 2016 (DV)	1	Absolute value	-	Region Unemployment 2016
REGRDPERS (DV)	1	Absolute value	-	Region R&D Personnel (2010-2016) $\Delta R\&DPERS = R\&D_{2016} - R\&D_{2010}$
REGEMPLOYEES (DV)	1	Absolute value	-	Region Employees (2010-2016) $\Delta EMPLOYEES = EMPLOYEES_{2016} - EMPLOYEES_{2010}$
REGREVENUES (DV)	1	Absolute value	-	Region Revenues (2010-2016) $\Delta REVENUES = REVENUES_{2016} - REVENUES_{2010}$
REGNBF (DV)	1	Absolute value	-	Region New Business Formation (2010-2016) $\Delta NBF = NBF_{2016} - NBF_{2010}$
REGEXPORTS (DV)	1	Absolute value	-	Region Exports (2010-2016) $\Delta EXPORTS = EXPORTS_{2016} - EXPORTS_{2010}$

Note. IV – Independent Variable, DV – Dependent Variable

Source: authors own elaboration

In the next stage, we grouped the firms in the corresponding regions for economic development, and we found significative associations between the same variables. For example, between Regional Proactivity for Collaboration Formation (REGPROA) and Regional Median Salary Evolution (REGSALARY) measured at the county level we have obtained r = 0.135, *p > .05*, denoting that there is no association between these variables. But when we investigated the same relationship at the regional level, we found a significative and positive effect of REGPROA on REGSALARY (r = 0.339, *p< .05*). We observed the same situation when we correlated the REGPROA with REGUNEMPLOY. First, we have observed a weak and no significative effect of REGPROA on REGUNEMPLOY r = - 0.136, *p > .05* measured at the county level. Then when we grouped the firms in the corresponding regions for economic development, we observed a negative and significative effect of REGPROA on REGUNEMPLOY 2016 (r = - 0.334, *p< .05*). Based on these observations, we concluded that yes there is a relationship between the collaborative aspects and the regional performances. For example, the regions in which the medium and large companies are more proactive regarding collaboration or cluster identification and formation display also lower levels of unemployment.

Table 2: Correlation Matrix

VARIABLE	REGCOMPE	REGPROA	REGCOMMIT	REGSALARY	REGUNEMPLOY 2016	REGUNEMPLOY 2010	REGRDPERS	REGEMPLOYEES	REGREVENUES	REGNBF	REGEXPORTS
REGCOMPE	1.00	0.628**	0.793**	0.261+	-0.287*	-0.257+	0.181	0.294*	0.231+	0.292*	0.106
REGPROA		1.00	0.685**	0.339*	-0.334*	-0.268*	0.272*	0.312*	0.329*	0.292*	0.245+
REGCOMMIT			1.00	0.329*	-0.337*	-0.329*	0.280*	0.328*	0.309*	0.314*	0.203
REGSALARY				1.00	-0.926**	-0.889**	1.000**	0.821*	0.999**	0.739**	0.848**
REGUNEMPLOY 2016					1.00	0.904**	-0.925**	-0.976*	-0.908**	-0.939**	-0.584**

REGUNEMPLOY2010						1.00	-0.839**	-0.871**	-0.842**	-0.831**	-0.570**
REGRDPERS							1.00	0.820**	0.999**	0.738**	0.849**
REGEMPLOYEES								1.00	0.794**	0.991**	0.393**
REGREVENUES									1.00	0.708**	0.871**
REGNBF										1.00	0.269*
REGEXPORTS											1.00

Notes. **Correlation is significant at the 0.01 level (1-tailed); *Correlation is significant at the 0.05 level (1-tailed); +Correlation is significant at the 0.1 level (1-tailed).

Source: authors own elaboration based on respondents' answers

For these considerations, since in our sample of 46 companies we have in most of the cases one, two or three companies participating from each county, we decided to group the companies in regions for economic development and continue studying the subject of our study at the regional level. (According to *Strategia Națională de Dezvoltare Durabilă 2014-2020* Romania is divided in eight regions for economic development: North-East, South-East, Muntenia South, Oltenia South-West, West, North-West, Center, Bucharest lfov.) Thus, we continued to conduct our analysis at the regional level grouping the companies in their corresponding regions for economic development. Since in our sample of 46 best performers medium and large companies we have only 1 company from the West Region, 2 companies from South-West Region and 3 companies from the North-East Region we have excluded from our analysis these regions. Thus, for our empirical analysis we further investigated the companies with operations in three regions: North-West Region (23 companies), Bucharest-Ilfov Region (10 companies), and Center Region (7 companies). In the Table 2 one can observe the results of our analysis.

Hypotheses interpretation

Regarding the first hypothesis (H1), investigating the relationship between the proactivity of the companies in each region and the regional performance, through conducting the correlational analysis we observed that the regions in which the companies operating there reported higher scores for the collaborative competences displayed a positive evolution of salaries, of employees, and of new business formation, for the period investigated. For all these dependent variables we found a positive, medium intensity and significant association between the collaborative competences of the firms operating in the region and the regional performances. There is also a significative, but negative association, between the collaborative competences and the evolution of the unemployment in the region. Those regions in which the companies reported higher scores for the collaborative competences are the regions displaying lower levels of unemployment for the period investigated. We observed also a positive and weak, but still significative association, between the collaborative competences and the evolution of the regional revenues' growth during the 2010-2016 period. Those regions in which the operating companies possess higher levels of proactivity are the regions which reported higher revenues (absolute value) during the period of investigation. On the other hand, it seems that the collaborative competences of the firms are not associated with the R&D personnel evolution and with the regions' exports growth.

For the second hypothesis (H2), investigating the relationship between the proactivity of the companies operating in each region and the regional performance, for the period we explored, we found that with one exception (regional exports), the regions in which the firms and companies reported higher levels of proactivity for collaboration or cluster formation are the regions also displaying higher salaries evolution, higher levels of R&D personnel evolution, higher levels of employees evolution, higher revenues evolution and higher scores for new business formation. For all these dependent variables we observed a positive, medium intensity and significative association between the proactivity of the firms in the region and the regional performances. Consistent with all the hypotheses in our paper we observed that the regions in which the companies are more proactive regarding collaboration formation are the regions also displaying lower levels of unemployment. On the other hand, like in the previous case, it seems that the proactivity of the firms is not associated with regional exports growth.

For the third hypothesis (H3), investigating the relationship between the commitment of the companies in the region and the relationship with the regional performance, the same story as for the second hypotheses. The regions in which the companies are more committed to collaborative relationships participation are the regions

displaying higher salaries evolution, lower levels of unemployment, higher levels of R&D personnel evolution, higher levels of employees and revenues evolution and higher scores for new business formation. There are medium intensity and significant associations between the companies' commitment and the regional performance. (Positive for all the dependent variables and negative for the unemployment - higher the commitment, lower the level of unemployment reported.) In addition, same as for the hypothesis above, there is no relationship between the commitment of the companies for collaboration or cluster participation and the regional performance.

In addition to the proposed hypotheses, we can also observe a highly and positive association between REGSALARY evolution and various other measures of regional performances, respectively a negative and very significative effect of REGSALARY on REGUNEMPLOY ($r = -0.926$, $p < .01$). This means, that there is a positive association between the growth of the salaries in the region and the new business formation in the region for example ($r = 0.739$, $p < .01$). At the same time, all the measures of regional performance are negatively associated with the regional unemployment change. This means that for example, higher the revenues in the region observed lower will be the unemployment level ($r = -0.908$, $p < .01$). At the same time, REGRDPERS, REGEMPLOYEES, REGREVENUES were also positively and strongly associated one with each other. Higher the score for the growth of the regional personnel employed in R&D activities, higher will be the growth of the regional revenues. Regional revenues were also strongly associated with the growth of the exports and the growth of the new business formation in the region. Higher the regional revenues growth observed, higher was the growth of the exports ($r = 871$, $p < .01$) and higher the new business formation observed ($r = 708$, $p < .01$).

For our proposed hypotheses, since we have obtained correlation scores very close to each other we have graphically examined these relationships. After the graphical analysis we have concluded that the scores are so close to each other since we have investigated companies only from three regions (Nort-West 23 companies, Bucharest Ilfov – 10 companies, Center – 7 companies), which represent the dependent variables. But, the scores obtained by the companies in these three regions for example for Regional Productivity (independent variable) are quite different. Regarding the relationship between Regional Proactivity and Region Revenues Growth (2010-2016) we have obtained $r = 0.329$, $p < .05$ denoting a significative relationship between regional proactivity and revenues growth. Thus, in this case, the companies (in fact, the group of companies) in the Bucharest-Ilfov Region (ΔREVENUES = 91.209 mil RON) are the companies which also reported higher scores for the independent variable which in this case is Regional Proactivity. On the

other side of the coin, the companies in the Nord-West Region (ΔREVENUES = 43.601 mil RON) are the companies which reported more modest Regional Proactivity scores. In fact, through the graphical analysis one can observe that the group of companies in each region cluster together (up or down on the axis) depending on their scores reported for region revenues evolution. Those companies operating in higher revenues scores regions clustering above on the chart but with variations between them since their proactivity scores are different. The correlation in this case might be interpreted as follows: for a positive coefficient, the regions in which the group of companies reported higher scores for proactivity are also the regions which obtained better regional performances, over the period of investigation.

5. Limits and opportunities for new research

The main limit in our study is the fact that the relationships between independent and dependent variables are medium intensity and for some variables we only found a weak intensity, but still significant association. Thus, further studies could investigate the same relationships considering more companies in each region and perhaps including all the development regions in Romania. At the same time, the fact that we have observed specific associations between the proposed variables in our study does not automatically mean that the independent variables proposed by us are the cause of the variation in the regional performances. The observed associations denote that there is a relationship between the collaborative aspects and the regional performances. The independent variables might be the cause – for example the companies' proactivity might drive the regional performance – but at the same time the regional superior performances might determine the companies to be more proactive as well. Thus, the causality – beyond association – should be investigated in further studies.

There are also some limits regarding the sample of companies participating in our study. We have analyzed the answers provided by 40 best performers medium and large companies operating in three regions for economic development in Romania. Perhaps, through investigating SME, for example, researchers might obtain different results. The same assumption might be true in the case of below average medium and large companies. At the same time, we have investigated the relationship between some collaborative aspects and the regional performances in Romania. Researchers in other parts of the world perhaps could obtain different results.

From a theory point of view, in this paper we have investigated the relationship between some collaborative aspects – given the theoretical assumption that the collaborative aspects represent an essential aspect for cluster formation and

development – and the regional performance. Other regional aspects in the regional context might influence the formation and development of clusters as well. For example, the public policies developed and implemented by the local authorities also might influence the formation and development of clusters. At the same time, further studies should investigate the presence of clusters and the relationship with the regional performance, particularly in Romania, where as far as we know the data regarding this topic is limited enough.

6. Conclusions

In the pages above we have discussed an important and recent topic of debate in the regional economics literature and practice, namely that of microeconomic competitiveness. In fact, we discussed a very specific and narrow topic in the microeconomics competitiveness domain. There are many theories and models developed over the years in the existent regional economics literature. Although the regional competitiveness and the relationship with the regional performance has also been debated in previous studies – both internationally and in Romania as well – as far as we know the contribution of the existent firms and companies operating in the region to the regional development is a topic which received less attention from the part of regional scholars. Thus, most of the existent studies examined the regional competitiveness from a macroeconomics perspective (regional model) and very few studies investigated the competitiveness topic from a bottom-up perspective, considering the needs of the regional companies to be competitive in the national and/or international arena.

Starting from our assumption that the collaborative activities of the firms operating in the region represent an important variable for cluster formation and development (the regions in which the companies possess more advanced capabilities and competences for inter-organizational collaboration display a more favorable predisposition for cluster formation and development), in this paper we investigated if there is a relationship between some specific collaborative aspects and the regional performance.

For all three proposed hypotheses, we found that the regions in which the best performers medium and large companies reported higher scores for collaboration formation and development (with one exception exports growth) are the regions which also reported higher levels of salaries growth, employment growth, revenues growth, new business formation growth, R&D personnel growth (exception for the collaborative competences). At the same time, the collaborative aspects investigated by us are also associated but negatively with the lower levels of unemployment. The regions in which the best performers medium and large companies reported higher

scores for the collaborative aspects are the regions which also experienced lower levels of unemployment. On the other hand, the collaborative aspects proposed by us are not associated with exports growth in the considered period. From other perspective, we also observed strong associations between all the regional performances variables in our study. This means that the regions displaying higher salary growth, for example, are also the regions characterized by higher revenues growth, employment growth, R&D personnel growth, new business formation growth and lower levels of unemployment.

Our findings are valuable for the regional economics literature since underline the fact that for cluster formation and development, which constitutes an important aspect in the modern regional economic development theory (Porter, 2003), an important aspect is the consideration of the collaborative activities of the firms and companies operating in the region. The local and/or regional clusters are in the center of attention for modern regional development in order to accelerate and support the regional economic growth and development (Porter, 2003). Thus, according to our data the companies in the regions need to be proactive in cluster formation, need to be committed for the participation in clusters and very important need to work to develop their competences and abilities for inter-organizational collaboration. Otherwise, the development of regional clusters might be hampered even if the local authorities make all the possible to support the development of regional clusters in order to support higher levels of economic growth. Consistent with the main theories reviewed in the pages above, the regional competitiveness development is a process top-down but also bottom-up. It is a partnership between the local authorities and the business sector. Thus, the companies in the specific regions also need to take specific actions to be more proactive in cluster identification and formation, committed to the participation in clusters initiatives and develop their competences and abilities for inter-organizational collaboration. As we have seen in our study, the regions in which the companies are more proactive regarding cluster formation, committed to participation in clusters and reported higher scores for the collaborative competences are the regions which are also characterized by higher regional performances.

References
1. Alesina, A., Ozler, S., Roubini, N. & Swagel, P. (1996) Political instability and economic growth, *Journal of Economic Growth* 1(2): 189-211.
2. Antonescu, D. (2019) *Dezvoltarea regională. Teorie și practică*, Iași: Lumen.
3. Barna, R.C. (2008) *Economie Regională*, Cluj-Napoca: Editura Fundației pentru Studii Europene.

4. Bhattacherjee, A. (2012) *Social Science Research: Principles, Methods, and Practices,* Florida: Textbooks Collection.

5. Bogdanski, M. (2012) Modern Theories of Regional Development – a Review of Some Concepts, *Oeconomia Copernicana*, 2, 25-41.

6. Borozan, D. (2008) Regional competitiveness: some conceptual issues and policy implications, *Interdisciplinary Management Research*, IV: 50-63.

7. Business Magazin (2016, October 24) Acestea sunt cele mai mari companii din România. Pe ce loc se află prima companie românească. *Business Magazin*. Retrieved from https://www.businessmagazin.ro/actualitate/acestea-sunt-cele-mai-mari-companiidin-romaniape-ce-loc-se-afla-prima-companie-romaneasca-15849928.

8. Cheshire, P. & Duranton, G. (2005), *Recent Developments in Urban and Regional Economics*, MA: USA Edward Elgar Publishing.

9. Chen, Z. & Schintler, L. (2023) Rediscovering regional science: Positioning the field's evolving location in science and society, *Journal of Regional Science*, 1-26.

10. Clipa, R.I. (2016) *Economiile de aglomerare și competitivitatea regională*, Iași: Editura "Universității Alexandru Ioan Cuza".

11. Delgado, M., Porter, M. & Stern, S. (2011). Clusters, Convergence, and Economic Performance. *National Bureau of Economic Research*, 1-49.

12. Delgado, M., Ketels, C., Porter, M. & Stern, S. (2012). The Determinants of National Competitiveness. *NBER Working Paper*, 18249.

13. Delgado, M., Porter, M. & Stern, S. (2014) Defining Clusters of Related Industries. *National Bureau of Economic Research*, 1-46.

14. Furman, J.L., Porter, M.E. & Stern, S. (2002) The Determinants of National Innovative Capacity. *Research Policy*, 31: 899-933.

15. Grashof, N. (2020) Firm-specific cluster effects: A meta-analysis, *Papers in Regional Science*, 99: 1237–1260.

16. Hartman, L.M. & Seckler, D. (1967) Towards the application of the dynamic theory to regions, *Journal of Regional Science*, 7(2).

17. Kitson, M., Martin, R. & Tyler, P. (2004) Regional competitiveness: an elusive yet key concept? *Regional Studies*, 38(9), 991-999.

18. Krugman, P. (1991) Increasing returns and economic geography, J*ournal of Political Economy,* 99(3): 483-499.

19. Institutul Național de Statistică (2018) Repere economice și sociale regionale: *Statistică teritorială*. Retrieved from: https://insse.ro/cms/files/Publicatii_2018/84.Repere_economice_si_sociale_Statistica_terit oriala/Repere_economice_si_sociale_regionale_statistica_teritoriala.pdf.

20. Jula, D., Ailenei, D., Jula, N. & Gârbovean, A. (1999) *Economia Dezvoltării*, București: Editura Viitorul Românesc.

21. Lehene, C. (2020) *Strategii de colaborare între companii. Contribuții privind creșterea performanțelor relaționate cu productivitatea și inovarea*, Cluj-Napoca: Presa Universitară Clujeană. http://www.editura.ubbcluj.ro/www/ro/ebooks/domains.php?id=14.

22. Marshall, A. (1920) *Principles of Economics*. London: Mcmillan.

23. Martin, R. & Sunley, P. (2014) On the notion of regional economic resilience: Conceptualization and explanation, *Journal of Economic Geography*, 15(1): 1–42.

24. Ministerul Dezvoltării Regionale și Administrației Publice (2013, July) *Strategia Națională pentru Dezvoltare Regională 2014-2020.* Retrieved from: https://inforegio.ro/images/Documente_de_programare/Strategia_Nationala_Dezvoltare_Regionala_-_iulie_2013.pdf.

25. Milne, W. (1993) The Interaction between Regional Science and Economics: An Economist's View, *The Review of Regional Studies*, 65-72.

26. Mills, E. S. (1967), An aggregative model of resource allocation in a metropolitan area. *The American Economic Review*, 57(2), 197–210.

27. Moller, J. (2019) Theories in Regional Economics in the Light of Local Development, in Futo, P. (2019) *Contemporary drivers of local development*, 23-39.

28. Myrdal, G. (1967), *Economic theory and underdeveloped regions*, Duckworth.

29. Pelinescu, E., Iordan, M., Chilian, M. N & Simionescu, M. (2015) *Competitivitate: competitivitate regională în România*, București: Editura Universitară.

30. Perroux, F. (1955) La notion de pole de croissance, *Economie appliquee*, 1-2.

31. Piața Financiară (2017, February 8) Top 1000 companii după cifra de afaceri pe 2015. *Piața Financiară*. Retrieved from http://www.piatafinanciara.ro/top-1000-companii-dupa-cifra-de afaceri-pe-2015/.

32. Porter, M.E (1990) *The Competitive Advantage of Nations*. Harvard Business Review, 71-91.

33. Porter, M.E. (1998) Clusters and Competition: New Agendas for Companies, Governments, and Institutions, *on Competition*, pp 3-54, Boston, MA: Harvard Business School Press.

34. Porter. M.E & Stern, S. (2001) Innovation: Location Matters. *MIT Sloan Management Review,* 42(4): 28-36.

35. Porter, M.E. (2003) The Economic Performance of Regions. *Regional Studies*, 37(6&7): 549-578.

36. Rastvortseva, S. N. (2022) An Overview of Investigations Concerning Agglomerations in Regional Economy. *Ekonomika regiona [Economy of regions],* 18(2), 324-337.

37. Riddle, P. (2014) Location and Company Competitive Advantage: The View from the Business, *Regional Studies,* 1-17.

38. Romer, P. M. (1986) Increasing returns and long-run growth, *Journal of Political Economy*, 94(5), 1002–1037.

39. Rickard, S. (2020) Economic Geography, Politics, and Policy, *Annual Review of Political Science,* 23:187–202.

40. Sutton, J. & Arku,G. (2022) Regional economic resilience: towards a system approach, *Regional Studies, Regional Science*, 9:1, 497-512,

41. Tanțău. A. (coord.) (2011) *Ghid de bună practică pentru clustere și rețele de firme*, București: Print Group.

42. Weber, A. (1929) in C. Friedrich (Ed. & Trans.), *Theory of the location of industries*. University of Chicago Press.

THE SECRETS OF UNICORN COMPANIES: AN EMPIRICAL INVESTIGATION

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Abstract: *Starting a new business is a challenging task, and many factors can affect the success or failure of the venture. One such factor is the field of activity in which the business operates. Some industries are more competitive than others, and some have more significant barriers to entry. This article aims to explore the influence of the field of activity on the survival and growth of new businesses. The startup ecosystem has been on the rise in recent years, with the emergence of several unicorns, or startups valued at over $1 billion. This has led to increased interest in entrepreneurship and the potential for significant financial returns. However, the reality is that most startups do not become unicorns, and many do not survive beyond a few years. The field of activity in which a startup operates can significantly influence its survival and growth prospects. Several studies have explored the influence of the field of activity on the survival and growth of new businesses. These studies have found that factors such as competition, regulatory compliance, access to financing, and availability of talent can significantly influence a startup's chances of survival and growth. For example, industries with high levels of competition and technological intensity have been found to have lower rates of new firm survival and growth (Carrie, et al., 2002). This study investigates a possible correlation between several statistical dimensions of unicorn start-up companies in the world. For this purpose, we will use descriptive as well as inferential statistical methods such as presenting the main parameters of the numerical variables, some graphical representations; we will also employ a nonparametric correlation analysis. We consider that there is a possible correlation between the date the companies were set up, their field of activity, country of origin and their valuation respectively. Our study confirmed four research hypotheses, as follows: there is a correlation between the date the unicorn start-up companies were set up and their valuation, their valuation and their field of activity, the field of activity is in statistical association with the companies country of origin and the field of activity is influenced by the date the companies were set up. We will conclude by discussing the implications of these findings for entrepreneurs, policymakers, and investors, and provide recommendations for improving the survival and growth prospects of new businesses.*

Keywords: *start-ups, unicorns, survival rate,* business success factors

JEL Classification: *M13; M21*;

1. Literature review

The emergence of unicorns - start-ups that have achieved a valuation of at least $1 billion - has captured the attention of entrepreneurs, investors, and policymakers alike. While much attention has been paid to the characteristics that distinguish unicorns from other start-ups, less attention has been paid to the role that the field of activity plays in unicorn success.

Several studies have explored the influence of the field of activity on the survival and growth of new businesses. Carree, Thurik, and Wennekers (2002) found that the level of competition and the degree of technological intensity of an industry significantly influenced the survival and growth of new firms. They found that industries with high levels of competition and technological intensity had lower rates of new firm survival and growth. Similarly, the study by Herrington, Kew, and Kew (2017) found that barriers to entry, such as access to financing and regulatory compliance, significantly influenced the survival and growth of new businesses in African countries.

Moreover, the availability of resources, such as financing and talent, can also be influenced by the field of activity. A study by Landström and Harirchi (2018) found that venture capitalists tended to invest more in technology-based startups than in other industries. This preference can make it easier for technology startups to access funding, which can be critical for survival and growth. Additionally, a study by Ondruska and Guzman (2019) found that the availability of talent, specifically skilled workers, and managerial talent, was a critical factor in the survival and growth of new businesses.

Another study, by Gompers, Kovvali, and Mukunda (Gompers, et al., 2018), found that startups in the software and internet industries were more likely to become unicorns compared to startups in other industries. This study also found that startups that had previously received investment from a top-tier venture capital firm were more likely to become unicorns.

Similarly, a study by Song and Lee (Song & Lee, 2018) found that startups in the healthcare industry had a higher likelihood of becoming unicorns compared to startups in other industries. The study also found that startups in the healthcare industry tended to have higher initial valuations, which could indicate a more favourable market for these startups.

The field of activity can significantly impact a start-up's chances of success and the emergence of unicorns. Each industry has its own set of challenges and obstacles that start-ups must overcome to succeed. For example, start-ups in the biotech industry face significant regulatory hurdles and require extensive research and development to bring products to market. Similarly, start-ups in the e-commerce industry must navigate complex supply chains and manage inventory effectively. These challenges can significantly impact a start-up's chances of survival and success (Song & Lee, 2018).

The competitive landscape within each industry can also impact unicorn survival chances. Start-ups in industries with high barriers to entry, such as biotech and fintech, may face fewer competitors, but those competitors may be well-funded and well-established. On the other hand, industries with lower barriers to entry, such as e-commerce, may have more competitors, but those competitors may be less established and easier to compete against. The competitive landscape can significantly impact a unicorn's ability to survive and thrive (Gompers, et al., 2018). Customer behaviour within each industry can also influence unicorn survival chances. Start-ups in industries with fickle or hard-to-please customers, such as the fashion industry, may struggle to build brand loyalty and customer retention. Conversely, start-ups in industries with loyal and engaged customers, such as the fitness industry, may have an easier time building brand loyalty and retaining customers.

Finally, economic conditions within each industry can impact unicorn survival chances. Start-ups in industries that are particularly sensitive to economic fluctuations, such as luxury goods or travel, may struggle during times of economic downturns or uncertainty. Conversely, start-ups in industries that are less sensitive to economic conditions, such as healthcare or education, may have an easier time weathering economic downturns (Landström & Harirchi, 2018).

A report by the European Commission found that certain fields of activity are more conducive to unicorn success than others. This recent institutional report by the European Commission found that the software and e-commerce industries are the most common fields of activity for unicorns (European Commission JRC Technical Report, 2022). These industries are characterized by relatively low barriers to entry, high growth potential, and the ability to scale quickly. By contrast, industries such as biotech and energy require significant investment in research and development, are subject to strict regulatory oversight, and have longer product development cycles, making it more challenging for start-ups to achieve unicorn status. The report also found that unicorns in certain fields of activity tend to achieve higher valuations than unicorns in other fields. For example, unicorns in the software and e-commerce

industries tend to achieve higher valuations than unicorns in the fintech or healthcare industries. This may be due to the fact that the software and e-commerce industries have larger markets and greater scalability than other industries. The report's findings highlight the importance of considering the field of activity when evaluating start-up opportunities. Entrepreneurs and investors should take into account the unique challenges and opportunities presented by different fields of activity and develop strategies to overcome those challenges and capitalize on those opportunities. The report's findings also have important implications for policymakers. Policymakers should consider the field of activity when developing policies to support start-up growth and innovation. For example, policymakers may need to provide more targeted support to start-ups in industries with higher barriers to entry, such as biotech and energy, to help them overcome those barriers and achieve success. Similarly, policymakers may need to develop policies that encourage the growth of industries with high growth potential, such as software and e-commerce, to create an environment that is conducive to unicorn success.

Several studies have supported the findings of the report "In search of EU unicorns - What do we know about them?" regarding the influence of the field of activity on start-up success and the emergence of unicorns. For instance, a study by Bellavitis and Filatotchev (Bellavitis & Filatotchev, 2019) found that the software and internet industries were the most prevalent fields of activity for unicorns, followed by the healthcare industry. The study further noted that industries with high R&D intensity, such as biotech and energy, had lower rates of unicorn creation due to the longer product development cycles and regulatory barriers associated with these industries. In a more recent study, Kipping and Clarke (Kipping & Clarke, 2020) have examined the characteristics of unicorns in the UK and found that start-ups in the software and e-commerce industries were overrepresented among unicorns. The study also noted that unicorns in these industries tended to have higher valuations than unicorns in other industries. Taken together, these studies provide further evidence for the importance of the field of activity in determining the success of start-ups and the emergence of unicorns. Entrepreneurs and investors should carefully consider the unique challenges and opportunities presented by different industries when evaluating start-up opportunities and developing strategies for success.

While there is considerable evidence to suggest that the field of activity is an important determinant of start-up success, some studies have suggested that this may not always be the case. For example, a study by Kortum and Lerner (Kortum & Lerner, 2000) examined the factors that contribute to the success of Silicon Valley start-ups and found that factors such as the quality of the management team, access

to financing, and the ability to scale quickly were more important determinants of success than the industry in which the start-up was operating.

Similarly, a study by Fehder and Hochberg (Fehder & Hochberg, 2014) have examined the characteristics of successful start-ups in the US and found that while certain industries, such as software and biotechnology, tended to have a higher concentration of successful start-ups, the differences between industries were not statistically significant. The study concluded that factors such as the quality of the management team, the ability to pivot and adapt to changing market conditions, and access to funding were more important determinants of success than the industry in which the start-up was operating. Furthermore, a study by Meoli and Vismara (Meoli & Vismara, 2016) found that while certain industries, such as healthcare and software, tended to have a higher concentration of unicorns in Europe, the difference between industries was not statistically significant. The study suggested that factors such as the quality of the management team, access to financing, and the ability to scale quickly were more important determinants of unicorn success than the industry in which the start-up was operating. Also, a study by a study by Guarascio and Tamagni (Guarascio & Tamagni, 2019) found that the field of activity was not a significant predictor of start-up success in Italy. The study examined a sample of new firms and found that other factors, such as human capital, access to finance, and the ability to innovate, were more important determinants of success.

The literature review highlights the importance of considering the field of activity when analysing the survival and growth of new businesses, including the likelihood of becoming a unicorn. While some industries may be more conducive to the emergence of unicorns, the majority of startups operate outside these industries and face significant challenges in terms of survival and growth. Policymakers, investors, and entrepreneurs should consider the factors identified in the literature review when developing policies, investment strategies, and business plans to support new businesses.

The availability of resources, such as financing and talent, can also be influenced by the field of activity. For instance, venture capitalists have been found to invest more in technology-based startups than in other industries, making it easier for technology startups to access funding, which can be critical for survival and growth (Landström & Harirchi, 2018). Similarly, the availability of skilled workers and managerial talent has been identified as a critical factor in the survival and growth of new businesses (Ondruska & Guzman, 2019).

The survival rates of companies can vary widely based on the industry or sector they operate in. Some industries are more competitive and have a higher risk of failure, while others may have more stable demand and fewer competitors. For example,

according to a study by the U.S. Bureau of Labour Statistics (Bureau of Labor Statistics, 2018), the 5-year survival rate for new businesses in the construction industry was 54.2%, while the 5-year survival rate for businesses in the healthcare and social assistance industry was 72.2%. On the other hand, the 5-year survival rate for businesses in the accommodation and food services industry was only 50.3%. Another study by Statista (Statista, 2021) showed that the 5-year survival rate for new businesses in the information sector was 50.9%, while the 5-year survival rate for businesses in the finance and insurance sector was 56.3%. The retail trade sector had a lower survival rate, with only 47.7% of new businesses surviving for 5 years. It's important to note that survival rates can also vary based on the size of the company. Small businesses have a higher failure rate than larger businesses. For example, according to the Small Business Administration (Small Business Administration, 2012), only about half of new businesses survive the first five years, and only one-third survive 10 years or more.

2. Data and methodology

This study investigates a possible correlation between several statistical dimensions of unicorn start-up companies in the world. We used data sets collected from https://www.crunchbase.com/. Data collected reflect the name of the company, the valuation (in billion USD), the year the companies were set up, the country and town of origin, the field of activity as well as their main investors from 2017 until 2023. The sample includes a list of 1210 companies from all over the world. We consider that there is a possible correlation between the date the companies were set up, their field of activity, country of origin and their valuation respectively. Our paper will focus on confirming four research hypotheses, as follows:

H1: There is a correlation between the date the unicorn start-up companies were set up and their valuation.

H2: There is an association between the valuation of the unicorn start-up companies and their field of activity

H3: There is an association between the field of activity and the unicorn start-ups' country of origin.

H4: There is an association between the field of activity and the date the unicorn start-up companies were set up.

For this purpose we will use descriptive as well as inferential statistical methods such as presenting the main parameters of the numerical variables, some graphical representations; we will also employ a non parametric correlation analysis.

3. Descriptive statistics and research hypothesis testing

In order to have a complete image regarding the unicorn start-up companies around the world we first built one-dimensional tables (based on a single variable) and computed the descriptive statistics fot the numerical variables. Graphical representations were used to show the distribution of the companies by the non-nummerical variables.

As seen in **Table 1**, we have investigated a total number of 1210 of unicorn start-up companies. As regards their worth, the maximum valuation of the companies investigated is of 140 billion USD – represented by ByteDance – a company set up in Beijing, China in 2017 which is an internet technology company that operates creative content platforms such as TikTok), followed by SpaceX – valued at 127 bilion USD – a rocket and spacecraft manufacturer located in US. Shein also hit the 100 billion USD value in 2022. These three companies are the only so called hectacorns in the world, valued at at least 100 billion USD.

Table 1: Descriptive statistics

	Valuation	**Date joined**
	Billion USD	Year
Mean	3.2	2020
Median	1.6	2021
Mode	1	2021
Std. Dev.	7.53	2.00
Skewness	12.5	-1.88
Kurtosis	191.35	4.79
Minimum	1	2007
Maximum	140	2023
Observations	1210	1210

Source: authors' computation

Most of the unicorn start-up companies have a valuation of 1 billion USD, half of them having a valuation below 1.6 billion USD. The average valuation of a unicorn start-up company is equal to 3.2 billion USD.

As regards the date they joined, most of the companies joined in 2021; the median value is also equal to 2021, which means that half of the companies joined before and half after 2021. The "oldest" company joined in 2007 (Veepee and Vice Media)

while the "youngest" – in 2023. There are 4 companies that joined in 2023 (Thrive Capital, ShiftKey, Our Next Energy and MNT-Halan). A total number of 525 unicorn start-up companies – almost a half of the total - joined in 2021.
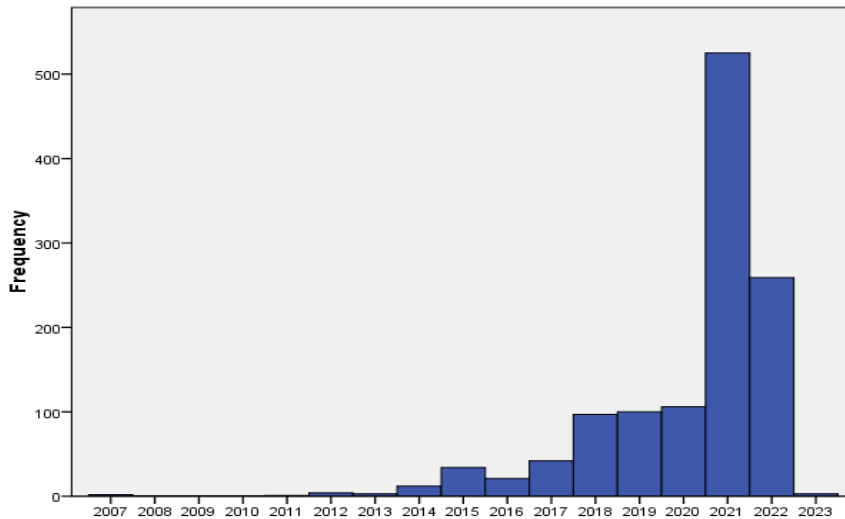
Figure 1. Hystogram of the unicorn startup companies by the year they joined
Source: authors' computation

The distribution of the start-up companies by their location is presented in **Figure 2**. The majority of the companies (54%) are located in the US, followed by the companies located in China with a share of 14% in the total of 1210 unicorn start-up companies that exist around the world.
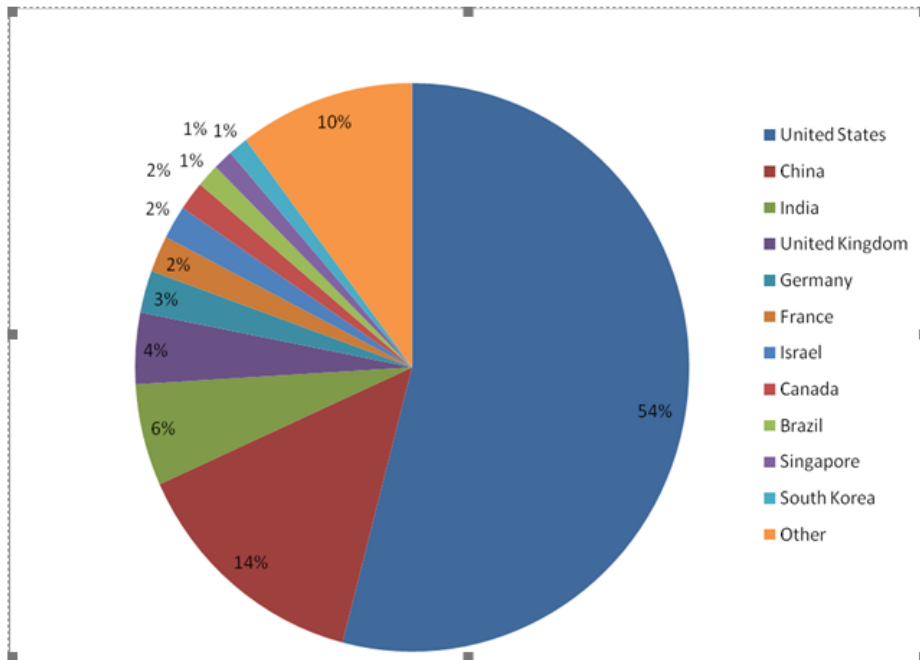
Figure 2. Distribution of the unicorn startup companies by their location
Source: authors' computation

As seen in **Figure 3**, almost half of the unicorn start-up companies' field of activity is in Fintech and internet software&services, followed by e-commerce and health companies.
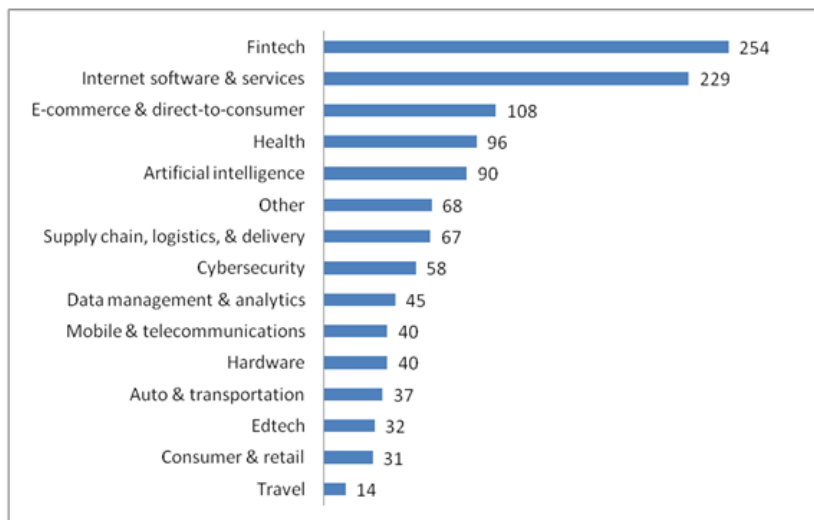
Figure 3. Distribution of the unicorn startups by their field of activity
Source: authors' computation

In order to investigate and validate our research hypotheses, we will use the Chi-Squared method, which is a statistical test used for the analysis of correlation based on contingency tables, and that can be used in case the sample size is large enough. For this purpose we will first construct the cross tabulations between the values associated to each pair of variables taken into account, then we will compute the expected frequencies and determine the value of the test in our population. Decision regarding the existence of a correlation is taken by comparing the value of the test with the critical value for specific degrees of freedom and a chosen significance level.

Hypothesis H1: *There is a correlation between the date the unicorn start-up companies were set up and their valuation.*
The Chi Square value in the sample is 7969,63, and since this value is higher than 0, our conclusion is that there is a correlation at the sample level between the between the date the unicorn companies were set up and their valuation.
To expand our result on our total population we'll use the following hypothesis test:

$$H_0 : \chi^2 = 0$$

$$H_1 : \chi^2 \neq 0$$

In order to decide whether the H_0 hypothesis should be rejected, the calculated value of the Chi-Squared test, 7969,63, is compared to the critical one for 2951 degrees of freedom and a probability of 95%, which in our case is 3,078. As the calculated value is higher than the critical one, hypothesis H_0 is rejected, therefore, there is a strong correlation between the two variables at the level of total population.
Research hypothesis H1 is validated with a significance level of 5%.

Hypothesis H2: *There is an association between the valuation of the unicorn start-up companies and their field of activity.*
The Chi Square value in the sample is 392,17 and as such, we conclude that since this value is higher than 0, there is a correlation at the sample level between the valuation of the unicorn start-up companies and their field of activity.
The calculated value of the Chi-Squared test is compared to the critical one for 406 degrees of freedom and a probability of 95%, which in our case is 360.29. As the calculated value is higher than the critical one, hypothesis H_0 is rejected, therefore, there is an association between the two variables at the level of total population, but the association is weak, since the two values are similar.
Research hypothesis H2 is validated with a significance level of 5%.

Hypothesis H3: There is an association between the field of activity and the unicorn start-ups' country of origin.

The Chi Square value in the sample is 669.16, and since this value is higher than 0, our conclusion is that there is a correlation at the sample level between the field of activity and the unicorn start-ups' country of origin.

The calculated value of the Chi-Squared test, is compared to the critical one for 400 degrees of freedom and a probability of 95%, which in our case is 639.61. As the calculated value is higher than the critical one, hypothesis H_0 is rejected, therefore, there is an association between the two variables at the level of total population.

Research hypothesis H3 is validated with a significance level of 5%.

Hypothesis **H4:** *There is an association between the field of activity and the date the unicorn start-up companies were set up.*

The Chi Square value in the sample is 387.47, we conclude that since this value is higher than 0, there is a correlation at the sample level between the field of activity and the date the unicorn start-up companies were set up.

The calculated value of the Chi-Squared test is compared to the critical one for 169 degrees of freedom and a probability of 95%, which in our case is 200.33. As the calculated value is higher than the critical one, null hypothesis H_0 is rejected, therefore, there is an association between the two variables at the level of total population and the correlation is strong, since the calculated value of the Chi-Squared test is much higher than the critical one..

Research hypothesis H4 is validated with a significance level of 5%.

Conclusions and discussions

This study investigates a possible correlation between several statistical dimensions of unicorn start-up companies in the world. The collected data reflect the name of the company, their valuation (in billion USD), the year the companies were set up, the country and town of origin, the field of activity as well as their main investors from 2017 until 2023. Our empirical analysis was based on descriptive statistics, graphical representation as well as inferential statistical computations. We considered that there is a possible correlation between the date the companies were set up, their field of activity, country of origin and their valuation respectively. Our study confirmed all our four research hypotheses. First, the analysis confirmed a correlation between the date the unicorn start-up companies were set up and their valuation. Of course, this hypothesis is an intuitive one. The older the companies

are, the higher their valuation. Age does not increase valuation by definition. An older company will have a better valuation if it has strong brand recognition, and unicorns seem to know how to do that.

Second, our analysis confirmed an association between the valuation of the unicorn start-up companies and their field of activity. Third, the data validated the association between the field of activity and the unicorn start-ups' country of origin. The importance of the field of activity in determining a startup's survival and growth prospects highlights the need for entrepreneurs to carefully consider their industry and markets before starting a business. Policymakers and investors should also take into account the field of activity when developing policies and investment strategies to support new businesses.

Fourth, our computations confirmed the association between the field of activity and the date the unicorn start-up companies were set up. This is why we consider that entrepreneurs and investors should carefully consider the unique challenges and opportunities presented by different industries when evaluating start-up opportunities and developing strategies for success.

There are several political and economic implications related to the phenomenon of unicorn startups and their chances of survival based on their field of activity.

Politically, governments and policymakers who want to encourage economic growth and employment creation may benefit from the success of unicorn businesses. High-growth businesses can significantly boost the economy, raise taxes, and add jobs. Governments can help unicorn firms by fostering an atmosphere that encourages innovation and entrepreneurship, by opening finance sources, and by subsidizing research and development.

The economic success of unicorn firms can have a big impact on the overall economy. Technology has been a big engine of recent economic growth and employment creation, and unicorn businesses are frequently found in this field. These businesses have the potential to significantly increase value for shareholders while also fostering competition and innovation in the markets in which they compete. Additionally, the success of unicorn firms can draw capital and talent to an area, fostering a positive feedback loop of innovation and economic growth. Our research revealed that many high-growth firms ultimately fail and that only a small number of them achieve unicorn status. The high failure rate of startups can have implications for investors, who may be wary of investing in the startup ecosystem, given the perceived risk of failure. Additionally, the failure of unicorn startups can lead to job losses and can reduce economic activity in the regions in which these companies operate. In addition, our research shows that unicorn companies are

frequently concentrated sectors, including the technology sector, which might raise issues with economic concentration and competition.

Governments and politicians may assist unicorn startups by fostering an atmosphere that encourages innovation and entrepreneurship. The high startup failure rate and the concentration of unicorn firms in particular areas, however, may have detrimental economic effects. These consequences must be understood by policymakers and investors, and action must be taken to reduce any potential negative effects.

References

1. Bellavitis, C. & Filatotchev, I., 2019. The productivity of unicorns: Substantial heterogeneity among billion dollar startups. Research Policy, 48(10).

2. Bureau of Labor Statistics, 2018. Business Employment Dynamics: 2018, s.l.: s.n.

3. Carrie, M. A., Thurik, A. R. & Wennekers, S., 2002. Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976–1996. Small Business Economics, 19(3), pp. 271-290.

4. Carrie, M. A., Thurik, A. & Wennekers, S., 2002. Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976–1996. Small Business Economics, 19(3), pp. 271-290.

5. European Commission JRC Technical Report, 2022. In search of EU unicorns - What do we know about them? Luxembourg: Publications Office of the European Union,.

6. Fehder, D. C. & Hochberg, Y. V., 2014. Industry-specific human capital and startup success. Journal of Financial Economics, 111(2), pp. 523-542.

7. Gompers, P., Kovvali, A. & Mukunda, G., 2018. The other side of venture capital: Exploring the relationship between venture capital and the unicorn phenomenon. Harvard Business School Working Paper, pp. 18-090.

8. Guarascio, D. & Tamagni, F., 2019. Persistence of innovation and patterns of firm growth. Journal of Evolutionary Economics, 29(1), pp. 131-166.

9. Herrington, M., Kew, P. & Kew, J., 2017. Doing business in Africa: The impacts of firm and country-level factors on the performance of small and medium-sized enterprises. Journal of African Business, 18(3), pp. 361-384.

10. Kipping, M. & Clarke, J., 2020. Unicorns, chameleons, and camels: The UK scale-up landscape. Journal of Small Business Management, 58(4), pp. 813-832.

11. Kortum, S. & Lerner, J., 2000. Assessing the contribution of venture capital to innovation. RAND Journal of Economics, 31(4), pp. 674-692.

12. Landström, H. & Harirchi, G., 2018. Accessing and leveraging finance for entrepreneurial firms in different stages of the business life cycle. Journal of Small Business Management, 56(S1), pp. 15-32.

13. Meoli, M. & Vismara, S., 2016. The determinants of unicorn firms in the European Union. Small Business Economics, 48(2), pp. 361-380.

14. Ondruska, E. A. & Guzman, J., 2019. The importance of managerial talent in entrepreneurial success. Journal of Small Business Management, 57(4), pp. 1475-1489.

15. Small Business Administration, 2012. Frequently Asked Questions, s.l.: s.n.

16. Song, S. & Lee, S., 2018. Industry characteristics and unicorn startups: Evidence from the U.S. Journal of Business Research, 88(1), pp. 168-177.

17. Statista, 2021. 5-year business survival rate in the United States in 2020, by industry., s.l.: s.n.

18. https://www.crunchbase.com/ [29 March 2023]

AN EVALUATION OF STUDENTS PROFICIENCY IN DIGITAL LITERACY AT ECONOMIC SUBJECTS

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Abstract: *Contemporary education relies heavily on new technologies, which have an undeniable impact on learning and are considered a crucial component. In order to acquire technical skills relevant to the 21ˢᵗ century, students need to adapt to the evolving technologies. Education in digital literacy is essential, and as such, it ought to be included in the curriculum of all courses in educational systems. This study set out to assess the degree of digital literacy among students in a high school that placed a strong emphasis on economics, with a particular emphasis on the need for skill development in the context of a culture that values digital knowledge. In addition, the study used a framework derived from earlier research to assess the contribution of nine literacies to digital literacy. The investigation, which was based on a survey of 217 students, revealed that their levels of digital literacy ranged from average to high. The statistical study showed that every suggested literacy in the framework significantly contributed to digital literacy.*

Keywords: *Digital literacy; high school, learning; 21ˢᵗcentury education; economical education; digital age*

1. Introduction

Today's world has integrated electronic devices in almost all sectors of activity. Understanding this reality is essential for any individual because his success academically, professionally, in business or in other aspects of his existence depends on how he masters technology. The education system, like the other social sectors, is obliged to adapt to this paradigm shift in teaching and learning, by adopting electronic means. Educational institutions must rethink learning environments, expanding the possibilities of learning through digitalization and ensuring the improvement of digital skills, as key points in the new learning scenarios (Tejedor et al., 2020).

The implementation of innovative technologies has resulted in new directions for education that were not previously possible. Inclusion and market rationales have led to processes of mobilization and globalization of education (Martin, 2006). This has resulted in the development of distance education, which enables learning from anywhere and at any time. Digital technologies have made it possible for a community of remote learners to connect teachers and students, as well as students with each other, despite significant geographical distances.

The development of technology has demonstrated that basic abilities like reading, writing, and arithmetics, which were formerly adequate for successful integration into society and the workforce, are no longer sufficient. The development of new abilities known as the 21st century skills is required for the use of digital technology to access, assess, and share information in today's diverse environments. These abilities comprise a broad spectrum of cognitive and socio-emotional abilities that help people adapt to a digitally-driven culture. They go beyond simply knowing how to utilize digital tools or software (Eshet-Alkalai, 2004). The literature has coined the term "digital literacy" for these skills, which is seen as a natural evolution of traditional fundamental skills rather than a replacement for them. A low level of digital literacy can negatively impact an individual's innovation, creativity, and participation in society, ultimately affecting economic development as a whole.

Initially, digital literacy was mostly concerned with computer knowledge and technology use, but as time has gone on, it has come to place more focus on the internet and its effects on other facets of human life. Social media platforms, where individuals engage in a variety of activities, have become more and more popular as new technology continue to provide new kinds of online engagement. Because of this, digital literacy programs have developed from emphasizing the use of fundamental tools to more intricate forms that entail analyzing and producing a variety of information (Feerrar, 2019).

Researchers have paid a lot of attention to the growth of digital literacy, leading to a large number of definitions and frameworks throughout time. This issue is still important and hasn't been fully explored. The significance of digital literacy for people has also been acknowledged by national and international public policies, which have developed several frameworks for implementation in educational institutions. The objective is to lay the groundwork for educators to include parts of digital literacy in their curricula and for students to keep track of their own progress in this area.

Thus, since 2006, the EU has included digital literacy among the 8 key competencies for any European citizen, and the European Commission considers digital literacy as one of the 7 pillars in the *European Commission's 2010 Digital Agenda for*

Europe. Moreover, the elaboration by the European Commission of the *EU Digital Competence Framework for Citizens (DigComp)* in 2017 led to the adaptation of policies in most European countries and not only (Kluzer and Pujol Priego, 2018). We can also talk here about the *Global Framework of Reference on Digital Literacy Skills (UNESCO, 2018)*, a synthesis of the relevant digital literacy skills. The *Coalition for Digital Intelligence*, which is an initiative launched in 2018 by the OECD, IEEE Standards Association and the World Economic Forum, also represents a global framework for the development of digital skills and digital literacy, being a useful tool for governments, educators or technology companies.

International organizations have generally concentrated on creating guidelines and studies on digital literacy for people of all ages, with just a few explicitly targeted at children to help them adapt to the digital world. One such program is the *Digital Kids Asia-Pacific* project, which was created by the UNESCO Asia and Pacific Regional Office with the sole purpose of concentrating on creating digital citizenship activities for kids.

No matter the digital literacy framework we take into consideration, it prioritizes the learning process because it is of the opinion that anyone can aquire digital literacy skills (Feerrar, 2019). It's vital to remember that not everyone is equally interested in developing their digital literacy. There are substantial discrepancies and differences in this regard, which may be caused by elements like age, gender, socioeconomic class, geography, degree of economic development, sophistication of the educational system, and level of societal digitalization.

Due to the ubiquitous use of technology in everyday life, there is a perception in society that all students are digitally literate, but it is often evident that there are large differences in how students use technology and in terms of their level of digital skills. For this reason, digital literacy should not be seen as a separate set of skills to be trained, but incorporated together with the other skills of the 21st century in all core subjects (Voogt et al., 2013). The interest in digital literacy is increased in a range of disciplines, but a very diverse use of the concept at the trans-disciplinary level is found, which still produces ambiguities and still requires the attention of researchers (Spante et al., 2018).

Studying economic subjects, as part of the basic curriculum, today requires the existence of some digital literacy skills, and on the other hand, it can help a lot to improve these skills. This research aims to evaluate the level of digital literacy of high school students enrolled in a school with an economic profile in order to identify the real training needs of students and to help teachers implement high-quality teaching approaches. Therefore, it is desired to design a digital literacy framework with the most relevant literacies for these students.

2. Literature Review

2.1. Digital Literacy concept

The concept of "digital literacy" appeared at the end of the 1990s, being defined in educational terms by Gilster (1997), who brought to the world's attention the revolutionary role of the Internet in education. He identified the digitally literate student as possessing a set of information skills that he applies to text and multimedia information obtained from the Internet, within a school learning context. Starting from this definition, a multitude of other concepts and definitions have emerged to explain digital literacy. These have evolved from references to what an individual should be able to do, to broader perspectives that focus on what a digitally literate individual should be able to achieve. Thus, we can recall the definition given by Martin (2006:155), which says that "Digital Literacy is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process". Another definition that reflected a broader perspective says that "Digital literacies are those capabilities which fit an individual for living, learning and working in a digital society" (Jisc, 2014).

The definitions of digital literacy have been continuously changing as new technologies emerge and innovations in the digital field occur at a rapid pace, transforming the ways in which people use technology to accomplish different tasks (Reddy and Sharma, 2020). As a result, the term digital literacy has been associated with various terms, such as "digital skills," "digital competence," or "21st century digital skills," which have been used interchangeably by researchers (Audrin and Audrin, 2022).

There is also a concern among researchers regarding the levels of engagement in digital literacy. Thus, Martin (2006) identifies the following three "stages": *digital skills* (knowledge, understanding and skills related to digital in the context of a real life situation), *digital usage* (application of digital skills in a specific professional context) and *digital transformation* (the acquired digital skills determine innovation and creativity, leading to transformations in the professional and knowledge field). Different digital literacy frameworks have been developed by researchers with the aim of structuring the recommended set of digital skills needed in a contemporary economy and society. The purpose of these frameworks is to be used in educational policy documents, school curricula, academic papers, assessment and certification systems (Reddy et al., 2022; Feerar, 2019; Martin, 2006). There are a multitude of

such frameworks, also developed by international or national organizations, as exemplified in the introduction. The present research also considers one of the most well-known frameworks, *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2* (Law et al., 2018). This framework was used to identify the required competence areas from the model proposed in the present research, i.e. the digital competences needed by students in learning economics.

The effort to build a framework that meets all the challenges and takes into account all the skills that can be associated with the term, led to the inclusion of several literacies in digital literacy. Thus, Covello (2010) put several sub-disciplines or "literacies" under the digital literacy umbrella such as: information literacy, computer literacy, technology literacy, communication literacy, media literacy, visual literacy. However, these literatures no longer fully reflect the evolution of new tools and technologies, the six components lacking the skills that are needed today (Reddy, Sharma and Chaudhary, 2020). Thus, in the literature we also meet the newer terms of digital content creation literacy, safety literacy, problem solving, branching literacy, socio-emotional literacy and others.

Further research in the field shows that there are several essential components of digital literacy that can be taken into account considering the realities of today's digitized society and economy. In order to evaluate the level of digital literacy of the students enrolled in the economics courses participating in this research, the 6 literacies nominated by Covello (2010) and incorporated in the *South Pacific digital literacy framework* (SPDLF) were used (Reddy et al., 2022), as well as 3 more literacies taken from *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2.* (Law et al., 2018). The choice of these 9 literacies was considered the most relevant for the purpose of our research.

2.2. Digital literacies

Media literacy refers to the skills to find, evaluate, use and communicate information, as well as the ability to produce original or remixed content in various media forms, from print to video, thus contributing to the volume of information available online (Bigelow et al., 2017). This literacy is now recognized as a lifelong process that involves not only technical skills, but also the ability to recognize and evaluate different messages, understand their impact on one's values and beliefs, and make informed decisions about their use of digital media (Reddy, Chaudhary and Sharma, 2019).

Problem-solving literacies refer to solving technical problems, adapting digital environments to personal needs, using digital tools to innovate processes and products, understanding one's own needs and skill gaps. Problem resolution can be

found in any of the other important competence areas (Sánchez-Cruzado, Campión and Sánchez-Compaña, 2021), but due to its importance in the use of technologies and digital media, it seems convenient to highlight it as an independent component as well (Santiago and Bergmann, 2018).

Information literacy refers to the skills to search, evaluate, use and create content effectively in order to achieve personal or professional goals. This literacy is a determining factor of skills regarding the efficiency of online search (Aavakare and Nikou, 2020), the assessment of the credibility of sources, the correct and legal citation. Print-based culture is becoming more and more overtaken by the online environment, major technological innovations continuously forcing information literacy to reconceptualize existing perceptions (Špiranec and Banek Zorica, 2009).

Computer literacy refers to understanding how computers work, digital technologies and their application for practical purposes (Reddy et al., 2020). Harris (2015:13) referred to these as "turning [digital devices] on and off; keyboarding; using a mouse; using a touchpad; right- and left-clicking; double-clicking; and long-pressing ... knowing how to create, save, locate, and edit computer files as well as how to open, use, and close a variety of computer applications".

Technology literacy involves the ability to use technology to improve learning, productivity and performance (Reddy et al., 2020). Effective technology literate individuals are able to easily use a wide range of devices and interfaces (e.g. internet, social media, cloud computing) to communicate and solve problems. Students must develop technology literacy skills and the ability to follow technological innovations in professional skills as a prerequisite for using technology in the profession (Saltanat et al., 2022).

Communication and colaboration literacy refers to the effective use of digital technologies in communication, collaboration with their help using publishing technologies, the Internet and digital technologies (Reddy et al., 2020). Communication literacy represents essential skills that high school graduates should possess. Their training is included among the tasks of preparing students for life in the information society and in the digital economy (Avdeeva, Uvarov and Tarasova, 2023).

Visual literacy is translated into the ability to see, interpret, understand graphic images, to communicate information, transforming it into visual representations (Reddy et al., 2020). The development of visual literacy skills in students has become increasingly important due to the great pressure, both in personal and professional life, to be proficient in communication. For this, it is recommended to adopt visual literacy pedagogy that can increase students' level of understanding of different materials (Kalaf-Hughes, 2022).

Safety literacy refers to skills related to protecting devices, personal data and privacy, to be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies, to be aware of digital technologies for social well- being and environment. The digital environment presents numerous risks, which cause concerns about the digital safety and well-being of students, as well as the impact on personal, academic and social roles and identities (Medina and Todd, 2019).

Career-related digital competences refer to a set of skills regarding the identification and use of appropriate digital tools and technologies for a particular field, the economic one in the case of our research; understanding, analyzing and evaluating data, information and digital content from the economic field in a digital environment. Digital literacy plays a crucial role in the successful digital entrepreneurship mindset. The identification and training of entrepreneurial talents in the digital economy, the formation of attitudes to identify opportunities to obtain entrepreneurial advantages in the digital economy require digital learning aptitude (Young et. al., 2020).

3. Research Objectives

This research proposes an adapted framework for evaluating the level of digital literacy of high school students enrolled in the economic profile. Thus, the following objectives were taken into account:

- Evaluation of the strongest predictors for digital literacy among the 9 literacies;
- Evaluation of the most important predictors for each individual literacy;
- Evaluation of the most important predictors among the 54 attributes for digital literacy;
- Measuring the level of digital literacy skills for the students included in the research.

4. Methodology

In this paper, an exploratory research was carried out for the validation of a framework that allows the evaluation of predictors for digital literacy and the level of digital literacy skills. In this sense, a quantitative analysis was used by applying a questionnaire with a Likert scale in 5 points to a number of 217 students enrolled in an economic college (high school), from all levels of studies (9th grade 27%, 10th grade 22%, 11th grade 23%, 12th grade 28%). With the help of a Google Forms, the

students had to evaluate their level of skills for the 54 attributes. As an initial step, a mathematical and numerical analysis was performed to identify and evaluate the relationships between the variables. For this, spearman's correlation analysis was used to evaluate the relationships between 9 literacies and the relationships between them and digital literacy, as well as the importance of each literacy. To evaluate the contribution of each attribute, as independent variables, multiple linear regression (MLR) calculations were performed. This statistical method is used to predict the outcome of a variable based on the value of two or more variables. Also, using MLR can determine the variation of the model and the relative contribution of each independent variable in the total variance (Taylor, 2023). In this research, the identification of the value of digital literacy was aimed at certain values of the attributes included in the framework, as independent variables.

Figure 1 shows the proposed model for evaluating digital literacy through the lens of the 9 literacies described above: Computer literacy (CL), Technology literacy (TL), Information and data literacy (IDL), Communication and collaboration literacy (CCL), Media literacy (ML), Visual literacy (VL), Safety literacy (SL), Problem-solving literacy (PSL), Career-related literacy (CRL). A set of competencies (attributes) were designed for each literacy.
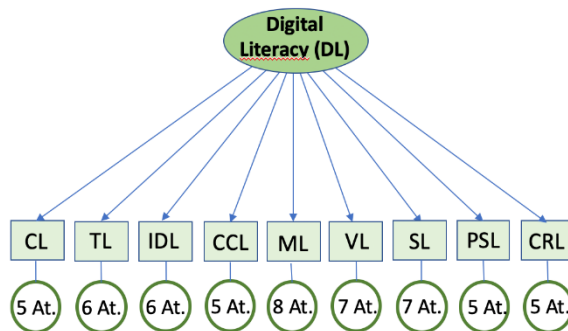
Figure 1. The framework model proposed for the evaluation of digital literacy skills (literacies and the number of related attributes)
Source: Figure made by the authors.

5. Results and discussion
5.1. Validation of data

The current study utilized an exploratory factor analysis (EFA) as a method to extract a few factors from a large set of associated factors, to be used for subsequent statistical analyses like multiple regression or analysis of variance. This approach is particularly useful when data is collected through questionnaires as it helps identify and remove irrelevant questions (Shrestha, 2021). To test the sampling adequacy of each variable in the model, as well as the entire model, the Kaiser-Meyer-Olkin

(KMO) test was employed. A KMO value between 0.8 and 1 is considered adequate while a value below 0.5 to 0.6 is considered inadequate (Keiser, 1974; Samuels, 2017). In this study, all attributes had KMO values above 0.8 and 40 out of 54 attributes had values above 0.9, indicating that the sample was valid and adequate for analysis.

5.2. The correlation analysis

Spearman's correlation analysis was used to evaluate the relationship between the 9 literacies and between each literacy and digital literacy. The results presented in Table 1. show that all literacies have a significant relationship with digital literacy. Thus, 5 literacies (CL, TL, CCL, PSL, CRL) have a "strong" correlation with digital literacy, having a value above 0.6, and the other 4 literacies (IDL, ML, VL, SL) have a "very strong" correlation" having values above 0.8 (statstutor, 2019). Regarding the correlations between literacies, the results indicate only two "weak" correlations between *Safety literacy* (SL), *Problem-solving* (PSL) and Computer literacy (CL), for that their values ranged between 0.2 and 0.39. The correlations between the other literacies take values between 0.40 and 0.88, which indicates moderate to very strong correlations (statstutor, 2019).

Table 1: Correlation between the different literacies

	DL	*CL*	*TL*	*IDL*	*CCL*	*ML*	*VL*	*SL*	*PSL*	*CRL*
DL	1.000									
CL	0.627	1.000								
TL	0.758	0.522	1.000							
IDL	0.813	0.525	0.570	1.000						
CCL	0.756	0.445	0.552	0.526	1.000					
ML	0.880	0.602	0.584	0.734	0.661	1.000				
VL	0.837	0.452	0.594	0.650	0.618	0.751	1.000			
SL	0.803	0.354	0.566	0.606	0.625	0.636	0.598	1.000		
PSL	0.790	0.346	0.572	0.613	0.638	0.619	0.645	0.709	1.000	
CRL	0.760	0.404	0.497	0.639	0.488	0.633	0.580	0.594	0.599	1.000

Source: Computed by the authors

5.3. Significant contributors to digital literacy

To identify the strongest predictors of digital literacy, among the 9 included in the framework proposed by us, we performed an exploratory factory analysis of the the data. Each literacy is considered the independent variable, and digital literacy is considered the latent variable. Standardized beta values β were thus calculated, which indicate that all literacies contribute significantly to digital literacy (Figure 2). Analyzing the results, it can be seen that Media literacy (ML), Information and data

literacy (IDL) and Visual literacy (VL) are the most important contributors to digital literacy, and Computer literacy (CL) has the smallest contribution.
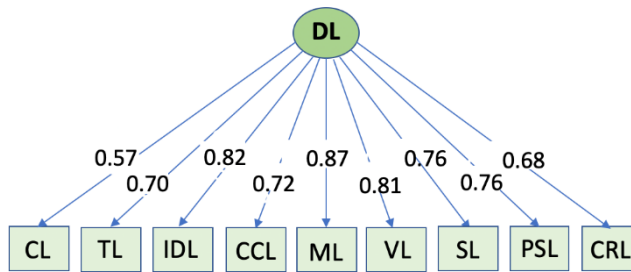
Figure 2: Significant contributors to digital literacy
Source: Figure made by the author.

5.4. Significant contributors to each literacy

For each of the 9 literacies, competencies were thought up based on the analyzed literature review. Those skills that are necessary for students in learning economic subjects with the help of technologies and digital devices were pursued. In this sense, an attribute analysis was carried out for each individual literacy. An EFA analysis was performed and standardized beta β values were determined in a simplified model in which each literacy was studied as a latent variable with associated attributes. The results for β values are presented in Figure. 3 for all 9 literacies. It is found that all attributes are relevant, 23 out of a total of 54 attributes having a high β (>0.7), only one attribute, *ML4*, having a factor lower than 0.3. As a result, the analysis performed indicates that the considered attributes are relevant in the EFA analysis.
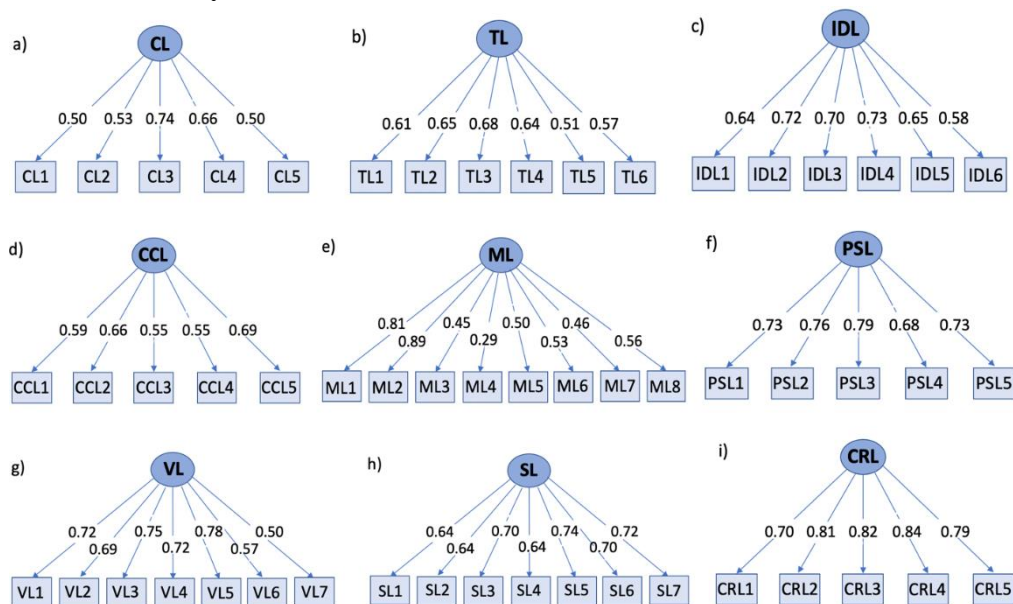
Figure 3: Significant contributors to: a) Computer literacy (CL), b) Technology literacy (TL), c) Information and data literacy (IDL), d) Communication and collaboration literacy (CCL), e) Media literacy (ML), f) Problem-solving literacy (PSL), g) Visual literacy (VL), h) Safety literacy (SL), i) Career-related literacy (CRL)
Source: Figure made by the authors.

5.5. Signinficant contributors to digital literacy from 54 attributes

In this analysis, we consider the digital literacy as having 54 independent attributes. Table 2. shows what are the most important contributors. Analyzing the attributes with the highest β values, the following significant contributors were identified: *ML2* (Interpretation of information from the economic media), *SL7* (Awareness regarding the responsibility of digital technologies towards economic development), ML8 (Understanding the values conveyed by different messages promoted on social networks), *PSL1* (Identifying and solving technical problems when using digital devices or environments), *PSL3* (Using digital tools and technologies to gain knowledge, to innovate processes and products), *CRL2* (Identifying and using apps for the domain economic), *PSL2* (Adopting and personalizing digital environments according to personal needs), *VL1* (Understanding and interpreting visual messages), *IDL5* (Searching for economic information online), *SL5* (Awareness of the responsibility of digital technologies towards social well-being). As all β values are between 0.30 and 0.71, we can say that all attributes can be considered significant contributors to digital literacy.

Table 2: Signinficant contributors to digital literacy

Attributes	Standardized Coeficients β	Attributes	Standardized Coeficients β	Attributes	Standardized Coeficients β
CL1	0.450	CCL2	0.428	VL7	0.608
CL2	0.307	CCL3	0.554	SL1	0.568
CL3	0.383	CCL4	0.395	SL2	0.543
CL4	0.462	CCL5	0.595	SL3	0.562
CL5	0.353	ML1	0.635	SL4	0.523
TL1	0.416	ML2	0.716	SL5	0.656
TL2	0.469	ML3	0.530	SL6	0.585
TL3	0.510	ML4	0.363	SL7	0.687
TL4	0.550	ML5	0.518	PSL1	0.679
TL5	0.518	ML6	0.503	PSL2	0.667
TL6	0.525	ML7	0.566	PSL3	0.673
IDL1	0.565	ML8	0.683	PSL4	0.563
IDL2	0.616	VL1	0.661	PSL5	0.575
IDL3	0.568	VL2	0.597	CRL1	0.579
IDL4	0.637	VL3	0.586	CRL2	0.673
IDL5	0.659	VL4	0.535	CRL3	0.568
IDL6	0.590	VL5	0.630	CRL4	0.624
CCL1	0.582	VL6	0.566	CRL5	0.561

Source: Evaluated by the authors

5.6. Evaluation of the overall digital literacy status and the individual digital literacy competencies

In the online survey, 217 students were questioned with a set of 54 attributes, in which they were asked to self-evaluate them on a scale from 1 (very low) to 5 (very high). The minimum/maximum score that can be obtained is 54/270. Students scored between 140 and 270. Students were categorized on a rating scale proposed by us that introduces 4 relevant levels of L1 – L4 skills, according to Table 3.

Table 3: Levels of digital literacy skills and student statistics regarding them

| | Level of overall digital literacy competences | | | |
	L1 Very low Score <140	L2 Low Score140→183	L3 Average Score 184→226	L4 High Score 227→270
Number of students	0	15	120	82

Source: Evaluated by the authors

The need to improve the various digital literacy skills among students is obvious if we observe the data in Table 3. This is evident from the fact that the majority of students have been assessed to have an average level of competency, highlighting the importance of implementing targeted measures to improve these skills. However, in order to address specific vulnerabilities that students may have, it is crucial to identify their specific areas of weakness. Table 4 shows the average values and standard deviation for all literacies and for overall digital literacy. As can be seen, the average value for overall *digital literacy* is 4.06, which indicates a medium to high level of skills. A lower level of skills is observed 3.84 in *Career-related literacy* (CRL), i.e. students' skills need to be improved regarding: identifying and using digital tools and applications suitable for the economic field, searching, evaluating and understanding online information and content digital from the economic field.

Other student competencies that require improvement are those related to problem solving, *Problem-solving literacy* (PSL) having an average value of 3.93. We are talking here about the ability to: identify and solve technical problems when using digital devices or media; to adopt and customize digital environments according to personal needs; to understand their own digital skills gaps and needs; of self-development and keeping up-to-date with your own digital evolution. Other Information and *data literacy* (IDL) skills, with an average value of 3.96, that need to be improved are, for example: knowing how to search for information online,

using multiple sources, evaluating the credibility of information sources and information, netiquette, digital identity management in digital communication.

Table 4: Mean Values and Standard Deviation for overall literacy and attributes

Variables	Mean value	Standard deviation	Variables	Mean value	Standard deviation
Digital literacy (DL)	4.064	0.478	Media literacy (ML)	3.978	0.577
Computer literacy (CL)	4.058	0.611	Visual literacy (VL)	4.073	0.619
Technology literacy (TL)	4.255	0.549	Safety literacy (SL)	4.131	0.596
Information and data literacy (IDL)	3.962	0.603	Problem-solving literacy (PSL)	3.930	0.667
Communication collaboration literacy (CCL)	4.348	0.546	Career-related literacy (CRL)	3.848	0.764

Source: Evaluated by the authors

6. Concluzii

This paper proposed a digital literacy framework that included 9 relevant literacies for economic subjects. Through statistical mathematical analyses, it has been demonstrated that all these literacies have a significant relationship with *digital literacy*, serving as strong and very strong contributors. Notably, *Safety literacy* (SL), *Problem-solving literacy* (PSL), and *Career-related literacy* (CRL) serve as novel components of the framework compared to previously established models. Significant contributors to each literacy were also analyzed, by calculating standardized beta values β in a simplified model in which each literacy was studied as a latent variable with associated attributes. The results again showed that all 54 attributes were relevant to our analysis. Regarding the identification of the attributes with the most significant contribution to digital literacy, the study revealed that these involve skills such as to interpret information from the economic media, awareness of the responsibility of digital technologies towards economic development, understanding the values transmitted by different messages promoted on the networks socializing.

The findings of this study suggest that students pursuing economic subjects possess a moderate to high level of digital literacy, which imposes a need to improve these skills through a series of interventions in terms of teaching-learning in economic subjects. The assessment of the level of each individual literacy shows that the greatest needs to improve digital skills are in the field of career-related, problem-solving and information and data. Our results indicate the need to adapt the

curriculum to economic disciplines for the training and improvement of digital skills necessary for future professionals in the economic field.

We are currently witnessing an increase in the pervaisive use of digital technologies, and this reality requires the adoption of measures related to curriculum adaptation, teacher training, changing existing concepts (Liu, 2020). The integration of the digititalized educational process in the vocational education and training systems is determined by several objective factors, which can no longer be ignored. The emergence of the digital economy brings about new requirements for personal skills, as novel digital technologies continuously shape the digital environment, and the current generation of students possess distinct social and psychological characteristics (Bilenko et al., 2019). It is therefore evident that the personal development in terms of digital literacy is crucial, as well as the major role played by digital technologies in education (Audrin and Audrin, 2022). It is recommended that the literacies identified in this research are disseminated among those involved in economic education to ensure the appropriate preparation of students for a labor market that is currently undergoing profound transformations.

References

1. Aavakare, M., Nikou, S. (2020) "University Staffs' Everyday Engagement with Digital Technology - Exploring the Role of Information Literacy and Digital Literacy", Calgary, s.n., pp. 1-14. ITS Online Event, 14-17 June 2020, International Telecommunications Society.

2. Audrin, C., Audrin, B." Key factors in digital literacy in learning and education: a systematic literature review using text mining", *Education and Information Technologies*, Vol. 27, pp. 7395–7419.

3. Avdeeva, S.M., Uvarov, A.Y., Tarasova, K.V. (2023) "Digital Transformation of Schools and Student's Information and Communication Literacy", Voprosy Obrazovaniya-Educational Studies Moscow, Vol.1, pp.218-243.

4. Bilenko, P.N., Blinov, V.I., Dulinov, M.V., Yesenina, Ye.Yu., Kondakov, A.M., Sergeiev,I.S. (2019). *Didactic concept of digital vocational education and training, under scientific supervision*, V. I. Blinov. Moscow: Publishing House "Pen".

5. Covello, S. (2010) "A Review of Digital Literacy Assessment Instruments", *A review of digital literacy instruments*.

6. Eshet-Alkalai, Y. (2004) "Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era", *Jl. of Educational Multimedia and Hypermedia,* Vol. 13, No.1, pp 93 – 106.

7. Feerar, J. (2019) "Development of a framework for digital literacy", *Reference Services Review,* https://doi.org/10.1108/RSR-01-2019-0002 .

8. Gilster, P. (1997) *Digital Literacy*. New York: John Wiley.

9. Jisc (2014). Developing digital literacies. Available [Online] https://www.jisc.ac.uk/guides/developing-digital-literacies .

10. Kalaf-Hughes, N. (2022) "Promoting Information Literacy and Visual Literacy Skills in Undergraduate Students Using Infographics", *Political Science and Politics*, Vol. 56, no. 2, pp. 1-7.

11. Kaiser, H. F. (1974) "An index of factorial simplicity", Psychometrik, Vol., no.11, pp.31–36.

12. Kluzer, S., Pujol Priego, L. (2018) "DigComp into Action − Get inspired, make it happen", *JRC Science for Policy Report*. Publications Office of the European Union, Luxembourg.

13. Law, N. W. Y., Woo, D. J., de la Torre, J., & Wong, K. W. G. (2018) „A global framework of reference on digital literacy skills for indicator 4.4.2."

14. Liu, Z.-J., Tretyakova, N., Fedorov, V., & Kharakhordina, M. (2020) "Digital Literacy and Digital Didactics as the Basis for New Learning Models Development", *International Journal of Emerging Technologies in Learning* (iJET), Vol.15, no.14, pp. 4–18.

15. Martin, A. (2006) "A european framework for digital literacy", *Nordic Journal of Digital Literacy,* Vol. 1, No. 2, pp 151 –161.

16. Medina, V.G., Todd, R.J. (2019) "Young People's Digital Safety and Wellbeing: Findings from Philippines and Qatar", ECIL 2018: Information Literacy in Everyday Life, Communications in Computer and Information Science book series (CCIS, volume 989), pp. 176-187.

17. Reddy, P., Chaudhary, K., Sharma, B. (2019) "Predicting Media Literacy Level of Secondary School Students in Fiji". Melbouren, s.n., pp. 1-7.

18. Reddy, P., Sharma, B., Chaudhary, K. (2020) "Digital Literacy: A Review of Literature", International Journal of Technoethics (IJT), Vol. 11, no.2, pp. 65-94.

19. Reddy, P., Chaudhary, K., Sharma, B., Chand, R. (2022) "Talismans of Digital Literacy: A Statistical Overview", *The Electronic Journal of e-Learning*, Vol. 20, no. 5, pp. 570-587.

20. Samuels, P. (2017) "Advice on Exploratory Factor Analysis", https://www.researchgate.net/publication/319165677_Advice_on_Exploratory_Factor_Analysis

21. Saltanat, A., Kaldykul, S., Zaure, K., Saniya, K., Gulbanu, U., Karas, K., Bagdat, B. (2022) "Opinions of University Students on Technology Literacy", *International Journal of Engineering Pedagogy,* Vol.1, no.2, pp. 141-154.

22. Santiago, R.; Bergmann, J. (2018) "Aprender al Revés: Flipped Classroom y Metodologías Activas en el Aula", Planeta-Paidós: Barcelona, Spain.

23. Sánchez-Cruzado, C., Santiago Campión, R., Sánchez-Compaña, M.T. (2021) "Teacher Digital Literacy: The Indisputable Challenge after COVID-19", *Sustainability* Vol. 13, no. 4, pp. 1858.

24. Shrestha, N. (2021) "Factor Analysis as a Tool for Survey Analysis", *American Journal of Applied Mathematics and Statistics*, Vol. 9, No. 1, pp. 4-11.

25. Spante, M., Hashemi, S.S., Lundin, M., Algers, A. (2018) "Digital competence and digital literacy in higher education research: Systematic review of concept use", Cogent Education, Vol, 5, No. 1, pp.1- 21.

26. Špiranec, S., Banek Zorica, M. (2010) "Information Literacy 2.0: hype ordiscourse refinement?", *Journal of Documentation*, Vol. 66 No. 1, 2010, pp. 140-153.

27. statstutor, 2019. Spearman's correlation. [Online] Available at:

Available at: http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf

28. Taylor, S. (2023) Multiple Linear Regression. [Online] Available at: https://corporatefinanceinstitute.com/resources/data-science/multiple-linear-regression/

29. Tejedor, S., Cervi, L., Pérez-Escoda, A., Jumbo, F. T. "Digital Literacy and Higher Education during COVID-19 Lockdown: Spain, Italy, and Ecuador", *Publications*, Vol. 8, No. 4, 48.

30. Voogt, J., Erstad, O., Dede, C., Mishra, P. (2013) "Challenges to learning and schooling in the digital networked world of the 21st century", Vol. 29, No. 5, pp 403 –413.

31. Young, R., Davis, E., Wahlberg, L., Abhari, K., (2020) "Towards a Theory of Digital Entrepreneurship Mindset: The Role of Digital Learning Aptitude and Digital Literacy", Americas Conference on Information Systems (2020).

ANALYSIS OF TRAVEL AND TOURISM COMPETITIVENESS INDEX IN EASTERN PARTNERSHIP COUNTRIES

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Abstract: *Over the last decade until the Covid-19 pandemic, the international tourism market has seen significant growth every year, involving more and more states and regions in the tourism and travel industry. In a number of countries, tourism has become the main sphere of employment for citizens and the most important sector of the economy. Tourism thus became the source of economic, social and economic innovations and transformations. However, the pace of tourism development in each country is different and depends on a number of factors and conditions. There is no homogeneity in tourism development worldwide. The differences are generated by distinctive features and the ability to capitalise on the opportunities these distinct features offer. At the same time, the level of success of a country or region on the international market for tourism services depends directly on its competitiveness. The article focuses on the analysis of the competitiveness of tourism in the Eastern Partnership countries using the index of competitiveness in tourism and travel published in the World Economic Forum report. The analysis is performed by comparing data from 2017 and 2019 using the Promethee model. Through the research, we performed comparative analysis of the tourism situation in Ukraine, Republic of Moldova, Georgia, Armenia, Azerbaijan. The international report lacks data on Belarus. The results showed that most Eastern Partnership countries do not have a high level of competitiveness in tourism and travel. A positive effect is the upward trend of Georgia and Ukraine's performance in the research area. At the same time, although Ukraine, Armenia and the Republic of Moldova increased in the global competitiveness ranking, this growth was not high enough to reach Georgia's level.*

Keywords: *Eastern Partnership countries; tourism competitiveness index; environment empowerment; tourism policies; infrastructure; cultural and natural resources.*

JEL Classification: *L83, Q26, Z32.*

1. Introduction

Globally, the tourism industry is booming as a result of globalization and technological advances and has become a critical driver of social and economic growth in the world economy, as well as one of the main drivers of international trade (Liu, Cheng, OuYang, 2019). Economic growth processes associated with tourist activities generate a number of benefits for the economy (Cárdenas-Garcíaand, Pulido-Fernández, 2019). In this regard, tourism has proved to be a major activity, becoming a cornerstone of its business activity in some countries (Castro, Molina, Pablo, 2013). According to the World Tourism Organisation, in 2018, the number of arrivals of international tourists worldwide reached 1,4 billion. Already the seventh consecutive year, the growth of tourism exports (+4%) exceeded the growth of exports of goods (+3%) (World Economic Forum, 2019). The tourism industry, including the sectors: transport, accommodation, catering, entertainment and retail is of major social, cultural and political significance and makes the following substantial contributions to the development of the economy (APEC, 2000):

1) It is a key source of economic demand and growth in demand.

2) It is a major employer at all economic levels, generating sustainable employment opportunities.

3) It is a significant winner of the currencies.

4) It is an important source of business opportunities for small and medium-sized enterprises.

5) Distribution of economic benefits within and between economies, especially at provincial level.

6) It contributes significantly to the achievement of the economic and fiscal objectives of governments.

7) It is a catalyst for public-private partnership (Hong, 2008).

Despite its contribution to economic growth, the development of the tourism sector can be hampered by a number of economic and legislative obstacles that may affect the sector's competitiveness. In this context, the World Economic Forum proposes, through the Travel & Tourism Competitiveness Index, in addition to a methodology to identify key factors that contribute to increasing the competitiveness of tourism, and tools for analysing and evaluating these factors. The aim of this research is to analyse the tourist competitiveness of Eastern Partnership countries by using the travel and tourism competitiveness index and the Promethee method. The results of this research can detect obstacles and problems, as well as the tourism potential of the Eastern Partnership countries. In order to assess the position of tourism

competitiveness in the Eastern Partnership countries, four strands are analysed, enabling environment, travel and tourism policy and enabling conditions, infrastructure, natural and cultural resources. Data are collected from the Travel & Tourism Competitiveness Report for 2017 and 2019. The report does not contain data on Belarus's tourist competitiveness. For this reason, the tourism competitiveness of five Eastern Partnership countries without Belarus has been analysed. The data were analysed using the Promethee method and were created rankings for each of the four components of the tourist competitiveness index and the general ranking of competitiveness.

2. Literature review

The popularity of the term "competitiveness" emerged in the 2000s. The significance, scope, measurement and relevance of competitiveness have been widely discussed in various disciplines such as economy, management and political science. Competitiveness is an important factor in creating national prosperity (Durand, Madaschi & Terribile, 1998); because it improves the level of living and real income, offering goods and services with some comparative advantages (Crouch & Ritchie, 1999).

A key element for defining competitiveness is competition. Without competition, competitiveness is non-existent. The definition of competition requires understanding several other dimensions in addition to competitiveness:

1) competitors, i.e. competition with whom. In general, when two or more independent and interested individuals (groups or nations) have interdependent interests, they may decide to cooperate or cooperate rather than compete with each other;

2) competing objects, i.e. something (e.g. profits, market shares, material sources, innovation of ideas, service networks, customer satisfaction, etc.) that not all groups can easily obtain. Without competing objects, competition is not possible.

3) competitive capacity, i.e. independent interested individuals demonstrate their special characteristics and abilities during the competitive process; the more capable they are, the easier they obtain competing objects;

4) competing results, i.e. competing objects are eventually distributed to competitors. If the results are not mutually satisfactory, competition can continue (Eatwell, Milgate & Newman, 1991).

The competition between tourist destinations and, implicitly, between countries, in terms of the ability to attract tourists is extremely harsh, and competition must be looked at at its real dimensions, without having a very optimistic vision, as only in

this way can all the necessary measures be taken to ensure the efficient development of a holiday destination. In order to be able to impose itself on a competitive market, the tourist destination must ensure that the quality of its own products and services is, at least, comparable to that of other destinations (Hapenciuc, 2018). In this context, the tourism industry in different countries has begun to make sustained efforts from a material, financial or informational point of view to develop the competitiveness of tourism activity internationally.

The competitiveness of a tourist destination could be defined as its ability to attract tourists (Dupeyras & MacCallum, 2013). However, this definition cannot be applied without further analysis of traditional tourism performance indicators, as this activity is a service where the consumer must be moved to the place of production. Thus, the impact of consumption and production takes place in the same place, so that the impact of tourism on destination also becomes a determining factor for the future (Seyoum, 2007). Therefore, in order to make an appropriate diagnosis of competitiveness in this sector, it is important in the analysis to take into account the period during which interactions occur. In addition, the size of the tourism sector in each destination (country) depends both on the physical size of the country itself and on its attractiveness, which has made the competitive diagnosis based on performance focus on the analysis of the evolution of its flows (growth rates) rather than its levels.

Theoretical and methodological aspects, together with empirical applications that focus on tourism competitiveness analysis, have become important in recent decades, due to the evolution of the size and importance of tourism as a sector for many countries (Hong, 2008). Thus, Hong (2008), reviewing an important part of literature on this subject, indicates that there is still no common accepted and standardised definition of the competitiveness of tourism. In this respect, the vision that has a higher practical acceptance is derived from the analysis of performance in the sector (tourist arrivals, tourism receipts, etc.), as well as its similarity to commodity flows (exports), despite the fact that they are of less theoretical recourse (Bolaky, 2008).

According to the model for measuring and explaining the competitiveness of tourism proposed by Medina-Muñoz (2013), a comprehensive and appropriate way of analysis should adopt indicators from the definitional approach (e.g. indicators relating to the ability to attract visitors) and the approach to explanation (e.g. production and contextual factors) (Medina-Muñoz, 2013). The author therefore suggests a structural model in which the variables related to market share and demand growth are causally correlated with factors that determine competitiveness,

aiming at an explanatory approach with relevant political and managerial implications.

Approaches to defining the competitiveness of a tourist destination are as different as those concerning the definition of the concept of competitiveness as a whole. Thus, below, we will present a selection of eloquent definitions, we believe, for the topic addressed:

Table 1. Definitions of tourism competitiveness

Author	Definition
World Tourism Organization (UNWTO), 2019	The competitiveness of a tourist destination is the ability to use its natural, cultural, human and capital resources efficiently, for the development and delivery of quality, innovative, ethical and attractive tourism products and services, in order to achieve sustainable growth in line with its overall vision and strategic objectives, to increase the added value in the tourism sector, to improve and diversify its market components, to optimise the attractiveness of the destination and the benefits, both for visitors and for the local community, in a sustainable perspective.
World Economic Forum, 2019	...the set of factors and policies enabling the sustainable development of tourism, which in turn contributes to the development and competitiveness of a country.

Source: elaborated by authors

In economic practice, the Travel & Tourism Competitiveness Index, a methodology developed by the World Economic Forum (WEF), together with partners from each country under review, including international organisations such as IATA, OMT, WTTC, as well as private organisations (air airlines, hotel chains, etc.) is used in economic practice. The report is published by the World Economic Forum every two years. From a methodological point of view, the Travel & Tourism Competitiveness Index aims to assess the elements that ensure the development of the tourism sector in different countries through three categories of variables that affect the competitiveness of tourism globally. These categories are assessed through four subindices subordinated to Travel & Tourism Competitiveness Index: 1) the legislative and regulatory framework affecting the tourism sector. The elements assessed in this subindex relate to those aspects which depend directly or indirectly on the country-specific political climate and institutional environment; 2) business environment; 3) infrastructure;

4) natural, cultural and human resources involved in tourism activities.

Table 2. Travel & Tourism Competitiveness Index

Travel & Tourism Competitiveness Index	
Enabling environment	- Business environment - Safety and security - Health and hygiene - Human resources and labour market - ICT readiness
T&T policy and enabling conditions	- Prioritization of Travel & Tourism - International Openness - Price competitiveness - Environmental sustainability
Infrastructure	- Air transport infrastructure - Ground and port infrastructure - Tourist service infrastructure
Natural and cultural resources	- Natural resources - Cultural resources and business travel

Source: developed by authors based on The Travel & Tourism Competitiveness Report 2019

Each of these subindices is composed of a number of pillars defining the essential elements in the analysis of the competitiveness of tourism. These elements are: specific laws and rules; environmental sustainability; safety and security; health and hygiene; priority given to tourism; air transport infrastructure; land transport infrastructure; tourist infrastructure; IT infrastructure; price competitiveness; the human resource; affinity for tourism and travel; natural resources, cultural resources, climate change. Each of these pillars is in turn made up of a number of individual variables. The data set used to estimate these pillars includes both data from annual statistical surveys carried out by the World Economic Forum, quantitative data obtained from publicly accessible sources, as well as data from international organisations and tourism institutions and experts. The statistical study is also carried out among executive directors and business leaders who make decisions in this field. In addition, the Travel & Tourism Competitiveness Index methodology is not limited to awarding scores and scores to the tourism sector in various countries, but aims to create a common evaluation framework to compare performance in this area. Given the elements that make up Travel & Tourism Competitiveness Index, it is noted that at least a large proportion of them cannot be directly assessed by means of standardised statistical indicators being determined on the basis of opinion polls conducted either among specialists or customers.

3. Eastern Partnership Countries

In this article we aim to carry out the analysis of the Travel & Tourism Competitiveness Index registered in Eastern Partnership Countries. That is why we believe that it is necessary to give the definition of this group of countries.

The Eastern Partnership is an initiative to strengthen and deepen European Union cooperation with the Eastern Dimension States. The countries that are part of this initiative are: Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine.

Officially launched on 7 May 2009, at the Prague Eastern Partnership Summit, the initiative is governed by the principles of common involvement, differentiation and conditionality, and common values such as democracy, the rule of law, respect for human rights, as well as the principles of market economy, sustainable development and good governance underpin this partnership.

The Eastern Partnership falls within the broader framework of the European Neighbourhood Policy, designed in the context of the 2004 enlargement to avoid the creation of new demarcation lines and to bring Europe's new neighbours to the east and south closer to political, economic and values levels. (European Commission, 2020)

The Eastern Partnership is an European Union political instrument structureing cooperation with partner states on two dimensions: bilateral (signation and implementation of association agreements, creation of the free and in-depth trade area, visa liberalisation) and multilateral, which is carried out through thematic platforms and flagship initiatives. Cooperation on the parliamentary dimension of the EaP is carried out in the EURONEST Parliamentary Assembly.

4. Methodology

Data used in the research were collected from the Travel & Tourism Competitiveness Report for the years 2017 and 2019. The report contains data on the tourist competitiveness of 140 countries, accounting for about 98 % of the world's GDP of tourism and travel. The report does not contain data on Belarus's tourist competitiveness. For this reason, the tourism competitiveness of five Eastern Partnership countries (Georgia, Ukraine, Azerbaijan, Armenia and Moldova) has been analysed. The data were analysed in the Visual Promethee software. The Promethee method is the central part of multicryritery decision analysis (Boujelben, 2017), and allows the pair comparison of alternatives. The Promethee method has a considerable place among ultra-classification methods (Ballis & Mavrotas, 2007),

because the mathematical model of Promethee is relatively easy to make decisions (Gilliams, et al., 2005). Simplicity, clarity, reliability of result and rapid and simple sensitivity analysis are important advantages of this method. The ranking is made from the highest to the lowest number.

5. Results and Discussions

According to the data published in The Travel & Tourism Competitiveness Report 2019, the situation of countries analysed in terms of international tourist arrivals (ITA), international tourism inbound receipts (ITIR), average receipts per arrival (ARPA), tourism and travel industry GDP and tourism and travel industry employment, Ukraine has the highest number of arrivals in international tourism between Eastern Partnership countries. Ukraine has 63.5 % of arrivals in international tourism out of total tourist arrivals in the Eastern Partnership countries. Ukraine also generates the largest employment opportunities in the tourism industry. While Azerbaijan has the largest international tourism inbound receipts (ITIR) among the Eastern Partnership countries, 35.8 % of the total ITIR for Eastern Partnership countries.

Table 3. The situation of tourism in Eastern Partnership countries in terms of environment empowerment

	ITA	ITIR (million)	ARPA	T&T GDP (million)	T&TIE (job)
Georgia	4 069 400	$2 704,3	$664,6	$1 703,5	151 300
Azerbaijan	2 454 000	$3 011,8	$1 227,3	$1 662,5	160 700
Armenia	1 494 800	$1 120,2	$749,4	$502,8	36 900
Moldova	145 200	$319,4	$2 199,9	$103,2	10 300
Ukraine	14 229 600	$1 261,0	$88,6	$1 794,5	206 200

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2019

5.1. Environment of tourist activity

The environment, as the first component affecting the competitiveness of tourism, contains 5 pillars (business environment, safety and safety, health and hygiene, human resources and labour market, ICT readiness). Following the analysis of 40 indicators referring to the tourism environment using the Promethee model, out of the 5 Eastern Partnership countries in 2017 and 2019, Armenia, Moldova and Ukraine scored negative scores. Moldova and Ukraine have a relatively upward trend, but Armenia has had a downward trend. The reason for the decrease in Armenia's score is the safety and security subindex. The Security and Safety pillar fell from 5,9 in 2017, to 5,8 in 2019, which resulted in the 6-place fall in the 140

countries for which the Tourism and Travel Competitiveness Index was calculated, i.e. the 34th place fell to 40th on this pillar.

Table 4. The position of Eastern Partnership countries in terms of environment empowerment

	2017				2019			
	Phi	Phi+	Phi-	Score	Phi	Phi+	Phi-	Score
Georgia	0,1391	0,1878	0,0487	100	0,1517	0,1778	0,0261	100
Azerbaijan	0,0840	0,1378	0,0538	89,43	0,0119	0,0892	0,0773	75,43
Armenia	-0,0115	0,0865	0,0981	73,85	-0,0131	0,0705	0,0835	71,76
Moldova	-0,0910	0,0635	0,1545	62,97	-0,0619	0,0597	0,1216	65,06
Ukraine	-0,1205	0,0821	0,2026	59,32	-0,0886	0,0625	0,1511	61,66

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2017 and 2019

The upward trend of Moldova and Ukraine is explained by improving the business environment, safety and security, human resources and labour market, promptness in the tourism industry.

In the Republic of Moldova the pillar of the business environment improved (from 3,8 to 4), safety and security (from 5,4 to 5,5), human resources and the labour market (from 4,3 to 4,4), ICT readiness (from 4,3 to 4,6), and in Ukraine the pillar of the business environment improved (from 3,7 to 4,1), safety and security (from 3,5 to 4,8), ICT readiness (from 4,2 to 4,5).

Two countries (Georgia and Azerbaijan) scored positive scores. Georgia has a positive trend, and Azerbaijan has recorded a descent. The reason for Georgia's rise is the ICT readiness pillar, which has increased from 4,5 to 4,9.

5.2. Travel and tourism policy and enabling conditions

Travel and tourism policy and enabling conditions involve indicators of performance and prioritisation of tourism and travel, international openness, competitiveness costs, environmental sustainability. The most important indicators used in assessing the prioritisation of tourism and travel are the development of the tourism industry by the government, the state budget allocations for tourism: museums, parks, etc., marketing and advertising to attract tourism and the country's promotion strategy as a tourist destination.

The need for visas, the opening of new air routes, the number of regional trade agreements are important indicators of international openness. Competitiveness involves ticket prices, airport costs, hotel costs, purchasing power and fuel prices.

Finally, the most important indicators used in environmental sustainability are the restrictions imposed by environmental regulations, the enforcement of environmental regulations and the sustainability of the development of the tourism

and travel industry, the ratification of environmental treaties, the grubbing-up rate of forests.

Table 5. The position of Eastern Partnership countries in terms of travel and tourism policy and enabling conditions

	2017				2019			
	Phi	Phi+	Phi-	Score	Phi	Phi+	Phi-	Score
Georgia	0,0728	0,2804	0,2076	100	0,0565	0,2402	0,1837	100
Azerbaijan	0,0380	0,2326	0,1946	76,67	0,0263	0,2533	0,2270	94,12
Armenia	0,0598	0,1435	0,2033	93,26	-0,0252	0,1857	0,2109	84,91
Moldova	0,1207	0,1522	0,2728	67,81	-0,0152	0,2120	0,2272	86,62
Ukraine	0,0696	0,2370	0,1674	99,35	-0,0424	0,2011	0,2435	82,04

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2017 and 2019

23 indicators have been analysed. The results showed that the Republic of Moldova had the biggest increase in this chapter, from 67,81 in 2017 to 86,62 in 2019. The Republic of Moldova recorded growth in all pillars of tourism policy. The highest increase and effect, respectively, had the international opening pillar, which increased from 2,1 in 2017 to 3,1 in 2019. This made the Republic of Moldova not last among the Eastern Partnership countries in terms of tourism policy, but in the penultimate place, last place being occupied by Ukraine.

5.3. Infrastructure

The infrastructure component involves air and land infrastructure and tourism services infrastructure. The most important indicators in increasing the competitiveness of tourism according to infrastructure are the quality of aviation infrastructure, road quality, rail infrastructure quality, port infrastructure quality, land transport efficiency (bus, metro, etc.) and the quality of tourism infrastructure. In this respect, the Republic of Moldova is at the end of the ranking among the Eastern Partnership countries and registered a decrease in the score from 39,52 to 36,11. The Republic of Moldova has a bad position both in the air transport infrastructure pillar (2,1 out of maximum 7), placing it 104th in the world, as well as in ground and port infrastructure (place 106) and tourist service infrastructure (104th place).

Table 6. The position of Eastern Partnership countries in terms of infrastructure

	2017	2019

	Phi	Phi+	Phi-	Score	Phi	Phi+	Phi-	Score
Ukraine	0,2088	0,2544	0,0456	100	0,2529	0,2971	0,0441	100
Georgia	0,0132	0,1176	0,1044	67,21	0,0853	0,1868	0,1015	70,74
Azerbaijan	0,0721	0,1838	0,1118	75,62	-0,0015	0,1971	0,1985	59,45
Armenia	-0,0471	0,1044	0,1515	59,57	-0,0912	0,1118	0,2029	49,66
Moldova	-0,2471	0,0353	0,2824	39,52	-0,2456	0,0750	0,3206	36,11

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2017 and 2019

Increases in this area have been recorded by Georgia. Georgia's growth is due to improvements in airport infrastructure and tourism infrastructure. The air transport infrastructure pillar for Georgia records 2,5, thus ranking it 81st and the tourist service infrastructure pillar is 4,9, placing it 41st in the world. Georgia's tourist service infrastructure pillar is markedly detached from the rest of the Eastern Partnership countries, followed by the rankings of the Eastern Partnership countries of Armenia, which ranks 62nd worldwide and the tourism service infrastructure pillar is 4,3.

5.4. Natural and cultural resources

Natural and cultural resources have indicators such as the number of tourist attractions that are part of the world's heritage, natural attractions (parks, beaches, mountains, etc.), large sports venues, the number of cultural attractions.

Table 7. The position of Eastern Partnership countries in terms of cultural and natural resource components

	2017				2019			
	Phi	Phi+	Phi-	Score	Phi	Phi+	Phi-	Score
Georgia	0,1518	0,3665	0,2147	69,78	0,2825	0,4325	0,1500	100
Ukraine	0,4081	0,5450	0,1369	100	0,2675	0,4750	0,2075	96,81
Azerbaijan	0,1250	0,3500	0,2250	67,64	0,0700	0,2950	0,2250	64,37
Armenia	-0,0253	0,2997	0,3250	57,73	-0,0075	0,2925	0,3000	55,11
Moldova	-0,6596	0	0,6596	35,66	-0,6125	0	0,6125	13,44

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2017 and 2019

The results of the research showed that during the analysed period Georgia increased, while the rest of the countries decreased tourist competitiveness in terms of natural and cultural resources. The Republic of Moldova is very bad at the natural

resources pillar, which is 1,7 (out of 7) in 2019, placing the country in the world's 139th place in 140 countries, i.e. the second-last place in the world in the natural resources index. It should be noted that all five Eastern Partnership countries are low on this indicator. Armenia alone ranked 100th in the world rankings, ranking 95th in the world, with Georgia ranked 105th, Ukraine 116th and Azerbaijan 123rd. Eastern Partnership countries also have low values in the index of cultural resources. In 2019, the lowest value of cultural resources index among Eastern Partnership countries is the Republic of Moldova, with a value of 1,2 (out of 7), placing the country 117th out of 140 in the world ranking. Ukraine ranks 55th, Azerbaijan 57th, Georgia 79th and Armenia 91st in the world.

5.5. General position of tourism competitiveness in the Eastern Partnership countries

In this part of the research, the general position was investigated, i.e. enabling environment, travel and tourism policy and enabling conditions, infrastructure, natural and cultural resources.

Table 8. General situation of Eastern Partnership countries in terms of tourism competitiveness

	2017				2019			
	Phi	Phi+	Phi-	Score	Phi	Phi+	Phi-	Score
Georgia	0,0941	0,2068	0,1127	100	0,1303	0,2218	0,0915	100
Ukraine	0,0482	0,1960	0,1478	91,19	0,0223	0,1827	0,1604	80,46
Azerbaijan	0,0705	0,1846	0,1141	95,36	0,0192	0,1707	0,1515	79,95
Armenia	-0,0306	0,1218	0,1524	77,88	-0,0296	0,1297	0,1593	72,52
Moldova	-0,1821	0,0699	0,2521	57,29	-0,1423	0,0934	0,2356	57,77

Source: Developed by authors based on The Travel & Tourism Competitiveness Report 2017 and 2019

The results of the analysis of 90 indicators of tourism competitiveness among the Eastern Partnership countries have shown that Georgia has maintained its leading position in the group and Ukraine has managed to increase its tourist competitiveness between 2017 and 2019 and ranks second among the Eastern Partnership countries, surpassing Azerbaijan, and Azerbaijan moves from 2nd to third place. Armenia and the Republic of Moldova retained their positions in the Eastern Partnership since 2017.

6. Conclusions

The results showed that although Moldova and Armenia improved their own position in the world rankings (Moldova climbed from 117th to 103rd and Armenia from 84 to 79), they did not change their positions in the overall ranking of the tourist competitiveness of the Eastern Partnership countries. Georgia and Ukraine also rose in the world rankings (Georgia 70th rose to 68th, and Ukraine from 88 rose to 78). Azerbaijan retained its 2017 position in 2019 (the 71st place in the world), but lost a position in the Eastern Partnership countries, yielding to Ukraine.

Most countries try to use the advantages of the tourism industry by providing adequate opportunities and infrastructure. The region of partnership countries is an attractive place for tourism because it is not yet widely explored by tourists. The tourism industry has not developed in some countries; as a result, it is not successful to attract tourists. The tourism industry in today's world is the world's leading tourist industry after its positive economic, cultural and social effects. In many countries tourism is considered an important resource for business activities, revenue generation, employment and international exchanges. As the results show, most Eastern Partnership countries do not have a good competitiveness power in tourism and travel. A positive effect is the upward trend of Georgia and Ukraine's performance in the research area.

Analysing the overall situation of the tourism and travel competitiveness index in the Eastern Partnership countries and the evolution of 2017 and 2019, it could be concluded that although Ukraine, Armenia and the Republic of Moldova increased in the global competitiveness ranking, this growth was not so high that it could reach Georgia's competitiveness level.

Based on the results of this research, several recommendations can be proposed to improve tourism hospitality in the Eastern Partnership countries.

National tourism authorities should invest in capacity building of staff directly involved in tourism activities, such as language learning, business techniques and e-tourism, the environmental and socio-cultural impact of tourism, history, national flora and fauna, etc.

The Eastern Partnership countries should recover the insufficient infrastructure needed to develop a viable tourism industry. Action programmes for the development of tourism infrastructure should focus on promoting economic, cultural and social incentives.

The quality of tourism infrastructure, such as accommodation facilities, access routes, transport and communications, should be improved and adjusted to European Union standards. This would mean creating a safe environment for tourists during their journey by promoting safety and health measures. It is important to train the

local population to involve them in tourist activities and promote existing attractions and tourist resources available.

References:

APEC Tourism Charter (2000), *Seoul Declaration on APEC Tourism Charter. The 1st APEC tourism ministerial meeting,* APEC Tourism Charter: Seoul.

Ballis, A., Mavrotas, G. (2007), Freight village design using the multicriteria method PROMETHEE. *Operational Research,* Vol. 7(2), p. 213–231.

Bolaky, B. (2008), *Tourism Life Cycle, Tourism Competitiveness and Upgrading Strategies in the Caribbean*, Santiago: Economic Commission for Latin America and the Caribbean.

Boujelben, M. (2017), A unicriterion analysis based on the PROMETHEE principles for multicriteria ordered clustering. *Omega,* Vol. 69, pp. 126-140.

Cárdenas-García, P.J., Pulido-Fernández, J.I. (2019), Tourism as an economic development tool. Key factors, *Current Issues in Tourism,* Vol. 22(17), pp. 2082-2108.

Castro, M., Molina, J.A., Pablo, M.P. (2013), Tourism and GDP. A meta-analysis of panel data studies. *Journal of Travel Research*, 52(6), pp. 745–758.

Crouch G.I., Ritchie J.R.B. (1999), Tourism, competitiveness, and societal prosperity, *Journal of Business Research*, Vol. 44 (3), pp. 137–152.

Dupeyras, A., MacCallum, N. (2013), Indicators for Measuring Competitiveness in Tourism: A Guidance Document, *OECD Tourism Papers,* 2013/02, OECD Publishing: Paris.

Durand, M., Madaschi, C., Terribile, F. (1998), Trends in OECD countries' international competitiveness: The influence of emerging market economies, *Economics Department Working Papers* No. 195, OECD Publishing: Paris.

Eatwell, J., Milgate, M., Newman, P. (1991), *The new palgrave: A dictionary of economics*, The Macmillan Press Ltd: UK.

European Commission (2020), *Eastern Partnership policy beyond 2020*, Brussels.

Gilliams, S., Raymaekers, D., Muys, B., Orshoven, J. (2005), Comparing multiple criteria decision methods to extend a geographical information system on afforestation, *Computers and Electronics in Agriculture,* Vol. 49(1), pp. 142-158.

Hapenciuc, C. (2018), *Cercetări privind implicaţiile noilor tehnologii informaţionale în contextul creşterii competitivităţii sectorului turistic din România*, Teză de doctor, Suceava.

Hong, W.C. (2008), *Competitiveness in the Tourism Sector: A Comprehensive Approach from Economic and Management Points,* Amsterdam: Physica-Verlag.

Medina-Muñoz, D. (2013), Tourism competitiveness assessment: The current status of research in Spain and China, *Tourism Economics*, Vol. 19(2), pp. 297–318.

Seyoum, B. (2007), Revealed Comparative Advantage and Competitiveness in Services: A Study with Special Emphasis on Developing Countries, *Journal of Economic Studies,* Vol. 34(5), pp. 376-388.

World Economic Forum (2019), *The Travel & Tourism Competitiveness Report. Travel and Tourism at a Tipping Point*, Insight Report.

World Economic Forum (2017), *The Travel & Tourism Competitiveness Report. Paving the way for a more sustainable and inclusive future*, Insight Report.

World Tourism Organization UNWTO (2019), *Tourism definitions,* [Online], Available: https://www.e-unwto.org/doi/epdf/10.18111/9789284420858 [10 April 2023].

World Travel and Tourism Council (2016), *Economic impact analysis,* London: World Travel and Tourism Council.

ANALYSIS REGARDING THE DYNAMICS OF SMEs IN ROMANIA AND EUROPEAN UNION

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Abstract: *SMEs are a concluding and relevant part of Europe's economy. A comparison between the dynamic of the added value, employment and number of enterprises is followed from 2018 to 2022 in Europe and Romania. This period had its ups and downs with the most notable ones being the Covid-19 pandemic and more recently the Russian invasion against Ukraine, both of which left some deep marks in the economy. Also, SMEs are being contrasted by large enterprises in order to obtain an image of their impact in economy. The food and accommodation sector is briefly debated because of the susceptibility that it may have been one the most affected sector at least in terms of the pandemic influence. Some of the measures taken for supporting the travel and tourism sector in Romania are also briefly debated.*

Keywords: *added value, employment, SMEs, Romania, European Union.*

JEL Classification: *E24; L83; M10; Z30.*

Introduction

European Commission affirms that small and medium-sized enterprises (SMEs) are the backbone of Europe's economy. They represent 99% of all businesses in the EU. They employ around 100 million people, account for more than half of Europe's GDP and play a key role in adding value in every sector of the economy. SMEs bring innovative solutions to challenges like climate change, resource efficiency and social cohesion and help spread this innovation throughout Europe's regions. They are therefore central to the EU's twin transitions to a sustainable and digital economy. They are essential to Europe's competitiveness and prosperity, industrial ecosystems, economic and technological sovereignty, and resilience to external shocks. Rotar et. al (2019) concluded that SMEs have a main part in achieving innovation potential, enhancing employment rate and creating added value which all effects national growth and development.

Discussions on the main indicators of SME development in Romania and the EU

We will analyze the evolution of Romanian SMEs in the European context in relation to the main indicators that reflect economic development, namely: added value, employment rate and number of enterprises. The analysis period starts with 2017 and ends with 2022.

Dynamic regarding added value and employment of SMEs, in Romania and/ or European Union
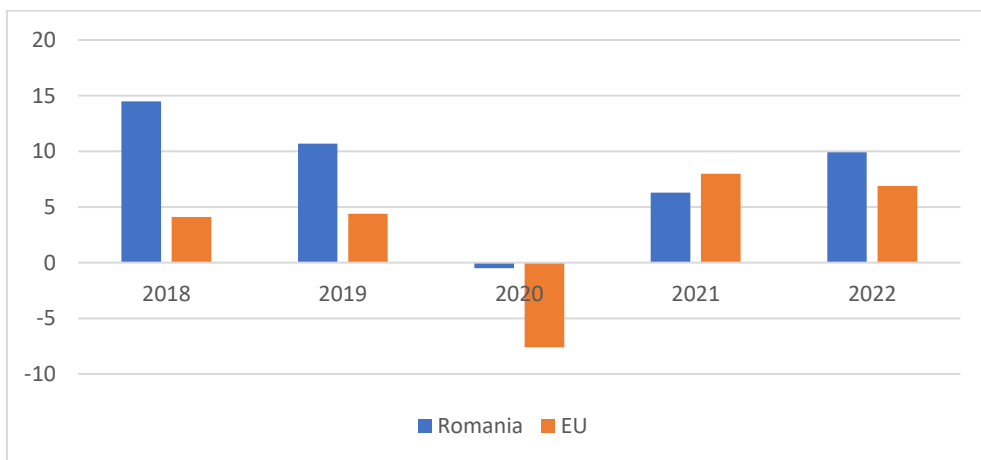
Figure 1: Added value in Romania and European Union in SME business class.
Source: Annual Report on European SMEs (from 2018 to 2022)

In Romania it can be observed that the maximum value registered from year to year, regarding the added value is 14.5 percent in 2018 compared with 2017. In the following year, 2019, the percentage drops to around 10.7, meaning a decline in the growth rate at around 4 percentage points. The year 2020 marks the beginning of the Covid-19 pandemic and a decrease in the value added compared to 2019 of 0.5 percent. In 2021, it can be observed that there is an improvement, translate into a growth of 6.6%. A reason for this might be the ease in the restrictions and a better understanding of the pandemic. For 2022, the results are only expected to reach 9.9% in terms of growth of the added value. But the start of the Russian invasion against Ukraine in February 2022 up to the present moment, that shock the whole Europe, may interfere with the expectation for the 2022 regarding the added value.

In Europe's case the numbers are a bit on a different path. In 2018 and 2019 the growth rate of the added value is between 4.1% and 4.4%, so at a lower rate than Romania's. 2020 brought a huge decrease of around 7.6%. In 2021, Europe's recovery in terms of percentages is better than Romania's, registering around 8%. The expected value for 2022 is lower compared to Romania, at a rate around 6.9 percent. Overall, it may be considered than Romania it's a bit more balanced than Europe, relating only at the added value indicator showed above.
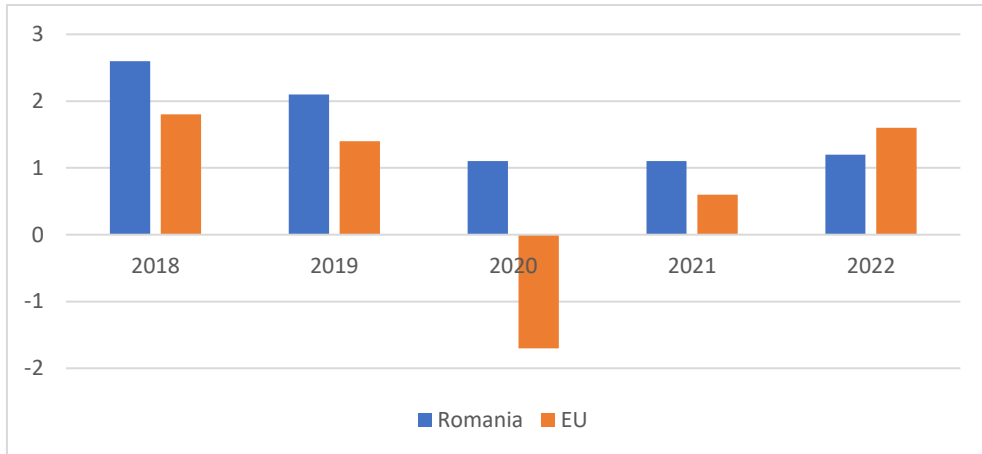
Figure 2: Dynamic of the Employment rate (from year to year) in SME business class.
Source: Annual Report on European SMEs (from 2018 to 2022)

Regarding the employment, this indicator is more or less the same as tendency in Romania and European Union with an exception in 2020. In that year, in EU, was registered a decrease of 1.7 percent compared with 2019 while in Romania's case the dynamic was positive, meaning an increase by 1.1% compared with the previous year. The percentage is higher in EU only in 2022 (which is going to be expected) in the other period analyzed Romania is situated above the EU average. Again, in Romania's case, thigs seem to be more balanced compared to EU, especially regarding the year 2020.
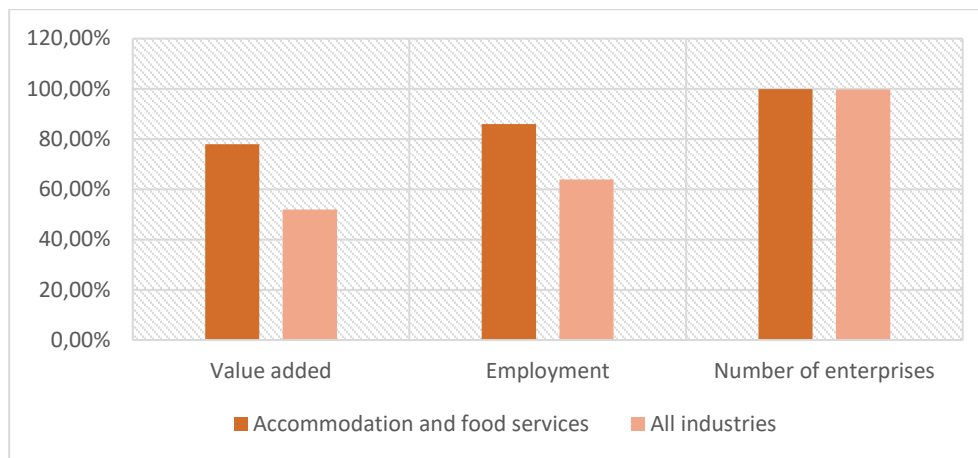
Figure 3: Proportion of total value added, employment and number of enterprises accounted for by SMEs in various EU-27 NFBS industries in 2021.
Source: Annual Report on European SMEs 2021/2022

In all the industries overall (NFBS-non financial business sector) and also in the accommodation and food services area, small and medium enterprises (SMEs) have a tremendous share (between 99.7-99.9%) in the total of enterprises. So, SMEs have a great impact in terms of numbers but if we look at the value added, SMEs only provide around 78% from total in accommodation and food services area and 52% in the entire industries (excepting NFBS). Even thou they are great in number, they are somehow divided and not able to create or to achieve a greater performance based on the added value that they are generating. In other words, large enterprises, that have a share of only 0.1% to 0.3% from the total, generate 48% of the added value in the total of industries in Europe. It can be mentioned that larger companies, generally speaking, are far more efficient and have more efficacy than the SMEs counterpart. Some of the reasons may be the ease of scalability and the economy of scale implemented after reaching a certain level of dimension. This does not mean that SMEs don't show a certain level of the above mentioned (in fact large companies were once SMEs, that went the extra mile thus reaching this status) but maybe by being so divided the results are somehow scatter and not as visible. The next indicator (employment) from Figure 3. is positioned better than the former meaning that accommodation and food services SMEs provide around 86% from the total while generally speaking for all the industries, large enterprises provide 36% and SMEs 64%. Regarding the number of enterprises in both the sectors analyzed the values are starting from a minimum of 99.8%, translated in the fact that the NFBS as an overall or just by concentrating at the accommodation and food sector is dominated by SMEs (as number of enterprises).
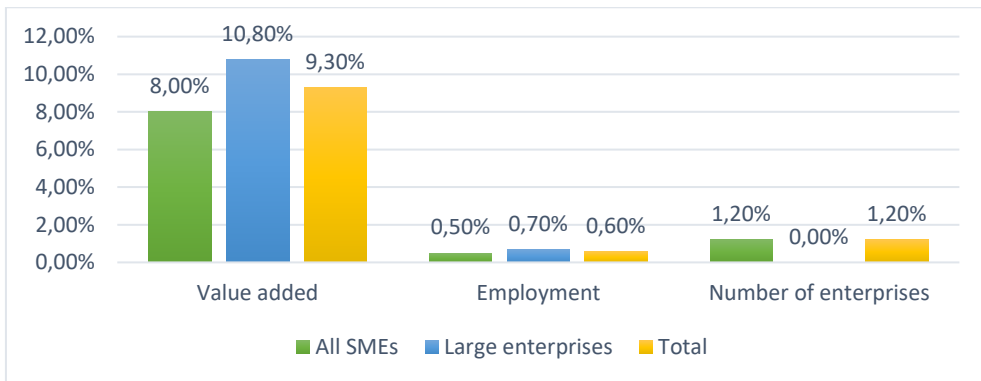
Figure 4: Percentage change in value added, employment and number of enterprises in 2021 compared to 2020 by enterprise size class in the NFBS.
Source: Annual Report on European SMEs 2021/2022

In 2021 compared to 2020 the situation its better looking regarding the added value, employment and number of enterprises. All three categories for all 3 types of business classes recorded an increase (with an exception), again the added value tops with percentages from 8 to 10.8. Meanwhile, employment increased at a lower rate but that may indicate that enterprises are getting more and more efficient, also because of a somehow forced digitalization induced by the pandemic. The number of enterprises is only influenced by the increase of SMEs while large enterprises are at the same level as in 2020.
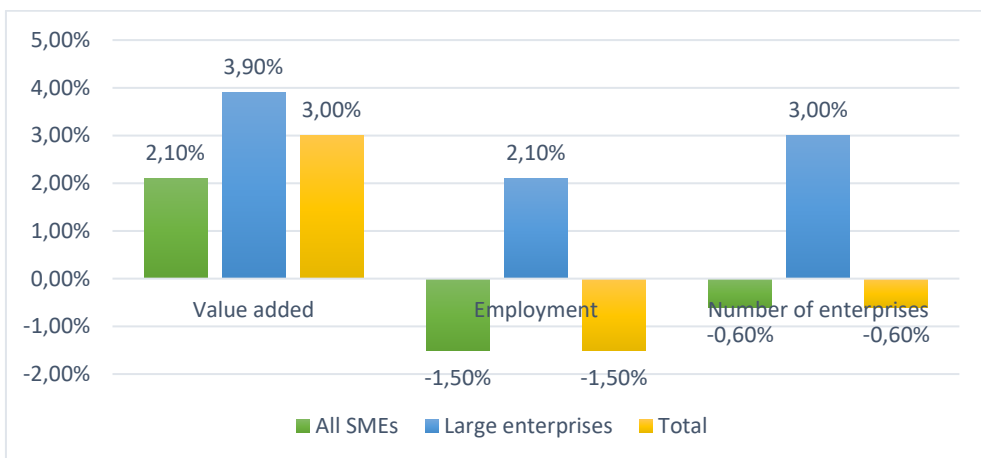
Figure 5: Percentage change in value added, employment and number of enterprises in 2021 compared to 2019 by enterprise size class in the NFBS.
Source Annual Report on European SMEs 2021/2022

Regarding the added value it can be said that all 3 categories analyzed in Figure 7 have grown from 2.1% (for all SMEs) to a high of almost 4% in large enterprises class. On the other hand, large enterprises are the only ones that registered an

increase (speaking in terms of percentages) on all 3 categories analyzed. Meanwhile The employment specific to SMEs sector decreased with around 1.5 percent in 2021 compared to 2019. Also, total employment decreased with the same amount, 1.5%. Based on the number of enterprises, SMES share the same amount of decrease, 0.6%, as the total. Hereby, it can be affirmed that large enterprises somehow managed to handle the pandemic somehow better than SMEs. A reason for this might be by having enough resources (financially mostly but not just that) in order to be able to respond more accurate to the disruptions that the pandemic brought. Meanwhile, SMES looked as being a bit more vulnerable in front of this kind of disruptive stimuli.
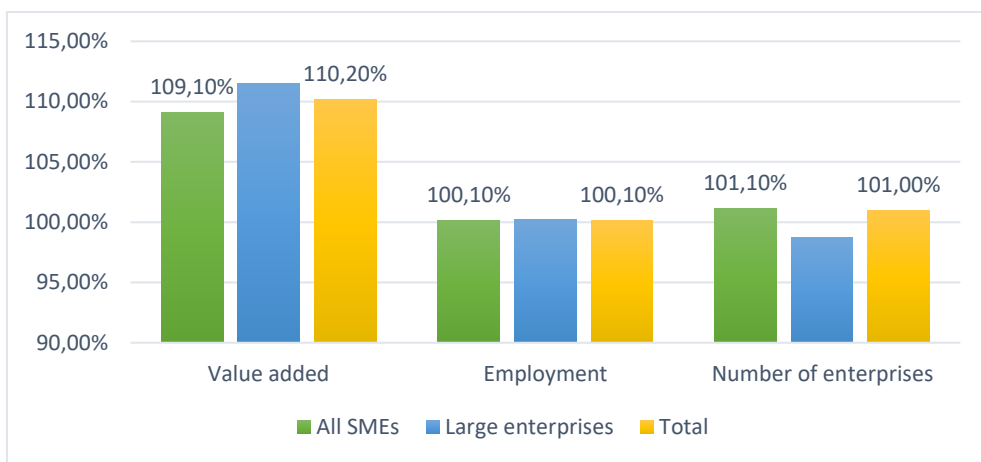
Figure 6: Expected EU-27 value added, employment and number of enterprises in 2022 as a percentage of their 2019 values, by enterprise size class.
Source: Annual Report on European SMEs 2021/2022

For 2022 are expected increases in all but one category, number of large enterprises, which is in a decline of around 1.3% (a share of 98.7% compared to 2019). So far 2019 is a strong point of reference because things have gone better up until then since the last big crisis, the 2008 great recession. So, these number for 2022 are excepted but the situation is not fully accurate. Mostly because of the impact that the Russian invasion of Ukraine have on European Union which had ramifications in a lot of areas that are extremely difficult to forecast.

Measures taken to support the tourism and travel sector in Romania during and after the Covid-19 pandemic

The European Parliament through its Transport and Tourism Committee discussed with the European Commission upon the measures to be taken in order to relief control the COVID-19 outbreak. Companies and workers in the tourism sector are benefiting from EU measures adopted in response to the crisis caused by the COVID-19 pandemic, including liquidity support, tax breaks and a relaxation of state aid rules, as well as the temporary suspension of the EU rules on time slots, to avoid flights with empty aircraft (according to the European Parliament).

According to UNWTO (United Nations World Tourism Organization) in Romania during the state of emergency, small and medium-sized enterprises holding the emergency situation certificate issued by the Ministry of Economy, Energy and Business Environment, benefit from the deferred payment for utilities - electricity, natural gas, water, services telephone and internet, as well as the deferred payment of the rent for the building destined for registered office and secondary offices.

Also, an aid scheme worth approximately 3.3 billion euros was introduced to support small and medium-sized enterprises (SMEs) in the context of the COVID-19 pandemic. Tourism businesses benefitting as well.

Some other measures involve a new guarantee scheme of about 1.5 billion lei (0.15 percent of GDP) which was adopted to support the procurement of work equipment by SMEs. Other measures include faster reimbursement of VAT, suspending foreclosures on overdue debtors, suspending tax authorities' control, discounts for paying corporate income taxes, postponement of property tax by three months, exempting the hospitality industry from the specific tax for 90 days.

The emergency ordinance for providing state financial support to entities in the HoReCa sector was another measure, worth 1 billion lei (approximately 200 million euros).

March 2021, the National Council of Private Small, Medium Enterprises of Romania (CNIPMMR) proposes the programme "IMM Restart Romania" with a budget of 1.23 billion EUR to support the SMEs in the context of the economic crisis generated by the Covid-19 pandemics.

In order to support tourism businesses hardly hit by the COVID-19 crisis, the Romanian Government has decided to maintain the Tourist Pass Holiday 13 initiative (holiday vouchers for public employees similar to the meal tickets, with which employees can buy tourist services in Romania, i.e., accommodation, meals and transport), and the validity of vouchers granted between March 19 and December

2019 has been extended by law until 31 May 2021. These vouchers can be granted and managed only to licensed operators, authorized by the Tourism Ministry.

The Economy, Energy, and Business Environment Ministry have launched a campaign meant to support the local hospitality industry and encourage Romanians to rediscover the country as a tourism destination and promote it online.

The campaign, titled Be the ambassador of Romanian tourism!, will feature video messages from various personalities, supporting local tourism. These will be published on the ministry's social media channels.

In conclusion

The year 2020 marks the beginning of the Covid-19 pandemic and a decrease in the value added compared to 2019 of 0.5 percent. In 2021, it can be observed that there is an improvement, translate into a growth of 6.6%. A reason for this might be the ease in the restrictions and a better understanding of the pandemic. Regarding the employment, this indicator is more or less the same as tendency in Romania and European Union with an exception in 2020. In all the industries overall (NFBS-non financial business sector) and also in the accommodation and food services area, small and medium enterprises (SMEs) have a tremendous share (between 99.7-99.9%) in the total of enterprises. So, SMEs have a great impact in terms of numbers but if we look at the value added, SMEs only provide around 78% from total in accommodation and food services area and 52% in the entire industries (excepting NFBS). Even thou they are great in number, they are somehow divided and not able to create or to achieve a greater performance based on the added value that they are generating. In other words, large enterprises, that have a share of only 0.1% to 0.3% from the total, generate 48% of the added value in the total of industries in Europe. It can be mentioned that larger companies, generally speaking, are far more efficient and have more efficacy than the SMEs counterpart. Some of the reasons may be the ease of scalability and the economy of scale implemented after reaching a certain level of dimension.

Some of the measures undergone for better handling the COVID-19 outbreak in Romania's case were that small and medium-sized enterprises benefitted from the deferred payment for utilities, deferred payment of the rent for the building destined for registered office and secondary offices. Also, Implementing a campaign meant to support the local hospitality industry and encourage Romanians to rediscover the country as a tourism destination and promote it online. It can be mentioned also the adopting of a new guarantee scheme to support the procurement of work equipment

by SMEs. And also implementing faster reimbursement of VAT, suspending foreclosures on overdue debtors, suspending tax authorities control, discounts for paying corporate income taxes.

References

1. Annual Report on European SMEs 2017/2018, [Online], Available: https://single-market-economy.ec.europa.eu/smes/sme-strategy/sme-performance-review_en [21 Mar 2022].

2. Annual Report on European SMEs 2018/2019, [Online], Available: https://single-market-economy.ec.europa.eu/smes/sme-strategy/sme-performance-review_en [18 Mar 2022].

3. Annual Report on European SMEs 2021/2022, [Online], Available: https://single-market-economy.ec.europa.eu/smes/sme-strategy/sme-performance-review_en [21.03.2022].

4. European Commission, [Online], Available: https://single-market-economy.ec.europa.eu/smes_en [18 Mar 2022].

5. European Parliament, [Online], Available: https://www.europarl.europa.eu/news/ro/press-room/20200507IPR78616/response-to-pandemic-is-vital-for-the-sustainable-future-of-the-transport-sector [13 Apr 2023].

6. European Parliament, [Online], Available: https://www.europarl.europa.eu/news/ro/headlines/society/20200429STO78175/covid-19-sprijinul-ue-pentru-sectorul-turismului [13 Apr 2023].

7. Laura Južnik Rotar, Roberta Kontošić Pamić & Štefan Bojnec (2019) Contributions of small and medium enterprises to employment in the European Union countries, Economic Research-Ekonomska Istraživanja, 32:1, 3302-3314, DOI: 10.1080/1331677X.2019.1658532.

8. UNWTO [Online], Available: https://www.unwto.org/tourism-data/covid-19-measures-to-support-travel-tourism [13 Apr 2023].

THE IMPACT OF COVID - 19 PANDEMIC ON THE QUALITY OF WORK WITHIN A MANUFACTURING COMPANY BASED ON CONTINUOUS IMPROVEMENT

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Abstract*: The study was conducted in a manufacturing company with foreign subscribed capital, that has implemented several principles on continuous improvement, and aims to reveal the impact of COVID – 19 pandemic on the quality of work. In recent years, in order to streamline and improve the company`s activity, several measures related to the production processes have been implemented, which obviously also involved the quality of the work performed. Since the company adopted the principles of continuous improvement, the outcomes were obvious, both in terms of economic-financial indicators and in terms of the skills and competencies of the workforce. The role of the workforce in continuous improvement is a vital one, therefore the company has successfully implemented working procedures that had led to the standardization of the way of working. With the COVID–19 pandemic, there have been certain changes at the company level, with different impacts on employees and their work. Based on the company`s internal data, this paper analyzes the results of the evaluation of employees' work performance, over a period of four years (2019 - 2022).*

Keywords: *quality of work; employees; continuous improvement; manufacturing company; COVID-19 pandemic.*

JEL Classification: *M12; M53*.

1. Introduction and theoretical framework

The COVID-19 pandemic was a phenomenon with a rapid and significant impact on the world's public health, the world's economies, financial markets, and society in general generating major changes in the way economic activities are carried out, the way of working, and the way of socializing among individuals. But at the same time, "COVID-19 has demonstrated that necessity is in fact the driver of change" leading

to developing innovations, some of them with potential long-term societal impact (Zimmerling and Chen, 2021).

Manufacturing companies have faced numerous challenges (decrease in demand, supply chain disruptions, illness or quarantine requirements for employees, etc.), and, due to the specificity of the activity, the continuity of operations and the way of working was necessary. This could be achieved by complying with all the rules and recommendations in the field of health. In other sectors of activity, work could be carried out remotely, from home, which was almost impossible in the case of the manufacturing industry. However, some researchers (Vahedi-Nouri et al., 2022) have developed different models for workforce planning and production scheduling in order to face the Covid-19 crisis and the possibility to be adapted in other similar crises. In their study, Kosieradzka, Smagowicz and Szwed (2022) presented the solutions implemented in Polish manufacturing companies in order to have continuous activity during the COVID-19 pandemic and they pointed out that some of the work and production organization solutions that they identified are innovative. Studies that revealed the negative impact of the COVID-19 pandemic on the manufacturing sectors of different countries were published. In this sense, we can mention the study of Dweck et al. (2022) which revealed the negative impact of the pandemic on the Brazilian manufacturing sector, or the study of Li and Bai (2023) which showed that the impact of the COVID-19 pandemic on China's manufacturing is much smaller than that of the US and the EU.

Considering manufacturing firms in Norway, Hermundsdottir, Haneberg and Aspelund (2022) showed that the COVID-19 pandemic had negatively affected the adoption of environmental innovations and the most affected were the companies that were oriented the most toward implementing environmental innovations before the pandemic. On the other hand, an analysis at an individual level (Huang, Lin and Lee, 2023), based on a sample of 262 employees from 40 manufacturing SMEs in Taiwan, revealed the employees' increased proactive innovative behavior in response to environmental turbulences and crises.

In searching for solutions to the problems that arise in turbulent periods (such as it was the Covid-19 pandemic period), Bianco et al. (2023) showed that by implementing Industry 4.0 technologies, manufacturing companies can develop their resilience through flexibility, reliability, robustness, and responsiveness. By conducting an analysis al the level of Italian regions, Lepore, Micozzi and Spigarelli (2021) also highlighted that industry 4.0 technologies can be a fundamental tool for economic recovery by favoring the shift towards sustainable manufacturing. The research of Cugno et al. (2022) is along the same line, revealing that Industry 4.0, corroborated with the digital reorganization of production activity, can accelerate

production recovery to pre-COVID-19 levels. Also, Mohapatra et al. (2022) revealed the significance of digital technology in manufacturing sectors, by examining twelve key factors during the Covid-19 pandemic. Ambrogio et al. (2022) also wrote about the impact of the Covid-19 pandemic on the workforce and supply chain, which can turn into an opportunity for fostering digital and technological innovation, which further leads to more resilient manufacturing systems. Gamal, Abdel-Basset and Chakrabortty (2022) have identified barriers that direct impact manufacturing sectors, and highlighted that establishing flexible supply chains and identifying barriers to the operation of industries can contribute to recovering from crises. Mezgebe et al. (2023) emphasized the role of Intelligent Manufacturing Systems for post-COVID-19 recovery and growth of the manufacturing industry.

Other studies concentrated on analyzing and revealing the effect of long Covid on general health status and working ability (Jain et al., 2023; Kisiel et al., 2023; Magnavita et al, 2023), on the workers' productivity and efficiency (Sakpere et al., 2023; Prathamesh, Mubashir and Rajashree, 2023), on the psychological impact of the Covid-19 pandemic on workers (Laskaris et al., 2022), on identifying and determining human resource risk control to support employee productivity in manufacturing companies during the COVID-19 pandemic (Ambarwati, Yuliastri and Sulistiyowati, 2022), or on investigating human resource management practices on employee productivity during the pandemic (Aggarwal, Khurana and Shefali, 2023).

Through this research we aim to investigate the impact of COVID – 19 pandemic on the quality of work within a manufacturing company, reflected by the results of the performance evaluation system applied. The analysis is based on the company`s internal data, over a period of four years (2019 - 2022).

The rest of the paper is organized as follows: section 2 presents the company profile and the employee evaluation system that the company uses, section 3 presents the results of the evaluations of the quality of work of the employees during the pandemics and the discussions related, and section 4 presents the conclusions of the study.

2. The company profile and the employee evaluation system

The company subject to this study is a manufacturing company with Belgian subscribed capital. The analysis focused on the factory owned by this company, in the North-West region of Romania, where there are about 350 employees. This factory produces sofas to the highest quality standards and the entire production is intended for export. Production at high-quality standards obviously implies, in

addition to the use of quality production factors, the efficiency and continuous improvement of production processes. And because, a few years ago, the company was facing a series of problems related to the production process, its management decided to focus on implementing measures that would lead to improvements within their factory, by adopting Kaizen principles and tools.

Since the company adopted the principles of continuous improvement, the outcomes were obvious, both in terms of economic-financial indicators and in terms of the skills and competencies of the workforce. The first results of the changes at the company level were detailed in a previous study (Sehleanu and Flore, 2019). The role of the workforce in continuous improvement is a vital one, therefore the company has successfully implemented working procedures that had led to the standardization of the way of working.

During the year 2019, the company implemented new employee evaluation forms, which were applied to production and administrative employee. The study focuses on the production evaluations, due to the fact that represent the real workforce within the company. The year 2019 was a decisive one for the company, with regard to improvements, and clearly, the first results were visible within evaluations.

Employees are evaluated based on:
1. Professional competencies (knowledge and experience).
2. Complexity, creativity, and diversity of the activities.
3. Social dialogue and communication.
4. Working conditions.

The evaluation form is presented in Annex 1. It can be seen that each of the four categories is structured into several evaluation categories, which leads to a more complex, objective, and accurate evaluation.

3. Employees' performance evaluation during Covid-19 - results and discussion

Every year, evaluations are conducted within fifteen departments such as:
- *Wood processing Department* - the department that transforms the wood into pieces that will form the sofa casing.
- *Foam processing Department* - the department that has the purpose of turning the foam blocks into elements necessary for gluing on the casing of the sofa.
- *Tailoring department* - the department that transforms fabrics, leather, lining and wadding into pieces that will form the covers of the sofa.
- *Stitching Department* - the department that sews the cut sections, resulting in the sofa cover.

- *Pillows filling Department* - the department that uses the process of filling the white lining, in order to form the elements of a sofa (seats, backrests), but also of decorative pillows.
- *Mounting Department* - the department that assembles the pieces from the wooden table into the sofa casing.
- *Gluing Department* - the department that forms the final case through the process of gluing the foam parts to the mounted wooden case.
- *Mechanisms Department* - the department that performs the mechanisms (manual and electric) for assembling them into the finished product.
- *Upholstery Department* - the department that carries out the final assembly of the sofa, through the process of upholstering the cover on the case glued with a sponge and adding the mechanisms from case to case, depending on the model
- *Packing Department* - the department that manually packs each module of the final product
- *Loading Department* - the department whose function is to load shipments with finished products
- *Warehousing Department* - the department that is responsible for the activity of the warehouse (the building, in which large quantities of goods or materials are kept, import and export of raw materials)
- *Maintenance Department* – the department that is responsible for repairs within the company (machines, tools).
- *Learning Department* – the department that is responsible for workforce learning, helping with upholstery processes.
- *Sofa Feet Department* – the department responsible for preparing the feet that will be attached to the finished products.

As we can observe from Figure 1, in 2019, a total number of 285 employees were evaluated, in 2020 a total number of 273 employees, and the same number in 2021, which express clearly the fact that the company provided stability to its employees. At the end of 2022, were evaluated 276 employees. All the employees were evaluated based on the Evaluation form included in Annex 1. For each evaluation criterion, a grade between 1 and 5 was given (1 - the lowest, and 5 - the highest). The final grade of the evaluation is calculated as the arithmetic mean of the marks awarded for each evaluation criterion. Therefore, with a score between 1.00 and 2.00, the evaluation result was Unsatisfactory (N), between 2.01 and 3.50, the result was Satisfactory (S), between 3.51 and 4.50 the result was Good (G), and between 4.51 and 5.00 the result was Very Good (VG).

In the following, we will analyze the results in more detail, offering related explanations.
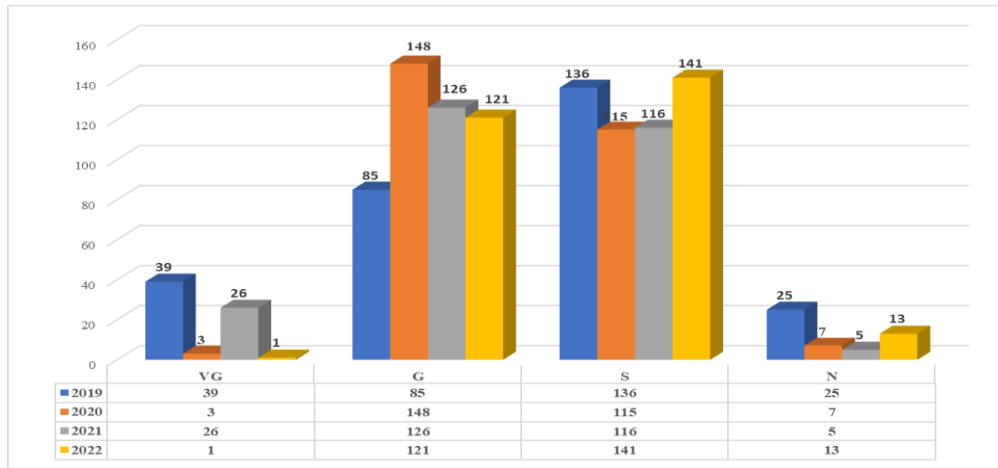
Figure 1: Employees' performance evaluation ratings from 2019 to 2022
Source: Authors` elaboration, based on company internal data

At the end of 2019, the evaluations had the following results (from a total of 285 production employees):

- 39 employees with a rating of VG (Very Good) – representing 13,68%
- 85 employees with a rating of G (Good) – representing 29,82%
- 136 employees with a rating of S (Satisfactory) – representing 47.72%
- 25 employees with a rating of N (Unsatisfactory) – representing 8,77%
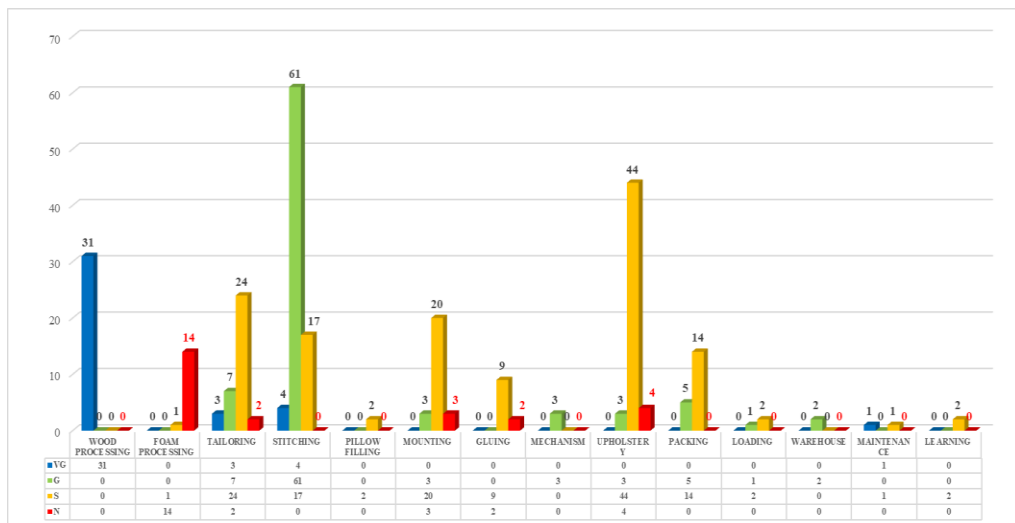
Figure 2: Employees evaluation results in 2019 per department
Source: Authors` elaboration, based on company internal data

The evaluation results obtained in 2019, made the company become focused on understanding the general trend of the employees and to aim for improving the quality of work, on operational direction by:
- Implementing operational standardization, including work instructions for each department/ model – in close collaboration with R&D department.
- Higher involvement of the learning team that performs professional training, which builds a worker's skills.

Training materials include work relations, work improvement (Kaizen), and work instructions. In addition to the implementation of training materials, the company has invested in work tools to help and protect the workers during the activities. A good example is represented by the pneumatic tables in the upholstery department, tables that are placed in front of the operator and are raised and lowered, avoiding excessive physical effort. Handling the wooden frames, glued with foam parts, becomes easier, as they are no longer lifted manually (there are models where the case glued with sponge exceeds several tens of kilograms).

Work instructions (W.I) were designed on the principle of Visual Management, using photos from the process (per element, per model). These suggestively presented WHAT, HOW, WHERE, and WHEN must be done, the procedure becoming easier to understand in training/retraining/checking (in Upholstery, Gluing departments). For departments where pictures are not needed, and the activity is technical, 3D sketches were created, through which the process is presented from several angles, and the ability to understand is higher (in Mounting, Foam departments).

Above mentioned implementations were carried out for a whole year, a fact that brought benefits to the employees, the ability to understand the activity in the processes became increasingly high, as other studies have already shown (Rodrigues et al.,2020; Sundararajan and Terkar, 2022).

The COVID-19 pandemic has had a significant impact on the global economy and workforce worldwide. The public health measures, restrictions, and disruptions caused by the pandemic have generated significant changes in the way people work and the structure of the labor market. On a global level, there have been changes in work models, the pandemic bringing remote work, and flexible work schedules, but also unemployment. The pandemic brought with it adaptation to changes and new requirements at the workplace. In the labor market, in many cases, professional reorientation was necessary to accelerate the adoption of technology and automation at workplaces, with effects on the requirements and retraining of employees.

The company subject to our study made every effort to maintain stability, did not carry out layoffs, and provided all health safety measures. These actions offered the

employees psychological safety, and every employee was supported in every aspect. All these efforts were rewarded, the employees offering in return seriousness, a higher degree of involvement in the activities at the workplace, this fact being visible in the results of the evaluations during the pandemic period.

With the outbreak of the COVID-19 pandemic, there have been certain changes at the company level, with different impacts on employees and their work. At the end of 2020, as Figure 1 shows, employees in the VG (Very Good) category were affected (discouraged) - if in 2019 there were 39 employees with this rating, in 2020 their number dropped to only 3 employees who excelled during the year. The rating category G (Good) included 148 employees in 2020 compared to 85 in 2019. Those in category G (Good), are on one hand, the employees who were discouraged and affected by the pandemic conditions (from rating category VG - Very Good), and on the other hand, the employees who evolved (from rating category S - Satisfactory), they improved, they encouraged themselves, improving at the same time their results at the workplace.

A positive evolution was also experienced by those in category N (Unsatisfactory), which, in 2019, included 25 employees, while, in 2020, their number decreased to 7 employees. Employees in this category have demonstrated that the desire for evolution at work, the desire for improvement, and social conditions directly affect results, efficiency, and effectiveness at work. Of course, the fear of losing their job represented a stimulus for them.

The results of the evaluations at the end of 2021 demonstrated the fact that the company's employees evolved in the years affected by the pandemic, even in adverse conditions. If in 2020, the VG (Very Good) category had decreased to only 3 employees, in 2021 this category increased to 26 employees, these being those who in 2020 were affected by the pandemic conditions. Category G (Good) suffered a decrease in the number of employees, from 148 in 2020 to 126 in 2021. Category N (Unsatisfactory) included only 5 employees, who failed to evolve in the years of analysis.

In 2022, as we can observe by analyzing Figure 1, the results showed a decrease in the number of employees with Very Good (VG) work evaluation results to only 1 employee, and an increase in the number of employees with Good (G), Satisfactory (S) and Unsatisfactory (N) work evaluation results. This happened for several reasons:

- First, the employees became more relaxed, they felt that the danger had passed, and they were no longer afraid of losing their jobs.

- Second, the total number of employees increased, and there was a change in the structure of human resources, a "movement of employees": some employees went

abroad, and others were hired. The new employees need, of course, a training period to be able to reach the work performance standards required within the company.

- Third, among the newly arrived employees in the second half of 2022, over 20 were from Pakistan. At the time of their evaluation, they were still in the period of learning, overcoming language barriers, and adapting working methods.

All this affected the overall result of the evaluations.

4. In conclusion

The study focused on revealing the impact and the evolution of the quality of the employees' work during the COVID-19 pandemic, reflected by the results of the performance evaluation system applied, and also on revealing the company's efforts to standardize the activity using continuous improvement principles. During the pandemic, the company did not have problems with the orders, with the decrease in demand, but rather certain logistical problems, related to the difficulty of carrying out the transportation of products in certain periods, due to the restrictions. As a result of the continuous improvement process implemented within the factory, which ensured proper procurement planning, and of the relatively constant maintenance of demand, there were no malfunctions in the production process. The company subject to this study made every effort to maintain stability, did not carry out layoffs, and provided all health safety measures. These actions offered the employees psychological safety, each employee was supported in every aspect. All these efforts were rewarded, the employees offering in return seriousness, a higher degree of involvement in the activities at the workplace. This fact was visible in the results of the evaluations during the pandemic period.

The results of the annual evaluations were analyzed under normal conditions, but also under abnormal conditions, and it was revealed that when improvement results appear, they come from the company, on one hand, due to the degree of involvement in providing good working conditions, and, on the other hand, from the employees that increase their performances and contribute to creating an internal culture (with benefits to both sides). We can see that, by implementing improvements regarding production processes and working procedures, before the COVID-19 pandemic, its impact on the company was significantly mitigated.

References

1. Aggarwal, P.J., Khurana, N. and Shefali (2023) "Impact of HRM practices on employee productivity in times of COVID-19 pandemic", *International Journal of Productivity and Quality Management*, Vol. 38, No. 1, pp. 73-97.

2. Ambarwati, R., Yuliastri, D. and Sulistiyowati, W. (2022) "Human resource risk control through COVID-19 risk assessment in Indonesian manufacturing", *Journal of Loss Prevention in the Process Industries*, Vol.74, 104665.

3. Ambrogio, G., Filice, L., Longo, F. and Padovano, A. (2022) "Workforce and supply chain disruption as a digital and technological innovation opportunity for resilient manufacturing systems in the COVID-19 pandemic", *Computers & Industrial Engineering*, Vol. 169, 108158.

4. Bianco, D., Bueno, A., Filho, M.G., Latan, H., Ganga, G.M.D., Frank, A.G. and Jabbour, C.J.C. (2023) "The role of Industry 4.0 in developing resilience for manufacturing companies during COVID-19", *International Journal of Production Economics*, Vol. 256, 108728.

5. Cugno, M., Castagnoli, R., Büchi, G. and Pini, M. (2022) "Industry 4.0 and production recovery in the covid era", *Technovation*, Vol. 114, 102443.

6. Dweck, E., Marcato, M.B., Torracca, J. and Miguez, T. (2022) "COVID-19 and the Brazilian manufacturing sector: Roads to reindustrialization within societal purposes", *Structural Change and Economic Dynamics*, Vol. 61, pp. 278–293.

7. Gamal, A., Abdel-Basset M. and Chakrabortty, R.K. (2022) "Intelligent model for contemporary supply chain barriers in manufacturing sectors under the impact of the COVID-19 pandemic", *Expert Systems with Applications*, Vol. 205, 117711.

8. Hermundsdottir, F., Haneberg, D.H. and Aspelund, A. (2022) "Analyzing the impact of COVID-19 on environmental innovations in manufacturing firms", *Technology in Society*, Vol. 68, 101918.

9. Huang, Y.-F., Lin, H.-C. and Lee, H.-M. (2023) "Innovation in manufacturing SMEs during the COVID-19 pandemic: How does environmental dynamism reinforce employee proactive behavior? ", *Technological Forecasting and Social Change*, Vol. 187, 122247.

10. Jain, A., Gupta, P., Mittal, A.A., Sengar, N.S., Chaurasia, S., Banoria, N., Kankane, A., Saxena, A., Brijendra, and Sharma M. (2023) "Long-term quality of life and work ability among severe COVID-19 survivors: A multicenter study", *Dialogues in Health*, Vol. 2, 100124.

11. Kisiel, M.A., Lee, S., Malmquist, S., Rykatkin, O., Holgert, S., Janols, H., Janson, C. and Zhou, X. (2023) "Clustering Analysis Identified Three Long COVID Phenotypes and Their Association with General Health Status and Working Ability", *Journal of Clinical Medicine*, Vol. 12, No.11, 3617.

12. Kosieradzka, A., Smagowicz, J. and Szwed, C. (2022) "Ensuring the business continuity of production companies in conditions of COVID-19 pandemic in Poland – Applied measures analysis", *International Journal of Disaster Risk Reduction*, Vol. 72 102863.

13. Larkaris, Z., Fleischer, N.L., Burgard, S. and Eisenberg, J.N. (2022) "Personal and work-related factors associated with mental health among auto workers during the COVID-19 pandemic in the United States", *Preventive Medicine Reports*, Vol. 30, 102001.

14. Lepore, D., Micozzi, A. and Spigarelli, F. (2021) "Industry 4.0 Accelerating Sustainable Manufacturing in the COVID-19 Era: Assessing the Readiness and Responsiveness of Italian Regions", *Sustainability*, Vol. 13, No. 5, 2670.

15. Li, Y. and Bai, Y. (2023) "Research on the Impact of Global Economic Policy Uncertainty on Manufacturing: Evidence from China, the United States, and the European Union", *Sustainability*, Vol.15, No. 14, 11217.

16. Magnavita, N., Arnesano, G., Di Prinzio, R.R., Gasbarri, M., Meraglia, I., Merella, M. and Vacca, M.E. (2023) "Post-COVID Symptoms in Occupational Cohorts: Effects on Health and Work Ability", *International Journal of Environmental Research and Public Health,* Vol. 20, 5638.

17. Mezgebe, T.T., Gebreslassie, M.G., Sibhato, H. and Bahta, S.T. (2023) "Intelligent manufacturing eco-system: A post COVID-19 recovery and growth opportunity for manufacturing industry in Sub-Saharan countries", *Scientific African*, Vol. 19, e01547.

18. Mohapatra, B., Tripathy, S., Singhal, D. and Saha, R. (2022) "Significance of digital technology in manufacturing sectors: Examination of key factors during Covid-19", *Research in Transportation Economics*, Vol. 93, 101134.

19. Prathamesh, K., Mubashir, A. and Rajashree, K. (2023) "Comparison of work efficiency in factory workers: pre & post covid lockdown – a cross sectional study", *BMC Public Health*, Vol. 23, No.1, 939.

20. Rodrigues, J., Sá, J.C., Silva, F.J.G., Ferreira, L.P., Jimenez, G. and Santos, G. (2020) "A Rapid Improvement Process through "Quick-Win" Lean Tools: A Case Study", *Systems*, Vol. 8, No. 4, 55.

21. Sakpere, W., Sakpere, A.B., Olanipekun, I. and Yaya, O.S. (2023) "Impact analysis of COVID-19 on Nigerian workers' productivity using multiple correspondence analysis", *Scientific African*, Vol. 21, e01780.

22. Sehleanu**,** M. and Flore, E.S. (2019) "Continuous Improvement Through Kaizen Management System: A Case Study". *Proceedings of the 13th International Management Conference: Management Strategies For High Performance (IMC 2019).* Bucharest Academy of Economic Studies, Faculty of Management, Romania, Edited by: Popa, I.; Dobrin, C.; Ciocoiu, C.N., pp. 25-36.

23. Sundararajan, N. and Terkar, R. (2022) "Improving productivity in fastener manufacturing through the application of Lean-Kaizen principles", *Materials Today: Proceedings*, Vol. 61, pp. 121–130.

24. Vahedi-Nouri, B., Tavakkoli-Moghaddam, R., Hanzálek, Z. and Dolgui, A. (2022) "Workforce planning and production scheduling in a reconfigurable manufacturing system facing the COVID-19 pandemic", *Journal of Manufacturing Systems*, Vol. 63, pp. 563-574.

25. Zimmerling, A. and Chen, X. (2021) "Innovation and possible long-term impact driven by COVID-19: Manufacturing, personal protective equipment and digital technologies", *Technology in Society*, Vol. 65, 101541.

Annex 1

EVALUATION SHEET
PRODUCTION STAFF

Name/ Surname evaluated person _____
Function _____

Name/ Surname hierarchical boss _____
Name/ Surname evaluator_____

Period evaluated: from_____ to_____
Qualifications obtained in the last 3 years: 1st year_____ 2nd year_____ 3rd year_____

EVALUATION CRITERIAS	Proposed score by hierarchic boss	Evaluator score
1.PROFESSIONAL COMPETENCE (knowledge and experience) - the professional capacity is evaluated in terms of the professional knowledge and skills necessary to optimally fulfil the tasks and duties assigned to the job		
a) Know and respect the applicable working instructions		
b) Demonstrates the responsibility of quality in the activity carried out		
c) Learning ability		
d) The capacity of assimilation and appreciation regarding the instructions regarding the activity		
e) Ability to apply knowledge in practice		
f) Meticulousness - skill, precision in the execution of the operations		
g) Need for help		
2.COMPLEXITY, CREATIVITY AND DIVERSITY OF THE ACTIVITIES - the ability to assume responsibilities on their own initiative in the performance of the individual activity objectives, tasks and tasks of the service, as well as the management of active behaviour and involvement in their performance is evaluated.		
a) The receptivity to the flexible working program (extra hours, help if needed)		
a) Availability at extra effort when requested		
b) Willingness to work effort under adverse conditions		
c) Orientation towards improvement		
3.SOCIAL DIALOGUE AND COMMUNICATION - it is evaluated		
a) The ability to integrate into a team, to collaborate with the team members and to make their own contribution, when necessary, through effective participation in achieving the objectives		
b) The ability to communicate clearly, coherently, and efficiently with hierarchical bosses, colleagues and third parties		
c) If it announces the absence motivated in time and correctly		
d) Avoidance of negative behaviour		
e) Absenteeism		
f) Nervousness and aggression		
4. WORKING CONDITIONS - is evaluated		
a) The skills in the efficient use of the material resources provided		
b) Respect the working hours		
c) Own activity organization		
d) Conscientiousness, precision in respect of breaks and other facilities granted to staff		
e) Respecting the internal general order rules		
f) Stress resistance		
g) Effort resistance		

Grades from 1 to 5 will be given for each criterion
The evaluation grade represents the arithmetic mean of the marks awarded for each criterion (between 1.00-2.00 - unsatisfactory, between 2.01-3.50 - satisfactory, between 3.51-4.50 - good, 4.51-5, 00 - very good)

EVALUATION GRADE _____
RATING _____

Name/ Surname hierarchical boss _____
Function _____
Hierarchical boss signature_____ Date _____

Name/ Surname evaluator_____
Function _____
Evaluator signature _____ Date _____

Name/ Surname of evaluated person _____
Function _____
Evaluated person signature _____ Date _____

CASCADING CONSEQUENCES OF UNEMPLOYMENT

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Abstract: *Combating poverty represents one of the challenges of the modern economy and Europe's geopolitical situation contributes to worsening this problem. Economic growth and employment rate are determinants of the level of poverty in a society. Unemployment and its consequences are widely approached both in economic literature and in sociology and psychology. In the first part of the paper, we carried out a conceptual presentation of the economic and social consequences of unemployment at the national, individual, and family level. In the second part, starting from Okun's law, we made an analysis of the relationship between the gross domestic product and unemployment rate for the period from 2005-2022 in Romania. In order to carry out the research, we used a series of statistical data regarding the unemployment rate available in the Monthly Bulletins of the National Bank of Romania (NBR) and data on GDP available on the website of the National Institute of Statistics of Romania (NIS). We worked with data regarding the situation in Romania from the first quarter of 2005 – fourth quarter of 2022. The conclusions of the paper converge towards the idea that unemployment is, nowadays, an increasingly complex phenomenon, being generated by a multitude of factors and which, in turn, determine multi-level direct and indirect consequences.*

Keywords: *unemployment, gross domestic product, statistical analysis*

JEL Classification: E24, A13, I24, I32

1. Introduction

One of the main consequences of unemployment is the fall of the standard of living and often poverty, a scourge that affects not only an increasing number of people and families, but also generates increasing inequalities.
Studies on the causes of poverty have taken a particular scale. Some authors consider that poverty is a vicious circle (Bauer, 1965) and breaking it is possible by changing the attitude and the competences, Ragnar Nurske states that the scourge of poverty cannot escape underdeveloped countries: "A country is poor, because it is poor." or

"Because it is poor, the country does not develop; because it does not develop, it remains poor." (Nurske, 1953, p.898). After studying the causes of poverty, several authors demonstrated that the level of economic development, the situation of the labour market, the employment rate and unemployment (Zamfir, 1998; Paraschiv, 2008; Ştefănescu and Pop, 2016) are factors that generate the reproduction of poverty.

The latest EUROSTAT data available on the incidence of risk of poverty for the population of the EU Member States highlight the seriousness of this problem among the Romanian population. Research shows that Romania has had every year, since 2014, over 30% of the population at risk of poverty or social exclusion and, in the last five years (Table no. 1), it occupies the leading places in this ranking competing for the first and second places with Bulgaria.

Table 1: Rate of people at risk of poverty or social exclusion in Romania and EU

Year	People at risk of poverty or social exclusion in Romania	People at risk of poverty or social exclusion in EU	Romania's position
2017	35.7%	22.4%	II.
2018	32.8%	21.7%	I.
2019	32.5%	21.1%	I.
2020	35.6%	21.9%	I.
2021	34.4%	21.7%	I.

Source: Prepared based on Eurostat data

The scourge of poverty haunts Romania although studies conducted by the European Commission (2022) show that the labour market has had good results, despite the COVID-19 pandemic. The data published by the National Institute of Statistics of Romania (NIS) show that the employment rate increased from 65.2% in 2020 to 67.1% in 2021, but in the fourth quarter of 2022, this rate was 62.8%, down from the previous periods, which led to an unemployment rate in the fourth quarter of 2022 of 5.8%, up by 0.4 percentage points compared to that recorded in the third quarter of 2022. Hence, unemployment is a phenomenon that requires an increased attention even at times when there are more favourable results.

Economic growth is reflected in the growth of the gross domestic product, but the factors that determine the GDP growth are very different. The studies conducted by Boldeanu and Constantinescu (2015) showed that natural resources, capital goods, human resources and technology are determinants of economic growth. Anghelache (2006) considers that there are four fundamental variables that can be used to measure the level of development of a country's economy: the growth rate of gross

domestic product, the unemployment rate, the inflation rate, and the current account balance of the balance of payments. Other authors (Simionescu, M. et al, 2017) showed that the growth rate of the gross domestic product is the main indicator used in assessing the performance of each economy.

Expert studies (Townsend 1979, Zamfir 2001, Ștefănescu 2016, INS, Eurostat) show that employed people are more protected from the danger of poverty than those unemployed or inactive, but also within these two categories a variety of situations can be noted.

At national level, unemployment influences the dynamics of the GDP size, in the sense that, on one hand, the training, qualification and retraining of the unemployed people involve costs that will not be recovered in the situation of the long-term unemployment (Stana, Roşca, 2010), and the employed active population does not contribute to the GDP growth**.**

2. Consequences of unemployment

Unemployment is a concept with a high degree of interdisciplinarity and there is an extensive literature in economics, sociology and psychology that deals with the effects of job loss on individuals and on the entire society. Studies regarding the consequences of unemployment show that this malady of contemporary economies has generally negative effects on economic development, effects that can manifest directly and indirectly. Helliwell, J. F., & Huang (2014) based on two surveys conducted in the U.S.A. consider that the indirect effects of unemployment are substantially higher than its direct costs on the well-being of the population. They showed that an increase of one-percentage point in local unemployment has an effect on well-being (subjective well-being) close to that of a 4% drop in household income. Saunders, P. (2002) following a study conducted in collaboration with the Academy of the Social Sciences in Australia showed that unemployment has costs and effects at three distinct levels: at the level of the unemployed people, at the level of their families and at the level of the entire society facing mass unemployment.

The intensity of the unemployment effect depends on a number of variables: personal characteristics, the individual's ability to adapt, social support, education or ethnicity, as well as the predominant economic climate in which the unemployed people live.

2.1. Economic consequences of unemployment
Eardley, T. (2002) analysing the consequences of unemployment separated the economic and social costs.

The most important economic consequence of unemployment is the incomplete use of the labour force, meaning the costs on the growth, education and training of the labour force, which cannot be recovered in conditions of full employment. If we consider the structural unemployment, of inadequacy, another consequence is also represented by the malfunctions in the economic activity generated by the shortage of labour having a certain qualification, respectively the costs with the qualification of labour force.

At the governmental level, additional costs arise due to the expenses on supporting the unemployed people and their families, namely unemployment benefits, as well as significant losses of taxes and social security income.

Furthermore, at the macroeconomic level, a direct relationship between the unemployment rate and the gross domestic product is found.

2.1.1. Analysis of the GDP correlation and unemployment rate

Next, we want to make an analysis of the relationship between the GDP growth level and the unemployment rate, a relationship first studied in 1962 by the American scientist Arthur Melvin Okun, who demonstrated the existence of a reverse (negative) correlation between the economic growth and the unemployment rate. This correlation is known as Okun's Law (Savelieva, 2016) and shows that the annual GDP growth by 2.5-2.7% keeps the number of unemployed at a constant level, and each additional 2% growth of the GDP contributes to the reduction of the unemployment by 1%. Okun's researches refer to a certain period of time and a certain country (USA), and the researches of the mentioned legalities from other countries have proven that the possibility of using this law depends on the real social and economic conditions, the particularity of the mechanisms of market relations and the level of economic development.

The existence of the interdependence between GDP and unemployment rate was analysed by C. I. Turturean, using data on the Romanian economy in the period from 1992-2004. He concluded that "the approach to modelling reciprocal and unique two-way relationship between GDP's growth rate and unemployment rates' growth presented in the original form of Okun's Law (1962) does not work for the Romanian economy for the period 1992-2004." (Turturean 2007, p.221).

In view of the above, we have decided to create a model in which we include indices of volume (%) of the gross domestic product compared to the corresponding quarter of the previous year, and the unemployment rate. The unemployment rate was analysed as both a dependent and an independent variable.

In order to carry out the research, we used a series of statistical data regarding the unemployment rate available in the Monthly Bulletins of the National Bank of

Romania and data on GDP available on the website of the National Institute of Statistics of Romania. We worked with data regarding the situation in Romania from the first quarter of 2005 – fourth quarter of 2022.

2.1.2. Descriptive indicators determined for the two variables

Before verifying the correlation between the unemployment rate and GDP, we performed an analysis on each indicator.

The histograms of the evolution of the two indicators are presented in Charts 1 and 2.
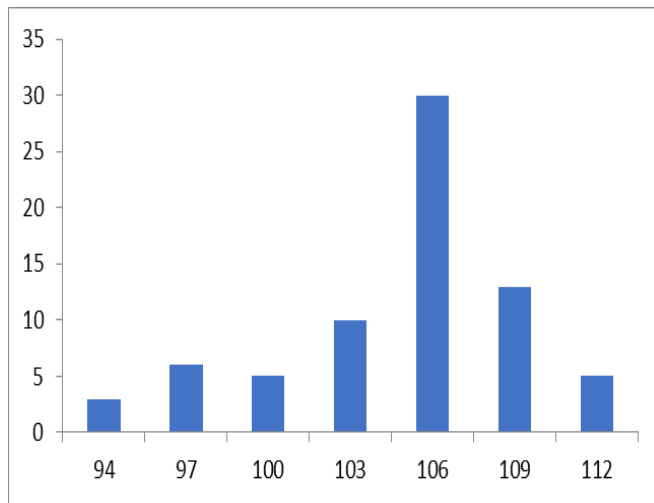
Chart 1: Histogram of the evolution of the Gross Domestic Product in the period from 2005-2022
Source: Prepared by the authors based on the data from the NIS

GDP 2005 - 2022	
Mean	103.47
Standard Error	0.52
Median	104.06
Mode	#N/A
Standard Deviation	4.45
Sample Variance	19.78
Kurtosis	0.10
Skewness	-0.63
Range	19.41
Minimum	92.06
Maximum	111.47
Sum	7449.74
Count	72

In the table next to the histogram, related to GDP, we can read the following results:

- during the analysed period, GDP varies between the minimum value of 92.06% and the maximum value of 111.47% and the mean is 103.47%.
- given that for the mode value we have not achieved any results, in the table above, the GDP values are not repeated
- the median, which divides the ranges of variation into two parts, has the value of 103.91%
- the standard deviation, measure of the scattering of the values of the variable from the mean value, is 4.45, so we could say that the scattering of values is quite large
- the coefficient of variation is 4%. The value of the variation coefficient being less than 40%, we say that the population is homogeneous, and the mean is representative of the population.

- the coefficient of asymmetry (Skewness) has a negative and subunit value, so the series shows a negative asymmetry or to the right
- the value of the vaulting coefficient (Kurtosis) is less than 3, the series is platykurtic
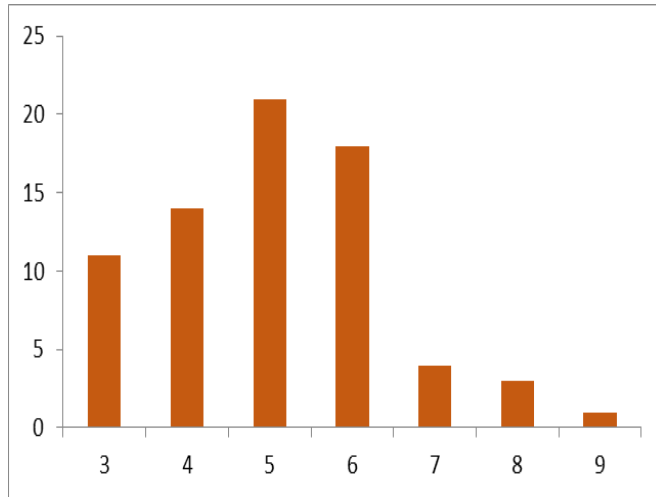
Chart 2: Histogram of the evolution of the unemployment rate in the period from 2005-2022
Source: Prepared by the authors based on the NBR data

Employment rate 2005 - 2022	
Mean	4.66
Standard Error	0.15
Median	4.80
Mode	3
Standard Deviation	1.30
Sample Variance	1.69
Kurtosis	0.17
Skewness	0.57
Range	5.70
Minimum	2.70
Maximum	8.40
Sum	335.29
Count	72

In the table next to the histogram, related to the unemployment rate, we read the following results:

- during the analysed period, the unemployment rate had a variation between the minimum value of 2.7% and the maximum value of 8.4% and the mean value is 4.66%.
- the mode value is 3, so the level of 3% is reached most times during the analysed period
- the median, which divides the ranges of variation into two parts, has the value of 4.80%
- the standard deviation is 1.30, so the scattering of the values related to the unemployment rate is lower compared to the values of GDP
- the coefficient of variation is 28%. As in the case of GDP, the value of the coefficient of variation being less than 40%, we say that the population is homogeneous and the mean is representative of the population.
- the asymmetry coefficient has a positive and subunit value, the series shows a positive asymmetry or to the left
- the Kurtosis value being less than 3, the series is platykurtic

Based on the collected data, the interdependence of the two indicators is presented in Chart 1. It can be noted that GDP in the last 17 years had a fluctuating evolution, but generally positive, with a fluctuation in the period from 2008-2009 when the economic and financial crisis manifested, fact that repeats itself, because 2020 represents an inflection point in the evolution of GDP, the trend changing for the next period due to the effects of the pandemic crisis and the economic and financial crisis. Furthermore, we note that the unemployment rate was falling except during the crisis period of 2008-2010. Although GDP has had a drastic drop during the pandemic period, it has not intensely influenced the unemployment rate, with only a small increase observed after 2020.
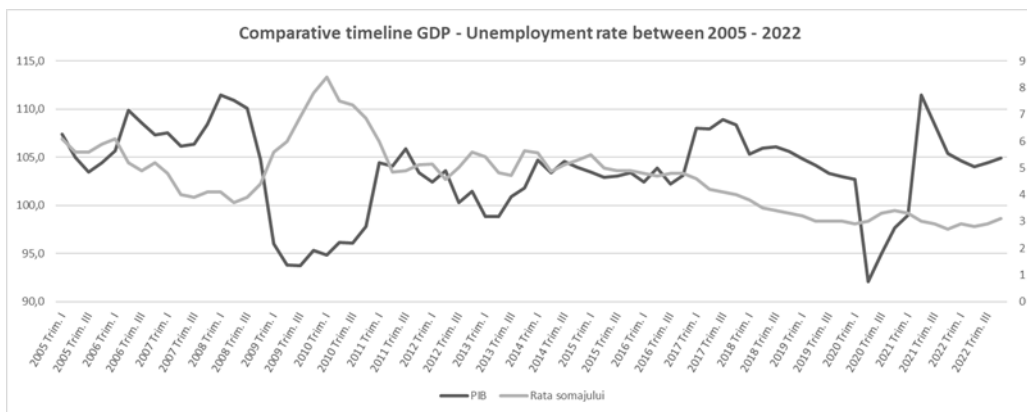
Chart 3: Gross domestic product and unemployment between 2005-2022

Source: Prepared by the authors based on the NBR and the NIS

In order to be able to follow and interpret the correlation between the gross domestic product and the unemployment rate, we have drawn up Chart 4.
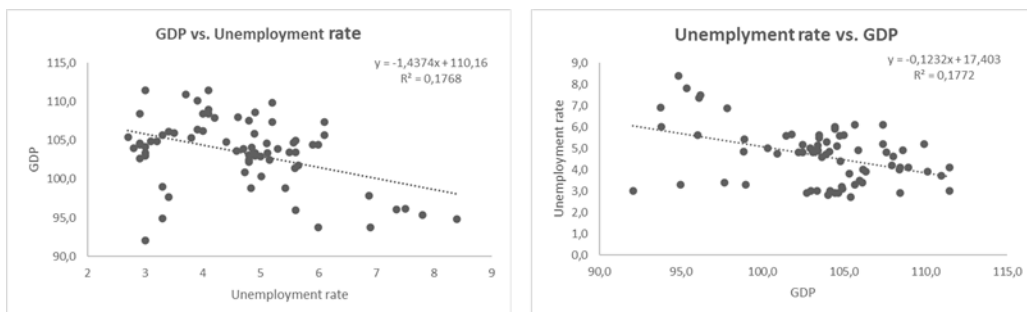
Chart 4: The correlation between gross domestic product and unemployment rate
Source: Prepared by the authors

In Chart 4 we can see that the cloud of points corresponding to the values recorded by the two macroeconomic indicators studied is quite grouped, so we can say that

there is a connection between the two variables. In the case of the two indicators, we can speak of a stochastic connection, because both the unemployment rate and GDP also depend on other factors that we do not take into account in this analysis.

In order to generalize the obtained result, for the correlation coefficient, at the level of the total population, we used the Fisher Test. After carrying out the test, we can say that the linear model of interdependence between the unemployment rate and GDP is valid for the entire population of values, the connection is found, even mutual, between the two variables at the level of a whole population of values of the two variables and not only for the chosen samples.

Thus, the function of dependence of the unemployment rate on the increase or decrease of GDP can be mathematically written as follows:

$$RS = -0,123188658 \cdot PIB + 17,40296864 + \varepsilon \qquad (1)$$

By performing the mutual analysis, that is, of the dependence of the gross domestic product on the changes in the unemployment rate, we obtain an almost similar relationship of dependence:

$$PIB = -1,43742341 \cdot RS + 110,16129086 + \varepsilon \qquad (2)$$

In order to test the significance of the regression equation parameters, we used the Student Test in order to ensure that the regression equation parameters do not take values very close to zero, at the level of the entire population of values. The probability that the value of the correlation parameter will be zero is 0.00023, a value obtained both for the dependence of the unemployment rate on GDP and in the mutual case of dependence of GDP on the unemployment rate. Therefore, we can firmly state that there is an interdependence between the two parameters.

It can be stated that similar to the period between 1992-2004 analysed by C.I Turturean (2007), Okun's law does not work for the Romanian economy including the period from 2005-2022.

2.1. Social consequences of unemployment

Studies carried out on the effects of unemployment have brought together a variety of empirical evidence on the social costs of unemployment, including its impact on the health and psychological state of those affected: the unemployed themselves, their families and the entire community facing the problem of the lack of employment. The most common consequences are (Eardley, P., 2002, p.47):

- social exclusion
- loss of skills
- psychological harm and distress
- ill health and reduced life expectancy
- criminal behaviour
- the undermining of human relation and family life
- housing stress and homelessness
- racial and gender inequality
- loss of social values and responsibility

Other authors have pointed out that long-term unemployment, especially among young people, can even generate acts of violence, delinquency, can accentuate crime, with impact on the whole of society. It has been shown that there is a connection between unemployment and population's poor health, increasing the risk of suicide or mental disorders (Dooley, D, Fielding, J., Levi, L., 1996).

A recent study conducted in Greece, one of the most affected EU countries in terms of unemployment, showed that parental unemployment was associated with a decrease in school performance of the family's children. Teenagers' school performance has worsened especially in the case of those from families who have experienced maternal unemployment and the family had a more precarious financial situation (Drydakis, N.,2023). In Sweden, a similar request was performed among students (Mörk, E., Sjögren, A., & Svaleryd, H., 2020) and the results showed that paternal unemployment did not, but maternal unemployment negatively affected students' grades.

Unemployment negatively affects morale and health, making the prospect of re-employment less probable, while at the same time leading to attitudes that reinforce isolation from the world of work that shapes people's lives (Sounders, P 2002).

3. Conclusion

Nowadays, unemployment is an increasingly complex phenomenon affecting in cascade the unemployed people, their families, the communities in which they live and their country through the relationship between unemployment and gross domestic product. A vicious circle often arises, which can be surpassed through carefully targeted policies according to the types of unemployment, through continuous education and training and by making the educational offer compatible with the requirements of the labour market.

A special attention must be paid to long-term unemployment and also to maternal unemployment, which has a negative impact on children, often leading to a perpetuation of poverty over several generations.

Our study demonstrates the existence of an interdependence between the unemployment rate and the evolution of gross domestic product, which can be a starting point for more refined statistical analyses that possibly include other variables.

References

1. Anghelache, C., Isaic-Maniu, A., Mitruț, C., & Voineagu, V. (2006). Proporții și corelații macroeconomice. Theoretical and Applied Economics, 2(497), 101-106. [PDF], Available: https://d1wqtxts1xzle7.cloudfront.net/81789472/44-libre.pdf?1646554239=&response-content-disposition=inline%3B+filename%3DMacroeconomic_Proportions_and_Corellatio.pdf [23.12.2022]

2. Banca Națională a României, Buletin lunar (decembrie 2005 – decembrie 2021) Anul XIII, nr.146 - Anul XXIX, nr. 338, Available: https://www.bnr.ro/Publicatii-periodice-204.aspx [15.12.2022]

3. Bauer, P.T (1965) The Vicious Circle of Poverty: Reality or Myth? [online] Available: https://www.panarchy.org/bauer/viciouscircle.htm [15.10.2022]

4. Boldeanu, F. T., Constantinescu, L. (2015). The main determinants affecting economic growth. Bulletin of the Transilvania University of Brasov. Economic Sciences. Series V, 8(2), pp. 329-338. [PDF] Available: http://webbut2.unitbv.ro/BU2015/Series%20V/BILETIN%20I/38_Boldeanu%20Constantinescu.pdf [23.12.2022]

5. Dooley, D., Fielding, J., & Levi, L. (1996). Health and unemployment. Annual review of public health, 17(1), 449-465. [PDF] Available: https://www.annualreviews.org/doi/pdf/10.1146/annurev.pu.17.050196.002313 [19.03.2023]

6. Drydakis, N. (2023). Parental unemployment and adolescents' academic performance. *International Journal of Manpower*. [PDF] Available: https://arro.anglia.ac.uk/id/eprint/708257/1/Paper%20Economic%20Crisis%20on%20Grades.pdf [19.03.2023]

7. Eardley, T. (2002), Identifying and quantifying the costs of unemployment in The price of prosperity: The economic and social costs of unemployment, UNSW press, p.44, [online], Available: https://books.google.ro/books?hl=ro&lr=&id=VJ3X81mzyYkC&oi=fnd&pg=PR7&dq=costs+of+unemployment&ots=NCYPeEt4wD&sig=dERiHttHGWfD6IDlYqnlh6d0oBk&redir_esc=y#v=onepage&q&f=false [10.03.2023]

8. Helliwell, J. F., & Huang, H. (2014). New measures of the costs of unemployment: Evidence from the subjective well-being of 3.3 million Americans. Economic Inquiry, 52(4), 1485-1502., [PDF] Available: https://onlinelibrary.wiley.com/doi/epdf/10.1111/ecin.12093 [19.03.2023]

9.https://ec.europa.eu/eurostat/databrowser/view/ILC_PEPS01N__custom_3337149/bookmark/table?lang=en&bookmarkId=0460cf2c-6a09-4773-be7a-db0513f4db8b [10.02.2023]

10.   https://ec.europa.eu/eurostat/en/web/income-and-living-conditions/data/database [10.02.2023]

11.https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Employment_annual_statistics [10.02.2023]

12.https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:People_at_risk_of_poverty_or_social_exclusion [12.01.2023]

13.https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Archive:People_at_risk_of_poverty_or_social_exclusion
https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220915-1

14. Institutul Național de Statistică (INS), Comunicat de presă Nr. 72/18 martie 2022 https://insse.ro/cms/sites/default/files/com_presa/com_pdf/somaj_tr4r_21.pdf [10.03.2023]

15.   INS,   Comunicat   de   presă   Nr.   70/17   martie   2023 https://insse.ro/cms/sites/default/files/com_presa/com_pdf/somaj_tr4r_22.pdf [25.03.2023]

16. INS, Tabele privind PIB Disponibil la: https://insse.ro/cms/ro/content/produsul-intern-brut [22.12.2022]

17. Mörk, E., Sjögren, A., & Svaleryd, H. (2020). Consequences of parental job loss on the family environment and on human capital formation-Evidence from workplace closures. Labour   Economics,   67,   101911.   Available: https://www.sciencedirect.com/science/article/pii/S0927537120301159 [10.03.2023]

18. Nurkse,R. (1953) Problems of Capital Formation in Underdeveloped Countries. By.Capital in The Economic Journal, Volume 63, Issue 252, 1 December 1953, pp. 897-899   Available   at: https://academic.oup.com/ej/article-abstract/63/252/897/5258742 [02.09.2022]

19. Paraschiv, E. (2008) Problema sărăciei în comunitățile urbane și rurale din România in Revista Română de Sociologie, serie nouă, anul XIX, nr. 3–4, p. 423–451, București. 20. Péter, L. 2015, Új szegények túlélési stratégiái in Erdélyi társadalom [PDF] 1.(1), p.25-50, Disponibil la: https://www.erdelyitarsadalom.ro/files/et01/et-bbu-01-02.pdf [02.09.2022]

21. Saunders, P. (2002), The Direct and Indirect Effects of Unemployment on Poverty and Inequality By SPRC Discussion Paper No. 118, December 2002 Published by The Social Policy Research Centre University of New South Wales Sydney NSW 2052 Australia [PDF] Available: https://www.arts.unsw.edu.au/sites/default/files/documents/DP118.pdf [10.03.2023]

22. Savelieva, G. (2016) Impactul Pieţei Muncii Asupra Creşterii Economice, CCD, INCE, [PDF] Available at: http://dspace.ince.md/jspui/handle/123456789/1440 [12.12.2022]

23. Simionescu, M. et al (2017). Determinants of economic growth in V4 countries and Romania. Journal of Competitiveness, Vol. 9, Issue 1, pp. 103 - 116, March 2017, Available: https://www.cjournal.cz/files/244.pdf [23.12.2022]

24. Stana, G., & Roşca, P. (2010). Șomajul, consecinţele lui și măsurile de combatere. Analele Universităţii Libere Internaţionale din Moldova (Seria Economie), (11), 120-128. [PDF]   Available: https://ibn.idsi.md/sites/default/files/imag_file/120_128_Somajul%2C%20consecintele%20lui%20si%20masurile%20de%20combatere.pdf [15.03.2023]

25. Ștefănescu, F, Pop A.P. (2016) The process of poverty reproduction in rural areas. The case of youth from the Romanian-Hungarian cross border region, in Journal of Social Research   and   Policy   [online]   7   (1)   Available: https://www.researchgate.net/publication/317935948_The_process_of_poverty_reproducti on_in_rural_areas_The_case_of_youth_from_the_Romanian-Hungarian_cross_border_region [12.10.2022]

26. Townsend, P. (1979) Poverty in the United Kingdom, A Surveu Household Resources and Standards of Living, University of California press, Berkeley and Los Angeles [online] Available: https://books.google.ro/books?hl=hu&lr=&id=weGYy_-czvsC&oi=fnd&pg=PA17&dq=townsend+1979&ots=4HCwEAFv3g&sig=x2zGbl6wO9S 43zCk-k7jyB8N2mk&redir_esc=y#v=onepage&q=townsend%201979&f=false [20.10.2022]

27. Turturean, C. I. (2007). Legea lui Okun pentru România în perioada 1992-2004. Published in: Politici, modele si scenarii de crestere economica in vederea aderarii Romaniei la Uniunea Europeana No. ISBN 978-973-594-978-5 (24 October 2007), pp. 214-221, [PDF] Available: https://mpra.ub.uni muenchen.de/10638/1/MPRA_paper_10638.pdf [10.01.2023]

28. Zamfir, C. (2001) Situaţia sărăciei în România dimensiuni, surse, grupuri de risc iunie 2001 in România socială – Revistă de cultură și anală social, 2001/2, [PDF] p. Available: https://adatbank.ro/html/cim_pdf385.pdf [20.10.2022]

29. Zamfir, C., Vlăsceanu, L. (1998) Dicţionarul de sociologie urmat de indicatori demografici, economici, sociali și sociologici, Ed. Babel, Bucuresti, [PDF] Available: https://bibliotecadesociologie.ro/en/download/zamfir-catalin-vlasceanu-lazar-eds-1998-dictionar-de-sociologie-bucuresti-babel/ [25.10.2022]

30. Zamfir, C., Vlăsceanu, L. (1998) Dicţionarul de sociologie urmat de indicatori demografici, economici, sociali și sociologici, Ed. Babel, Bucuresti

THE DETERMINANTS OF UNEMPLOYMENT REVISITED – EMPIRICAL EVIDENCE ON OECD

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Abstract: *Unemployment is a serious economic problem that has repercussions for people, families, and entire civilizations. It is a dynamic phenomenon with immediate and long-term implications for individuals and society. As a result, understanding unemployment and its causes is critical for politicians, economists, and academics seeking to create effective measures to alleviate its harmful consequences. It is critical to acknowledge the complexities of unemployment to establish successful policies and programs that address its core causes. The goal of this research paper is to conduct a quantitative analysis of the main determinants of unemployment in The Organization for Economic Cooperation and Development, considering demographic, governmental, economic growth, and cultural factors, as well as the period of Financial and Economic Crisis (2008-2009), to determine their impact and the evolution of unemployment, which countries have the most promising results, and who are the outliers. As a result, during a 26-year period, pooled OLS, FEM, and REM methods have been applied to a panel database. Additionally, member states are clustered based on the factors of interest and subsampled depending on the year of joining the OECD. A comparative case study regarding the differences between European Union's and OECD's unemployment situation is presented as well. Previous research, on the other hand, has frequently concentrated on individual criteria, such as education level or job experience, without considering the larger economic, social, and political issues that might impact unemployment rates. Therefore, findings in this study are novel when compared to the previous literature in the subject, and they bring a new dimension to our knowledge of the unemployment phenomenon.*

Keywords: *unemployment; economic growth; OECD; panel data.*

JEL Classification: J6; J64.

1. Introduction

Unemployment is a very challenging and frequently disputed topic at both political and academic levels because of the difficulty of tracing its origins and determining

the best strategy, policies, and methods to address it. It can help minimize unemployment and its negative consequences for individuals and communities, such as poverty, social marginalization, and mental health difficulties, by doing so. These policies might include targeted job training programs, educational efforts to increase employees' abilities in high-demand industries, infrastructure expenditures to create new jobs and encourage economic growth and supporting measures like unemployment insurance and job placement services.

Unemployment can be produced by several variables, including cyclical, structural, and frictional ones. Cyclical forces are economic ups and downs that are frequently connected with company cycles. Businesses endure diminished demand for goods and services while the economy is in a slump. As a result, they frequently lay off workers to cut expenses and retain profitability. This results in a labour excess and adds to a rise in unemployment. Businesses, on the other hand, receive higher demand for goods and services while the economy is booming. This frequently leads to their hiring additional people, lowering unemployment rates. Moreover, demographic characteristics such as age, gender, education level, and geographic region are drivers of unemployment. For example, younger individuals may have trouble obtaining a job owing to a lack of experience, but elderly workers may face age discrimination.

The following is the framework of this paper: a literature review, an explanation of the data and methods utilized in my analysis, the results obtained and their interpretation, a comparative case study, concluding with a robustness check, conclusions, study limits, and future research directions.

2. Literature review

The mission of understanding what genuinely remains behind the evolution of unemployment entails delving into economic theories, and concepts experimentally proven by the great minds of economists. Human sustainable development obviously influences the unemployment curve, as demonstrated by Okun's law, which defines the link between GDP and unemployment. Farsio (2003) conducted numerous analyses, including the Granger causality, and the Chow stability test using U.S. data to offer a logical explanation for this link and found that unemployment is substantially negatively related to GDP. Another proxy for assessment of sustainable development is governance quality. Shabbir et at (2019) used a panel vector error correction model to explore the short- and long-term link between economic factors and the unemployment rate in South Asian nations, and discovered a direct relationship between weak governance and high levels of

unemployment. Sumaryoto et al. (2020) used the Human Development Index (HDI) to explain Indonesian unemployment and discovered a negative and significant association. Furthermore, if the HDI value in an area is great, the unemployment rate in that zone will be lower, and vice versa, if the HDI is small, the unemployment rate in that area would be higher. A special shelf in the previously conducted studies is dedicated to the income inequality, defined by Gini index. Authors such as Cysne (2009) worked on proving the positive relationship between inequality and unemployment using job search models: a modification of McCall's model. Population growth should be factored into future analyses, as it can increase landlessness and poverty. Ahlburg (1996) argues that population growth can influence poverty by influencing economic growth, income, income disparity, availability of education and health services, and the number and structure of households. This can affect income and well-being, and directly regulate the level of unemployment. Urbanization and population expansion can lead to higher unemployment rates in small towns and rural regions due to limited social networks and economic growth opportunities. Sato (2014) investigated the effects of urbanization by using Bellman equations and determining the optimum equilibrium and its efficiency. He concluded that interactions of smart and skilled people in urban areas enhance the development of person-specific human capital and increase the rate at which new ideas are formed, but only to a certain level. Life expectancy is an important factor in addressing unemployment, as well as health, psychosocial factors, and well-being. According to the Health Foundation UK (2019), better healthy life expectancy is closely associated with higher employment rates, particularly for males. Healthy life expectancy increases by around 5 years per each 10% increase in employment. Keynesian theory (1936) suggests that unemployment and inflation have an inverse relationship, and governments should manipulate fiscal policy to ensure a balance. Cashell (2004) discovered that unemployment below 5% leads to greater inflation rates. Hofstede's cultural dimensions suggest that a culture with a high-power distance Index score avoids questioning the authority of elders. Bazyl (2014) found that the more a population has control over its decisions, the lower the level of long-term unemployment is. This suggests that there is a negative link between unemployment and power distance index. Abdelrahim (2021) found that long-term oriented cultures focus on long-term outcomes and are cautious and determined to take hazardous decisions, making it easier to accept work and deal with unemployment.

3. Data and methodology

In this section of the study, justified theories experimentally proven in prior studies are used to the specific population of OECD, are described the research instruments, the explanatory variables chosen, and the findings gained via numerous trials of data processing. The overall sample is analyzed first, using simple and multiple regressions and the Fixed or Random Effects Method, followed by related research on subsamples and a cluster analysis using the prior study findings. A general overview on the unemployment evolution emphasizes that starting with the specified date 1996 the OECD's unemployment rate decreased drastically by roughly 3% until the Financial and Economic Crisis of 2008-2009, when it increased dramatically by 4%. After a smooth recovery, it recovered to pre-crisis levels in ten years, until 2020, when a dramatic spike occurred due to COVID pandemics.

The sample for this study consists of the 38 member countries of the Organization for Economic Cooperation and Development, for which the explanatory variables were chosen over a 26-year period (1996-2021).

To assess the influence of the governance quality and its effectiveness, Worldwide Governance Indicators are considered as relevant proxies when constructing the database but analyzing their strong correlation and hence the impossibility to include all the dimensions in one regression due to multicollinearity risk, the arithmetic mean is used as a generalized index.

Table 1 Independent variables included in the analysis and the expected relationships.

Indicator	Previously conducted studies	Expected relationship	Used proxy	Abbreviation	Sources
GDP / capita	Farsio (2003)	Negative	GDP per capita, PPP (constant 2017 international $)	GDPcap	World Bank Database - World Development Indicators
Governance efficiency	Shabbir (2019)	Negative	World Governance Indicators (Control of Corruption, Governance Effectiveness,	WGI (CC, GE, PS, RQ, RL, VA)	World Bank Database - World Development Indicators

			Political Stability, Regulatory Quality, Rule of Law, Voice and Accountability)		
Population growth	Ahlburg (1996)	Negative / positive	Population growth (annual %)	Popgr	World Bank Database - World Development Indicators
Urbanization	Sato (2014)	Negative / positive	Urban population (% of total population)	Urb	World Bank Database - World Development Indicators
Inflation	Keynes (1936) Cashell (2004)	Negative	Inflation, consumer prices (annual %)	CPI	World Bank Database - World Development Indicators
Culture	Bazyl (2014) Abdelrahim (2021)	Negative / positive	Hofstede's cultural dimensions: Power distance, Individualism vs Collectivism, Uncertainty Avoidance, Masculinity vs Femininity, Long-term orientation, Indulgence vs Restraint	PDI, IDV, UAI, MAS, LTO, IVR	Hofstede Insights
Life expectancy	Health Foundation UK (2019)	Negative	Life expectancy	LE	World Bank Database - World Developme

					nt Indicators
Poverty	Sen (1973)	Positive	Multidimension al poverty headcount ratio (% of total population) Poverty headcount ratio at national poverty lines (% of population)	Povmult Pov	World Bank Database - World Developme nt Indicators

<div align="center">Source: Authors' processions based on the specialized literature</div>

4. Findings and discussions

An important step in assessing the influence of multiple factors on evolution of unemployment is the separate analysis of each potential determinant by placing them in simple linear regressions to further rank them according to their decreasing explanatory power – adjusted R^2.

As confirmed by economic theory and literature review presented previously GDP per capita, World Government Indicator and Human Development Index show the sustainable development of a country, so it is peculiar to engage them in one regression with unemployment, also given their strong correlation (above 0.75). Initially as the starting point WGI was chosen, being a variable of interest to assess the influence of the quality of governance quality of OECD. After including other variables to the model, we found out that WGI as well as AHDI are strongly correlated with another predictors of interest. The model was rebuilt by using instead of WGI - GDP per capita to improve the further quality of the model and increase its predictive power. So, in further analysis will remain only the logarithm of GDP per capita, considering its highest R^2 and future implications with other determinants of interest. The second variable included is population growth, followed by population growth, power distance index. Life expectancy, even though increases the predictive power of the model, is avoided because of the multicollinearity risk, considering its strong correlation with GDP per capita (0.71). The further estimation follows by adding to the multiple regression long-term orientation and consumer price index. The remaining variables will be left out as they have either insignificant p-value or cause endogeneity issues, as in the case of poverty, which is a very debatable predictor, which is often viewed as a result rather than a cause of

unemployment. The cultural dimensions could not be added altogether to a multiple regression again due to multicollinearity issues. The correlation matrix is available at demand.

Table 2: Simple regressions

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Constant	45.891 ***	28.864 ***	31.841 ***	4.224 ***	8.653 ***	4.799 ***	8.077 ***	7.621 ***	13.836 ***	2.921 ***
Ln (GDP/capita)	-3.65 ***									
World Governance Indicator		-1.493 ***								
Life Expectancy			-0.307 ***							
Gini				0.109 ***						
Population growth					-1.627 ***					
Power Distance Index						0.062 ***				
Long-term Orientation							-0.007 ***			
Consumer Price Index								-0.004 ***		
Urbanization									-0.081 ***	
Poverty										0.247 ***
R^2	0.1828	0.135	0.063	0.039	0.097	0.086	0.02	0.01	0.048	0.204
R^2 adj.	0.1820	0.134	0.062	0.037	0.096	0.085	0.01	0.01	0.047	0.201

Source: Author's processing in Stata

Hence, there exists a positive relationship between unemployment and Gini Index, Power Distance Index and Poverty and a negative one between unemployment and GDP per capita, World Governance Indicator, life expectancy, population growth, Long-term Orientation Index and Consumer Price Index.

Table 3: Multiple regressions

FULL SAMPLE	OLS 1	OLS 2	OLS 3	OLS 4	OLS5	OLS6	OLS 7	FEM	REM
CONSTANT	45.891 ***	43.056 ***	38.881 ***	17.731 ***	23.964 ***	30.543 ***	29.193 ***	102.263	85.510
LN GDPCAP	-3.650 ***	-3.306 ***	-2.986 ***	-1.321 ***	-1.695 ***	-2.305 ***	-2.186 ***	-9.726	-7.488
POPGR		-1.301 ***	-1.255 ***	-1.700 ***	-1.772 ***	-1.557 ***	-1.572 ***	-2.699	-2.632
PDI			0.017 **	0.035 ***	0.032 ***	0.031 ***	0.032 ***	omitted	-0.058
GINI				0.103 ***	0.078 **	0.080 **	0.081 **	0.306	0.190
LTO					-0.023 ***	-0.021 **	-0.021 **	omitted	-0.011
CPI						-0.168 ***	-0.141 ***	-0.185	-0.162
Dcrisis_2008							0.351 **	Within R^2= 0.3928	Within R^2 = 0.3863
Dcrisis_2009							0.492 *	Between R^2 = 0.2318	Between R^2 = 0.2029
R^2	0.183	0.243	0.248	0.252	0.268	0.283	0.291	Overall R^2= 0.2437	Overall R^2 = 0.2238
R^2 ADJ	0.182	0.242	0.246	0.247	0.262	0.276	0.282		
NO. OBS.	987	987	987	619	594	594	594	594	594
							Panel diagnosis:	chi2(4) = 21.71 Prob>chi2 = 0.0002 → FEM	

Note: *** means 1% significant coefficient, ** means 5% significant and * 10%. NS – not significant (above 10%); Source: Author's processing in Stata

All other things being equal, at an increase of 1% in the level of GDP per capita, the unemployment will decrease, on average, with -2.186 units. Once the power distance increases by 1 unit, meaning a less equal treatment of everyone and greater deference to a person of authority, the unemployment will increase, on average, by 0.032 units. One unit increase in the Gini index will lead to an increase of

unemployment by 0.081 units, on average, ceteris paribus. At an increase with 1 unit of long-term orientation index, which leads to a greater emphasize on long-term growth, unemployment will decrease by 0.021 units on average. If the Consumer Price Index increases with one unit, the unemployment will slacken with 0.141 on average, ceteris paribus. During the period of financial crisis (year 2008), the unemployment increased on average by 0.351 units and in 2009 average by 0.492 units.

4.1 Cluster Analysis

Based on the previously discovered explanatory factors, a cluster analysis is used to identify and classify nations with cssomparable traits in terms of these determinants. These average values are computed for each nation based on each predictor, changing the dataset from panel to cross-section. To ensure that all variables contribute equally to a scale, standardized values for the independent variables were subtracted from it and divided by its standard deviation. The variables have a zero mean and a unit standard deviation after being standardized. K-means is used to identify the clusters. Luxembourg behaves as an outlier and does not relate to a specific cluster, so it was excluded from the further analysis.

Table 4: Number of Cases in each Cluster

Cluster	1	5	Chile, Columbia, Costa Rica, Mexico, Turkey
	2	15	Australia, Austria, Canada, Denmark, Finland, Iceland, Ireland, Israel, Netherlands, New Zeeland, Norway, Sweeden, United Kingdom, United States
	3	17	Belgium, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Japan, South Korea, Latvia, Lithuania, Poland, Portugal, Slovakia, Slovenia, Spain
Valid		37.	

Source: Author's processing in IBM SPSS Statistics

The first cluster consists of nations with the greatest levels of unemployment, Power Index, inequality, inflation, and population growth, as well as the lowest levels of GDP per capita and long-term orientation. The second cluster exhibits divergent results, since it performs best in terms of unemployment, power distance, Gini index, CPI, and GDP per capita. The third cluster consists of average players in terms of the predictors mentioned previously, but who have the greatest Long-term Orientation ratings and the lowest population growth.

Principal Components Analysis was used to compress the information included in the variables studied to two components for a better depiction of the nations involved in cluster analysis.
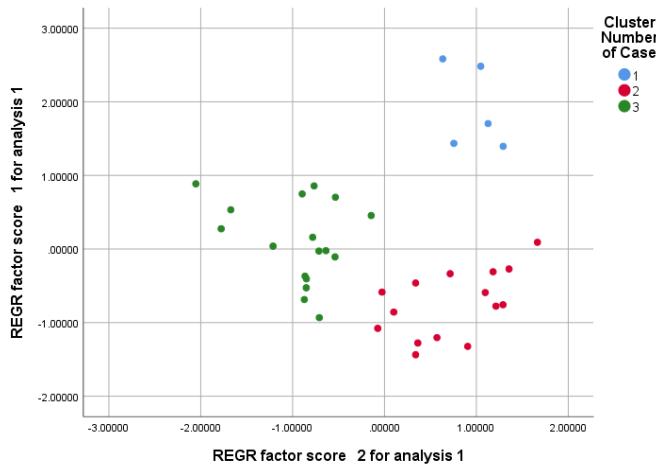
Figure 1: Representation of clusters
Source: Author's processing in IBM SPSS Statistics

5. Robustness checks

To check the results and to analyze the impact of the previously determined explanatory variables, OECD countries were divided, subsampled into 2 categories: old and new, based on the year of becoming a part of the organization. Founding members (Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweeden, Switzerland, Turkey, United Kingdom, United States) who signed the Convention in December 1960 are considered as Old members and the ones who joined later (Australia, Chile, Columbia, Costa Rica, Czech Republic, Estonia, Finland, Hungary, Israel, Japan, South Korea, Latvia, Lithuania, Mexico, New Zeeland, Poland, Slovakia and Slovenia) as new members. According to the International Labor Organization and the United Nations report on the Global Social Situation, the global and economic crisis prompted substantial production contractions in all industrialized nations in 2009, leading to a substantial rise in unemployment, in 2007-2010.

The subsamples were analyzed considering the explanatory variables determined on the full sample. In 26 years, on average, the countries from the new subsample had greater rates of unemployment, inflation, long-term orientation, and power distance scores, as well as Gini index values, but a lower level of GDP per capita and population growth rate, confirming the previously found connections.

Subsamples verified the negative connections between unemployment, GDP per capita logarithm, population growth, long term orientation, and consumer price index, as well as the positive link with Gini index. The differing effect of the Power Distance index on unemployment is one of the discrepancies that happened. A more evenly distributed power for founding members will result in a greater unemployment rate on average, and the opposite for the ones who joined later. Only the old subsample is significantly impacted by the financial and economic crisis. The detailed results for pooled OLS, FEM and REM for the subsamples are listed in the table 5.

Table 5: OLS, FEM, REM for old and new subsamples

	OLD			NEW		
	(1) OLS	(2) REM	(3) FEM	(1) OLS	(2) REM	(3) FEM
Constant	41.8568 ***	70.3010 ***	58.1176 ***	136.2025 ***	146.9283 ***	159.5502 ***
Ln(GDP/cap)	-3.5443 ***	-6.6619 ***	-5.4663 ***	-11.1333 ***	-13.7002 ***	-13.6521 ***
Population growth	-1.6975 ***	-3.0773 ***	-3.0142 ***	-0.44115 **	-1.1104 **	-0.8474 **
PDI	0.0901 ***	(omitted)	0.0322 NS	-0.0665 ***	(omitted)	-0.0905 ***
Gini Index	0.0956 *	0.3629 ***	0.3084 ***	0.2526 **	0.0579 *	-0.1728 **
LTO	-0.0223 **	(omitted)	-0.0049 NS	-0.0189 ***	(omitted)	-0.0029 NS
CPI	-0.2153 ***	-0.2091 ***	-0.2022 ***	-0.183 **	-0.1449 ***	-0.1284 **
Dcrisis_2008	0.8948 **	0.5725 **	0.6334 **	1.09722 NS	1.1792 *	1.18097 *
Dcrsis_2009	0.1148 *	0.1310 *	0.1447 *	1.1078 NS	0.8336 NS	0.8289 NS
	R^2=0.4576	WITHIN R^2=0.3927	WITHIN R^2=0.3913	R^2=0.402	WITHIN R^2=0.4669	WITHIN R^2=0.4503
	R^2 ADJ.= 0.4453	BETWEEN R^2=0.4379	BETWEEN R^2=0.4785	R^2ADJ.= 0.3803	BETWEEN R^2=0.2709	BETWEEN R^2=0.4449
		OVERALL R^2 =0.3843	OVERALL R^2 =0.4136		OVERALL R^2 =0.2402	OVERALL R^2=0.3586
	364	364	364	230	230	230

Note: *** means 1% significant coefficient, ** means 5% significant and * 10%. NS – not significant (above 10%);

6. Heterogeneity: comparison with EU-27

The present chapter's goal is to compare the impact of previously discovered explanatory factors on unemployment persistence in the 27 European Union member countries to the OECD.

OECD and EU-27 member countries followed the same trend throughout time, with the OECD achieving greater achievements in terms of unemployment and GDP per capita. During 1996-1997, the OECD had a faster population growth rate of roughly 3.78% and a lower Gini coefficient of 3 points on average. The EU-27 has a higher average Long-term Orientation and Power Distance Index score.

Table 6: Descriptive statistics of the variables included in the model OECD vs EU-27

Variable	EU27					OECD				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Unempl	702.00	8.69	4.31	1.81	27.47	988.00	7.70	4.06	1.81	27.47
Gini	578.00	31.15	3.64	23.20	41.30	619.00	34.22	7.30	23.20	58.70
Popgr	702.00	0.21	0.83	-3.85	3.93	988.00	0.59	0.78	-2.26	2.89
GDPcap	702.00	37875.26	18800.18	9959.12	120647.80	987.00	38948.61	18190.05	9023.62	120647.80
CPI	702.00	4.92	40.76	-4.48	1058.37	988.00	3.46	6.55	-4.48	85.67
LTO	702.00	57.56	17.03	24.00	83.00	962.00	51.89	21.99	13.00	100.00
PDI	702.00	51.74	20.23	11.00	100.00	988.00	46.61	19.16	11.00	100.00

Using the same procedure as in the case of the OECD, each explanatory variable was included in a simple regression with unemployment to assess the explanatory power and significance of the coefficients separately and afterwards based on the individual significance and adjusted R^2.

Table 7: Multiple regressions – EU-27.

	OLS	FEM	REM
Constant	19.7314	88.3478	-7.4429
LnGDPcap	-2.0709	-9.1185	-7.4429
Popgr	-0.6183	-1.7721	-1.5751
PDI	0.0191	omitted	-0.054
Gini	0.3096	0.5249	0.4222
R2	0.2506	Within: 0.3693	0.3689
R2 adj	0.2454	Between: 0.2476	0.2052
		Overall: 0.2347	0.2136
		Prob>chi2 = 0.0000 →FEM	

The results obtained in the multiple OLS regression and FEM and REM confirm the findings obtained on the OECD population, negative relationship between the unemployment, GDP per capita and population growth and a positive association between unemployment, Power Distance and Gini Index. The Consumer Price Index, Long-term orientation's coefficients are not significant for the EU-27 population.

7. Conclusions

To summarize, unemployment is a huge concern for countries across the world, and study on the subject is critical to understanding its complicated and diverse character. The results obtained from the OECD, comparative study on the European Union, cluster analysis, and multiple regressions have provided insight on the link between unemployment and a variety of characteristics, including GDP per capita, inflation, inequality, culture, and demographic factors. The study also emphasizes the necessity of knowing how many factors interact with one another in affecting unemployment rates. The application of statistical approaches such as cluster analysis and multiple regressions aids in the identification of these complicated interactions and gives policymakers with insights that can help them make more successful policy decisions.

Overall, the findings highlight the importance of a complete and integrated strategy to address unemployment that takes into account many causes and their interconnections.

8. Acknowledgements

References

1.Abdelrahim Y. (2021). The Influence of Indulgence and Long-Term Orientation on A Country's Risk Aversion. The Journal of Organizational Management Studies, Vol. 2021 (2021), Article ID 909336. DOI: 10.5171/2021.909336.
2. Ahlburg, D.A., Kelley, A.C., Mason, K.O. (Eds.) (1996). The Impact of Population Growth on Well-being in Developing Countries. Population Economics. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-03239-8_7.
3. Bazyl V. (2014). Does low power distance culture contribute to lower long-term unemployment? Applied Econometrics Papers, 2014, vol. 1, issue 1, 20-38. DOI: 10.4172/2168-9458.1000119.
4. Cashell, B. (2004). Inflation and Unemployment: What is the Connection?. Congressional Research Service, pp.1-24.
5. Cysne, R.P. (2009). On the positive correlation between income inequality and unemployment. The Review of Economics and Statistics, 91(1), 218–226. DOI: 10.1162/rest.91.1.218.

6. Farsio, F., & Quade, S. (2003). An Empirical Analysis of the Relationship Between GDP and Unemployment. Humanomics, Vol. 19 No. 3, pp. 1-6. https://doi.org/10.1108/eb018884.

7. Life Expectancy - The Health Foundation. Available at: https://www.health.org.uk/news-and-comment/charts-and-infographics/unemployment (Accessed: March 26, 2022).

8. Keynes, J.M. (1936). The General Theory of Employment, Interest and Money. New York.

9. Núñez, I., & Livanos, I. (2010). Higher education and unemployment in Europe: An analysis of the academic subject and national effects. High Educ, 59, 475–487. DOI:10.1007/s10734-009-9260-7.

10. Sen, A. (1973). Poverty, Inequality and Unemployment: Some Conceptual Issues in Measurement. Economic and Political Weekly, 8(31/33), 1457–1464. http://www.jstor.org/stable/4362925.

11. Sumaryoto, Herawati M., & Hapsari (2020). Analysis of Changes in the Unemployment Rate as a Result of the Human Development Index in Indonesia (Case Study 2010-2019). Journal of Economics and Business, Vol. 3, No. 4, pp. 1538-1548. https://doi.org/10.31014/aior.1992.03.04.301.

12. Shabbir, A., Kousar, S., Kousar, F., Adeel, A., & Jafar, R. (2019). Investigating the effect of governance on unemployment: A case of South Asian countries. International Journal of Management and Economics, 55(2), 160-181. DOI: 10.2478/ijme-2019-0012.

THE LABOUR SHARE IN HOUSEHOLDS' INCOME INEQUALITY IN ROMANIA

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Abstract: *The aim the paper is to analyse the relationship between the labour share in the households' income and inequality expressed by Gini coefficient in Romania during 1997-2020. Based on data from National Institute of Statistics of Romania, we provide evidence that high shares of labour income in total households' income are associated with high values of estimated Gini coefficient and labour and wages share could explain households' income inequality. We also highlighted the link of income inequality and income labour share to economic growth. Economic growth is associated with reducing levels of income inequality only in short periods of time. Policy makers should give attention to the evolution of labour share in the total income of households. Appropriate public policy measures regarding the improvement of labour market outcomes are required in order to prevent the rise of wage inequality.*

Key words: income inequality, households, labour income, economic growth

JEL Classification: D10, I30, I38, J38

1.Introduction

Income inequality remained a special concern of governments, especially in last years, when Pandemics extended the gap between poor and rich. Population is affected by disparities in earnings even though the global economy is more prosperous.
In the case of Romania, the rising levels of macroeconomic results (i.e., Gross Domestic Product per capita) is accompanied by the increase of income inequality. The Gini coefficient estimated by the World Inequality Income Database (WIID) for income inequality in Romania registered increasing levels year by year, from 21.6 in 1990 to 34.1 in 2020.

A very few studies are focused on the income inequality in Romania even the issue of poverty and social polarisation are on the agenda of policy makers and in the European framework of social policies.

The aim of the paper is to analyse the relationship between the labour share in the households' income and inequality expressed by Gini coefficient in Romania. It is highlighted the contribution of wage income inequality to the inequality of households' income of Romania. This is explained by the significant labour share income in the total gross income of households. Our study reveals that higher shares of labour income are associated with higher income inequality and economic growth. The contribution of the paper to the existing literature is threefold. First, unlike the most studies focused on income inequality using the variable of labour income as a share of GDP (expressed by the gross compensation of employees), our study is based on labour income as share of households' income. In this way we give a more accurate view on income inequality in Romania. Second, the results are based on authors' own estimation of inequality measure (Gini coefficient) for gross total income of households and its components: wage income and social benefits. Third, there are very few recent studies on inequality of households' income for Romania. The remainder of the paper is structured as follows. After a short literature review, data and methodology are described. It follows the section of exposing the main findings are exposed, and finally, the conclusions are presented.

2.Literature review

The literature focused on the link between labour income share and income inequality is not very rich. Daudey and Garcia-Penalosa (2007) found that higher labour shares are associated with lower income inequality in 39 developed economies between 1970-1994. In 2010, the same authors revealed similar results in the case of 16 OECD countries for 1960-2000. Adler and Schmid (2013) found that decreasing labour income shares are associated with increasing income inequality in Germany over the period of 2002-2008. Similar results were revealed by Jacobson and Occhino (2012) in the case of USA economy. Francese and Mulas-Granados (2015) found that labour share is not determinant for inequality, but wage inequality, in a study covering 93 countries during 1907-2013.

Other studies conducted for developed economies suggest also that lower labour income shares are associated with higher income inequality expressed by Gini coefficient (i.e., Dao et al., 2017; IMF, 2017; Sauer et al., 2020). In the same line, Erauskin (2020) provided an empirical investigation on how higher income

inequality is associated with decreasing share of labour income in a study comprising of 62 countries over the period of 1990-2015.

Blundell et al. (2018) developed a study in Britain and USA on interaction between labour market earnings in the family and household income inequality. They found that the welfare system played an important role on equalizing the income growth across the wage inequality.

Analyses of income inequality in the case of Romania are less present in the literature. All studies developed by Romanian authors revealed that income inequality grew during all years since 1990, Romania being one of the most unequal in the EU (Precupețu, 2010). Molnar (2010a, 2010b) analysed the income distribution in Romania and revealed the increase in inequality and polarization mainly after 2000 year. The conclusions show that Romania faces increasing levels of households' income inequality and a large share of households with low income. The redistribution policy (through social transfers) contributed to the inequality mitigation but was not enough to master the rise of income inequality.

The relationship between income inequality and economic growth is largely study in recent years.

The findings are mixed: some of them state that inequality is irrelevant for economic growth, other reveal that it is harmful for growth or it promotes growth. A group of studies found no association between income inequality and growth (Forbes, 2000; Panizza, 2002, Kray, 2015); Some of studies identified a significant negative effect of inequality on economic growth (i.e., Ostry and Berg, 2011; Oustry et al., 2014; Cingano, 2014). Shin (2012) concluded that both situation (positive or negative relationship between income inequality and economic growth) are possible because higher inequality can retard economic growth in early stage of economic development and income redistribution is no always effective for inequality reduction.

Income inequality can affect economic growth in several and complex ways and various channels. Its impact on economic growth could be significant and negative mainly in the presence of high level of poverty Breunig and Majeed, 2020). In economies with low level of opportunities the income inequality has a higher influence on economic growth while in economies with high opportunities the rise of income inequality is less harmful for growth (Aiyar and Ebeke, 2020).

Regarding how we can explain the trend of income inequality the study developed by Sauer et al. (2020) for 73 countries found that the declining labour income shares and increasing imports from developed countries has a rising effect on income

inequality while taxation and imports from low-developed countries has a compensation effect.

The present paper aims to cover the existing gap in the literature being focused on inequality of households' income of Romania by assuming the following objectives: (1) analysing the evolution of labour income share in the total gross income of households; (2) analysing the households' income inequality by estimating the Gini coefficient for the total gross income and its components (wages and social benefits); investigating the following possible associations: labour share income-total gross income inequality, GDP per capita- total gross income inequality, total gross income inequality-wage share income, total gross income inequality -wage inequality, GDP per capita-labour share income; (3) investigating the causality between the considered variables.

3.Data and methodology

The income concept used in the paper is gross income of households, regarded as the best proxy of the household's welfare (i.e., Molnar, 2010a).
Our data are extracted from National Institute of Statistics (NIS) of Romania regarding the income households, namely total gross income, gross salaries and social benefits for the period of 1995 to 2020. In the Romanian database, the total gross income includes in kind income (the value of benefits in kind received by individuals and value of consumption of agricultural products from own resources) and monetary income (gross wage earnings, income from agricultural, non-agricultural and independent activities, income from property, social benefits, property income. We used data sets on households' income structured by deciles.
Gini coefficient introduced by Corrado Gini (1912) is a popular measure of income distribution. It is computed based on the difference between the income of household taken two by two. Its null value means an equal distribution of income among individuals/households and the value of 1 signifies the case of perfect inequality.
We estimate the Gini coefficient of households' income by using the formula:
$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)\bar{y}} \sum_{i=1}^{n} i\, y_i \quad (1)$$
where: y_i is the income variable, i-represents the rank of each household in descending order, $\bar{y}$ is the average of variable y_i, n is the total number of households. We calculated the share of labour income in total household income as the share of salaries, income from agriculture, non-agricultural and independent activities. The

values of estimated Gini coefficient based on formula (1) are included in the Appendix.

In order to analyse the correlation between households' income inequality (expressed by the estimated Gini coefficient) and other explanatory economic variables (income labour share, income wage share, Gross Domestic Product per capita) the following model will be used:

$$y = a + b * x \qquad (2)$$

where: y is the dependent variable and y is the explanatory, independent variable.

The Anova test will be used in order to validate the association between x and y. A value of SignF under the threshold of 5% indicates validated correlation and the value of the coefficient of determination indicates the extent to which the independent variable can explain the variation of the dependent variable.

In order to find the direction of causality relationship between paired variables, the Granger causality test (1969) will used. The null hypothesis is that a variable *x* does not Granger- cause a variable *y*. If the value of Prob. is higher than 0.05, the null hypothesis (H0) is accepted, meaning that x does not cause *y*. Alternatively, if the value of Prob. is lower than 0.05, the null hypothesis is rejected meaning that the Granger causality runs from *x* to *y*.

4.Main findings
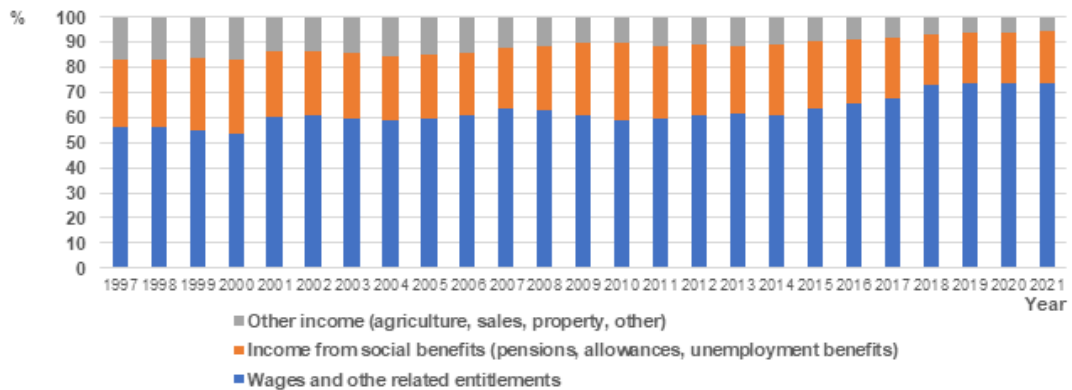
Figure 1 Structure of monetary income of households in Romania (1997-2021)
Source: authors' own computation based on National Institute of Statistics data

Gross wages and wage entitlements have a significant share in the total of households' monetary income, namely 56-72%. Their share increased over time, from 56,6% in 1997 to 72,6% in 2021, due to the reduction of the share of other income and social benefits (Figure 1). The share of income from social benefits

decreased from 17,25% to 5.77%, over the analysed period. A first conclusion that can be drawn is that the dynamics of wages can have a large influence on households' income inequality, given their considerable share in the total household income.

Based on NIS data, we estimated the share of labour income in the total monetary household income, as the sum of income from wages and salaries, income from sales (agricultural products), income from own-account activities (crafts, trade, transport), receipts from companies and agricultural associations.

The share of labour income in the total household money income has an increasing trend, strongly accelerated after 2010. In the period 1997-2010 it has an oscillating evolution around 67%. The period after 2010 is one of recovery (after the financial and economic crisis). During this period of expansion there are two moments of decline, namely in 2014 (compared to 2013) and then in 2021 (compared to 2020), but the increase is significant, from 65.37% to 77.39% of total money income (Figure 2).
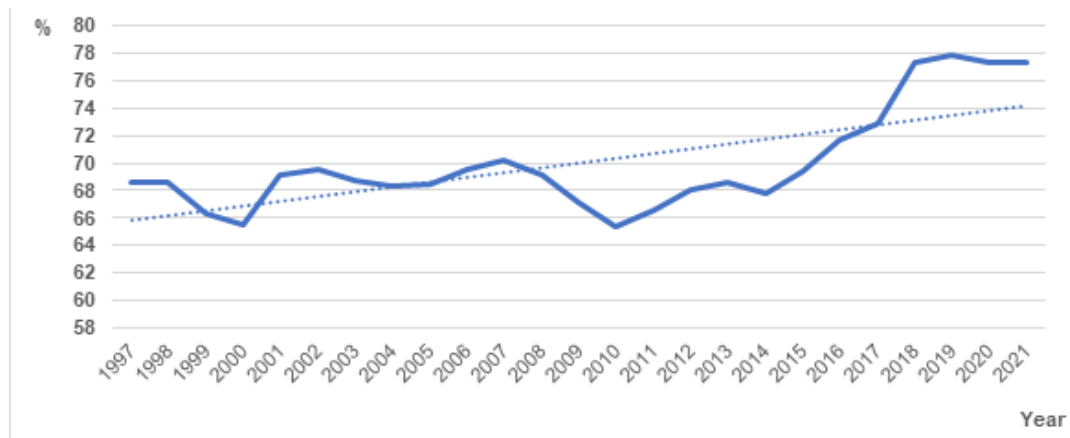
Figure 2 The share of labour income in Romania (1997-2021)
Source: authors' own computation based on National Institute of Statistics data

We estimated the GINI coefficient based on formula (1) for gross total income, for wages and for social benefits, their values are displayed in Figure 3.
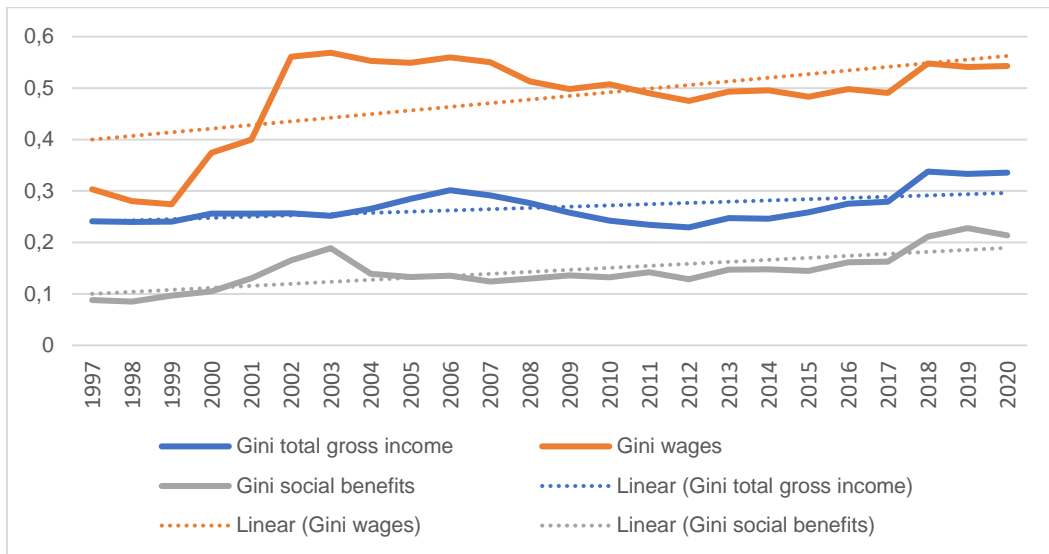
Figure 3 Dynamics of inequality of total gross income, wages and social benefits
Source: authors' own computation based on NIS data

We notice from Figure 3 that income inequality measured by the estimated GINI coefficient increased in all cases, as total income, wages and social benefits, in the period under examination. We can also observe that the inequality of wages in absolute values and growth is higher than that of gross income and social benefits. This suggests that wages inequality can be seen as a source of underpinning the household income inequality. The period of 1999 to 2003 the wage inequality has rapidly grown from 0.3 to 0.56. A maximum of social benefits inequality is reached as well in 2003 while a maximum of total income inequality is attained four years later. After 2003 the wages inequality slightly decreased, year by year, until 2012 followed by a period of apparent stagnation. 2018 is a year of leap for all GINI coefficients, followed by two years of slight decrease.

In order to establish a link between the income inequality and labour share in the total income we analyse the correlation between the two variables displayed in the Figure 4. The values of examined variables are distributed on both sides of regression line. The correlation coefficient is 0.87 and the determination coefficient has a value of 0.76. The ANOVA test show a F value of 71.75 (SignF=2.26E-08) for the regression meaning that we can accept that income in equality van be explained in a proportion of 87% by the income labour share, if other factors are remaining constant.
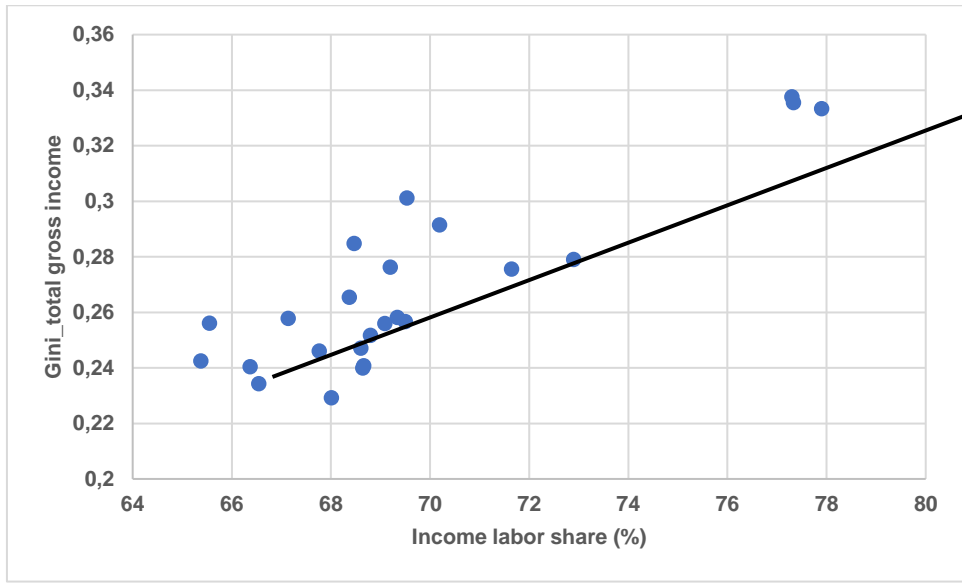
Figure 4 Correlation between inequality of total gross income and labour share on household income
Source: authors' own computation based on NIS data
$(GINI = -0.21912 + 0.008029 * income\ labour\ share\ )$
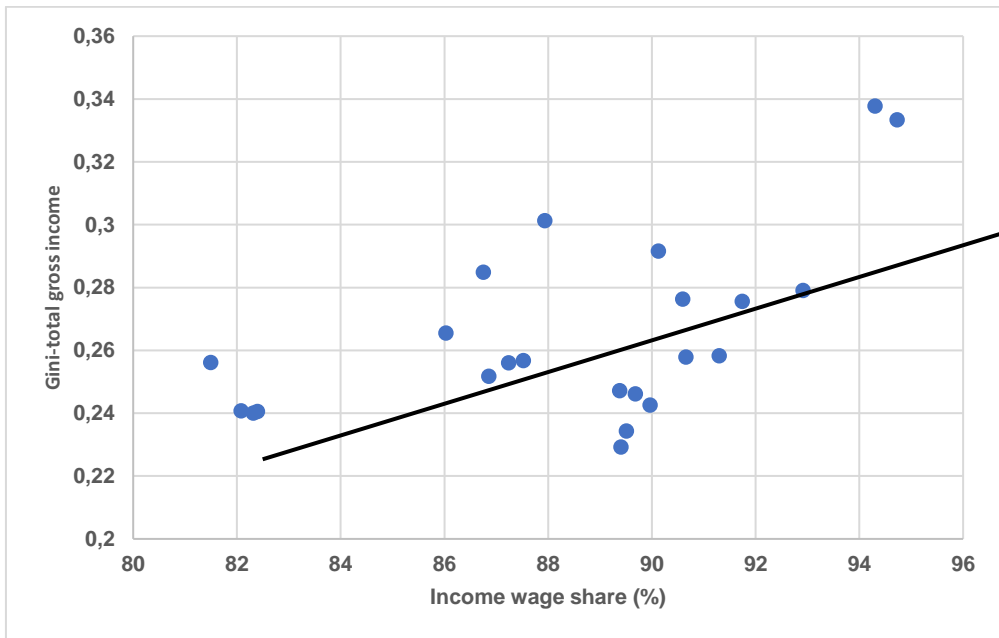
Figure 5 Correlation between inequality of total gross income and wage share on households' income
Source: authors' own computation based on NIS data
$(GINI = -0.18624 + 0.005121 * income\ wage\ share\ )$

Regarding the correlation between income inequality and income wage share, figure 5 shows a tight link between the two variables, the correlation coefficient is 0.62. The ANOVA test results indicates that the link statistically validated: the value of F is 14.39 for a SignF=0.000, resulting that in a proportion of 39% total income inequality can be explained by the variation of income wage share (Figure 5).
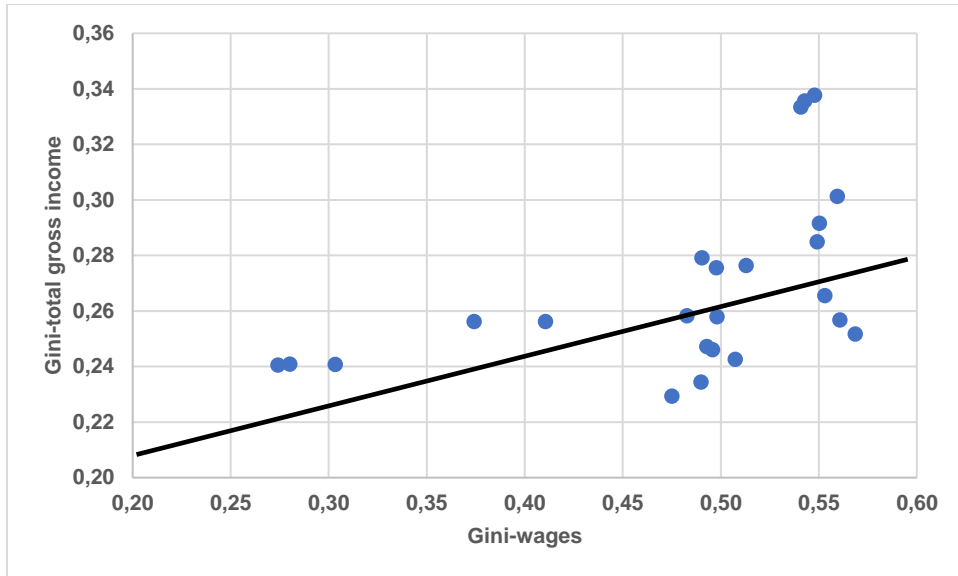
Figure 6 Correlation between inequality of total gross income and inequality of wages
Source: authors' own computation based on NIS data
$$Gini(total\ income) = 0.181054 + 0.181148 * Gini(wages)$$

The correlation between Gini for total gross income and Gini for wages is relatively strong (the correlation coefficient is 0.50) and statistically validated (SignF is 0.011). Given the coefficient of determination of 0.25 we van say that in a proportion of 25% the variation of total income inequality is due to the variation of wage inequality (Figure 6).

Given the focus of an extended literature on the relationship between income inequality and economic growth, we further investigate this link in our case.
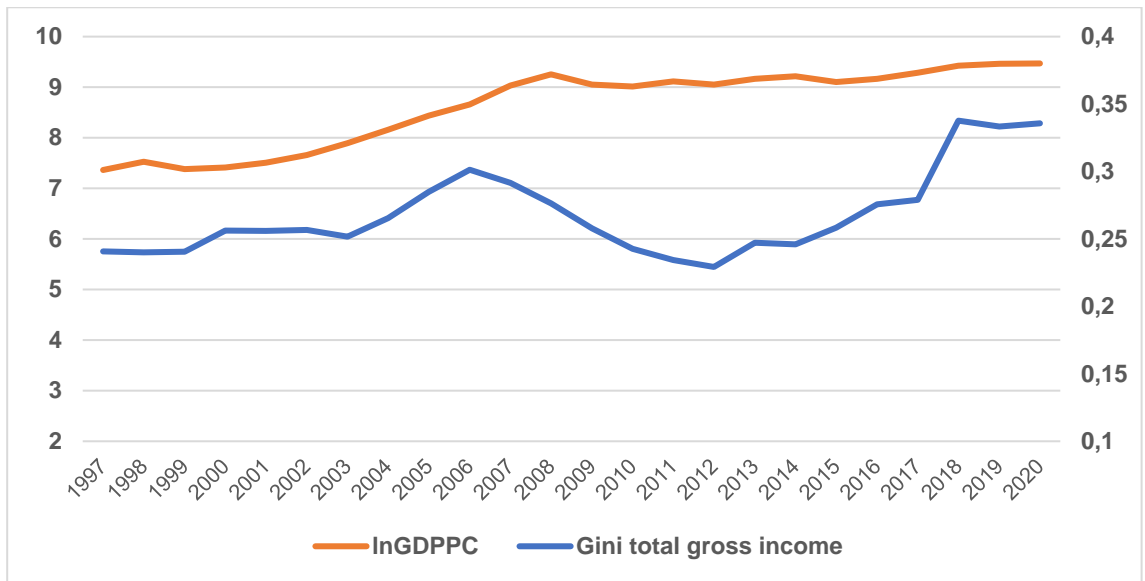
Figure 7 Evolution of GDP per capita and estimated Gini coefficient for households' total gross income
Source: authors' own computation based on World Bank and NIS data

As we can notice from the above graph, the inequality of households' income, expressed by the estimated Gini coefficient, as well as GDP per capita (in ln) have a general positive trend in the examined period of time (Figure 7). GINI coefficient increased from 0.23 to 0.33 and GDP per capita from 1852.5 to 14861.9 thousand US dollars in 2020. Between 1997 and 2005, income inequality evolves together with GDP per capita. In 2006, the Gini coefficient registered a maximum while GDP per capita reached its maxim value two years later, in 2008. After a short period of fall in 2009, GDP per capita continues to increase. The interesting part is the period from 2007 to 2012, when the inequality decreases continuously while GDP per capita is increasing. This is the period of time when economic growth is accompanied by a reduction in income inequality. Another similar period is a short one, 2009-2020. In the examined period of 18 years, we identified only 6+2 years when economic growth is associated with decrease of income inequality, as it is the case of developed economies. This fact suggests a lower capacity of economy to reduce income inequality.

As it is shown in the Figure 8, the correlation between GDP per capita (in ln) and Gini coefficient for total gross income of households is positive (the coefficient of correlation is 0.47) and statistically significant (the value of SignF is 0.0197) for a significance threshold of 5%. 22.33% of variation of we can impute the variation of

Gini coefficient as a consequence of GDP per capita variation, if other factors remain constant.
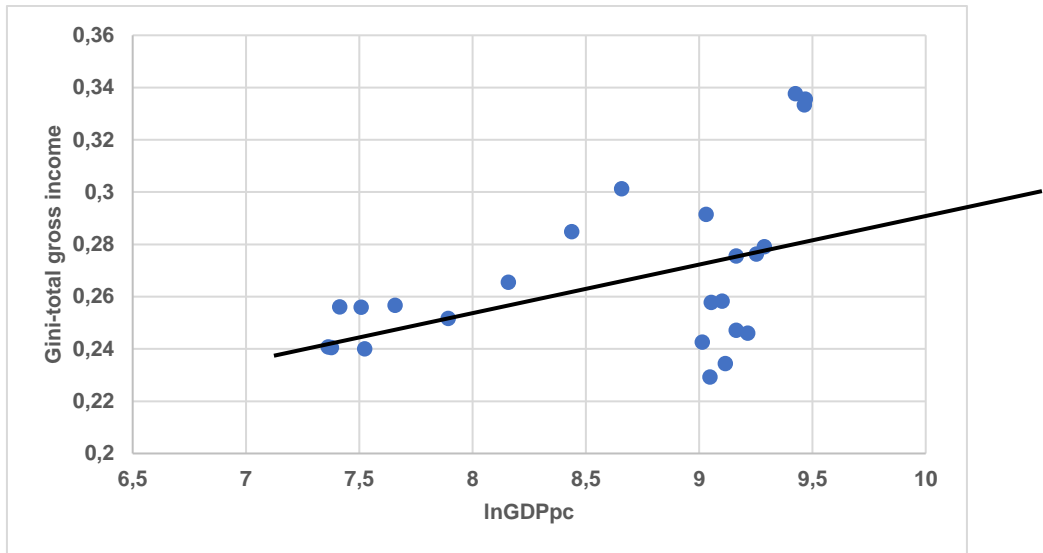
Figure 8 Correlation between GDP per capita and Gini coefficient for households' total gross income
Source: authors' own computation based on World Bank and NIS data
$(Gini = 0.100836 + 0.01943 * lnGDPpc)$

We also intend to find the association of labour share income with GDP per capita.
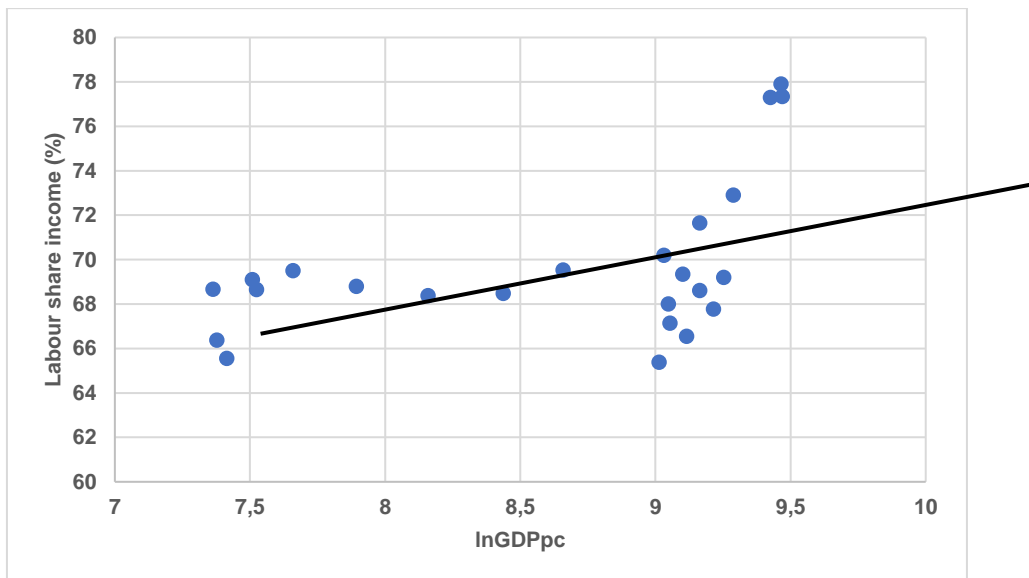
Figure 9 Correlation between GDP per capita and labour share income (%)
Source: authors' own computation based on World Bank and NIS data
$lnGDPpc = 51.16292 + 2.148621 * labour\ share\ income$

The coefficient of correlation between the two variable has the value of 0.76. The correlation is validated based on ANOVA test result (the value of SignF is 0.0176). The variation of GDP per capita can be explained in a proportion of 23% by the variation of labour share income (Figure 9).

Finally, we applied the Granger causality test for examined variables. We couldn't identify any causality up to lag equal to 6. Table 1 shows that the following causalities are running: from income labour share to GINI and to lnGDPc and from lnGDPpc to GINI.

Table 1 Results of Granger causality test

Null Hypothesis	Obs	F-statistic	Prob.
Lags=6			
Income labour share does not Granger cause Gini	18	7.12855	0.0239
Lags =7			
lnGDppc does not Granger cause Gini	17	2542.00	0.0004
Income labour share does not Granger cause lnGDPpc	17	216.652	0.0046

Source: authors' own computation by using EViews 12 software

5.Conclusions and policy implications

We computed the GINI coefficients for total gross income of households and also for income wage, as well as for social benefits, as components of total households' income, for the period of 1997 to 2020.
We found that inequality of wages is much deeper as the inequality of gross income of households and that of social benefits (the values of Gini coefficients are almost doubled) and the wage inequality is linked to the total income inequality as revealed by Francese and Mulas-Granados (2015).
We also found that high shares of labour and wages in household gross income are associated with high income inequality levels and also that they have a linked evolution. Income inequality (of gross income, and its components: wages and social benefits) had an increasing trend in the examined period of time (1997-2020). Overall, this increasing trend in the whole examined period of time suggest an urgency of understanding the processes driving the households' income inequality in Romania.

We revealed a validated causal relationship running from income labour share to households' income inequality (with a lag of 6), based on Granger test results. This suggests that inequality on income labour shares can be seen a source of inequality of total households' income.

We also found that, apart from developed countries, economic growth is generally accompanied with the increase of inequality of households' income. Only in short periods of time (6+2 years) the increase of GDP per capita is associated with the decrease of income inequality, suggesting a low capacity of economy to master the worsening of inequality of households' income. The Granger causality test identifies a causal relationship from GDP per capita to the estimated Gini coefficient of households' income, with a lag of 7 years, suggesting that is however possible a delayed positive impact of economic growth on households' income inequality, in the presence of appropriated policy measures.

Our findings suggest a Based on the above findings, the following policy recommendations can be drawn: (1) appropriate economic and social policy measures are required in order to limit the deepening of households' income inequality; (2) special attention must be given to the labour income due to its significant size in the total income of households, underpinning the total income inequality; (3) specific measure for the labour market are needed in order to reduce wages inequality on the long-term (i.e., improvement of employment structure, promoting participation in the labour market, extension of human capital investment mostly for low-income individuals or groups).

As a limit of the present study, the short time of available data series regarding the income of households can be mentioned.

Possible further directions of research could be to identify and investigate determinants of rising income inequality in Romania (e.g., social, political, institutional factors), as suggested by Wallace et al. (2022).

References

1.Adler, M. and Schmid, K.D. (2013) "Factor shares and income inequality. Empirical evidence from Germany 2002–2008", *Schmollers Jahrbuch*, Vol. 133 No. 2, pp. 121-132.
2.Aiyar,S.; Ebeke, C.(2020) "Inequality of opportunity, inequality of income and economic growth", *World Development*, 136, 105115.
3.Blundell, R.; Joyce, R.; Keiller, A.N.; Ziliak, J. (2018). Income inequality and the labour market in Britain and the US, Journal of Public Economics, 162, pp.48-62.
4.Breunig, R., Majeed, O., (2020) "Inequality, poverty and economic growth", *International Economics*, Vol. 161, pp. 83-99.

5.Cingano, F. (2014) ”Trends in Income Inequality and its Impact on Economic Growth” *OECD Social, Employment and Migration Working Paper*, 163.

6.Dao, M.-C., Das, M., Koczan, Z. and Lian, W. (2017) "Why is labor receiving a smaller share of global income? Theory and empirical evidence", *IMF Working Paper* WP/17/169.

7.Daudey, E. and García-Peñalosa, C. (2007) "The personal and the factor distributions of income in a cross-section of countries", *The Journal of Development Studies*, Vol. 43 No. 5, pp. 812-819.

8.Erauskin, I. (2020) ”The labour share and income inequality: some empirical evidence for the period 1990-2015”, *Applied Economic Analysis*, Vol.28, No.84, pp.173-195.

9.Forbes, K., (2000), 'A reassessment of the relationship between inequality and growth', *American Economic Review,* Vol. 90, pp. 869–870.

10.Francese, M. and Mulas-Granados, C. (2015) "Functional income distribution and its role in explaining inequality", *IMF Working Papers* WP/15/244.

11.Gini C. (1912) *Variabilità e mutabilità,* Studi Economico-Giuridici dell'Università di Cagliari, 3, pp. 1-158.

12.Granger, C. W. J. (1969) "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods,"*Econometrica,* 37,pp. 424–438.

13.IMF-International Monetary Fund (2017) "Gaining momentum?", *World Economic Outlook*, April.

14.Jacobson, M. and Occhino, F. (2012) "Labor's declining share of income and rising inequality", Federal Reserve Bank of Cleveland.

15.Kraay, A. (2015) ''Weak Instruments in Growth Regressions: Implications for Recent Cross-country Evidence on Inequality and Growth," *Policy Research Working Paper Series* 7494 (Washington: World Bank).

16.Molnar, M. (2010a) ”Income distribution in Romania”, *Munich Personal RePEc Archive* Paper no.30062 (https:// mprs.ub.uni-muenchen.de/300620)

17.Molnar, M. (2010b) ”Inegalitatea veniturilor gospodăriilor în România”, *Romanian Statistical Review* No.7, 2010.

18.Ostry, J., Berg, A. (2011) ”Inequality and Unsustainable Growth; Two Sides of the Same Coin?” *IMF Staff Discussion Note* No. 11/08 (Washington: International Monetary Fund).

19.Oustry, J.,et.al., (2014) ”Redistribution, Inequality, and Growth”*, IMF Staff Discussion Note* No. 14/02 (Washington: International Monetary Fund).

20.Panizza, U. (2002) ”Income inequality and economic growth: Evidence from American data”, *Journal of Economic Growth*, 7(1), pp.25–41.

21.Precupețu, I. (2010) ”Inequality trends in Romania”, *Calitatea Vieții*, XXIV, No.3,pp.249-276

22.Sauer, P., Rao, N.D. and Pachauri, S. (2020) "Explaining income inequality trends. An integrated Approach" WIDER Working Paper 2020/65.

Shin, I., (2012), ”Income inequality and economic growth”, *Economic Modelling,* Vol. 29, pp. 2049-2027.

23.Wallace,M.; Hyde, A.; Vachon, T. E. (2022) "States of inequality: Politics, labor, and rising income inequality in the U.S.State since 1950", *Research in Social Stratification and Mobility*, 78, 100677.
http://www.insse.ro/
http://data.worldbank.org/
https://www.wider.unu.edu/project/wiid-%E2%80%93-world-income-inequality-database

Appendix
Estimated GINI coefficients

Year	Gini - total gross income	Gini -wages	Gini -social benefits
1997	0.24076	0.30342	0.08775
1998	0.24081	0.28013	0.08512
1999	0.24048	0.27417	0.09666
2000	0.25613	0.37421	0.10483
2001	0.25614	0.41057	0.13014
2002	0.25671	0.56073	0.16494
2003	0.25173	0.56868	0.18870
2004	0.26547	0.55303	0.13915
2005	0.28488	0.54927	0.13258
2006	0.30128	0.55950	0.13535
2007	0.29154	0.55037	0.12394
2008	0.27632	0.51303	0.12943
2009	0.25785	0.49819	0.13575
2010	0.24260	0.50737	0.13215
2011	0.23434	0.48998	0.14219
2012	0.22925	0.47514	0.12820
2013	0.24718	0.49283	0.14686
2014	0.24608	0.49580	0.14777
2015	0.25828	0.48283	0.14484
2016	0.27559	0.49783	0.16164
2017	0.27908	0.49036	0.16297
2018	0.33770	0.54783	0.21126
2019	0.33337	0.54081	0.22786
2020	0.33560	0.54291	0.21397

Source: authors' own computation based on NIS data

FINANCE, BANKING, ACCOUNTING AND AUDIT

THE RELIABILITY OF RESERVES VALUATION IN INSURANCE COMPANIES

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Abstract: *Starting from the theory of probabilities, which represents an attempt to investigate uncertainty, insurance companies must calculate their insurance premiums in such a way as to cover all their operational expenses and obtain the expected benefit, preserving the principle of equity and solidarity. In commercial insurance, statistical research plays a special role in estimating the level of insurance activity and its prospects. For this purpose, the events that take place in insurance are measured, ordered, systematized and aggregated through observation (collection), processing and analysis. Estimating the risk and the insurer's obligations based on inadequate or incorrect data is an extremely dangerous situation. Therefore, it is extremely important for the insurer to establish the best possibility of observing and using the data. Basing premium rates and reserves is an important activity for insurance companies. If insurers do not accurately set premium rates that reflect the size of the risk, they may suffer losses due to the financial imbalance created between premiums and indemnities or due to adverse selection. The actuary deals with this within the insurance company, using various actuarial statistical methods. The Chain-Ladder method is one of the most popular claims reserving techniques. The aim of this study is to back-test the chain-ladder method. We use a stochastic scenario generator that allows us to simulate arbitrarily many upper claims reserving triangles of similar characteristics for which we also know the corresponding lower triangles. Based on these simulated triangles, we analyse the performance of the chain-ladder claims reserving method. The substantiation of technical reserves must be based on specific methods because there is a possibility that two insurers may use different calculation techniques for similar obligations and obtain totally different results, thus disrupting profitability and financial soundness.*

Keywords: *loss, claims, reserves, estimate*

JEL Classification: *G22, G52*

1. Literature review

Over the years, numerous methods and models have been developed to estimate both the level and variability of reserves for insurance company. According to Carrato et al. (2018), in practice the Mack Chain-Ladder and Bootstrap Chain-Ladder models are the most used methods to estimate the reserves across the UK industry and the Lloyd's market.

The chain ladder method is one of the most popular and well-known methods of claims estimating in non-life insurance. It was developed at a time when computers were not readily available and it was important to have simple closed form expressions. In the past, the classical actuarial literature has described the chain-ladder method as a pure computational algorithm to estimate claims reserves.

Many extensions of the Classical Chain claims reserving model have started to be developed. Authors such as: Mack (1993, 1994) or Murphy (1994) have shown that link ratio techniques for loss reserving can be regarded as weighted regressions of a certain kind.

The Chain Ladder Method (CLM) is a method for calculating the claim reserve requirement in the financial statement of an insurance company. The laddering method is used by insurers to forecast the amount of reserves that must be established to cover projected future claims by projecting past claims experience into the future. Therefore, CLM only works when past loss patterns are assumed to persist into the future. When the insurer's current claims change for some reason, the laddering method will not produce an accurate estimate without appropriate adjustments. The laddering method calculates estimates of incurred but unreported losses (IBNR) using runoff triangles of paid losses and incurred losses representing the sum of paid losses and case reserves. Insurance companies must set aside a portion of the premiums they receive from their underwriting activities to pay claims that may be made in the future. The amount of forecasted claims, along with the amount of claims that are actually paid, determines how much profit the insurer will publish in its financial documents.

2. Methodology

In general, the insurance reserve consists of:

- reserve for filed but unpaid claims. This reserve is intended for damages that are known to the company but have not been paid, it is also called the reserve for outstanding/not settled claims (RBNS – Reported but not settled);

- reserve for incurred but not reported claims. This reserve is intended for damages that are not known to the company because no claims have yet been made for them (IBNR – Incurred but not reported).

In this section are presented the methodologies applied to estimate the claims reserves for a Romanian non-life insurance company. There are tested two methods: The Basic Chain Ladder Method and The Chain Ladder adjusted for inflation method under two sets of data: cumulative payments and incurred losses triangles in the claims reserving estimation for insurer analysed.

3. Numerical experiments

An interesting application of the Chain-Ladder method is considered in the present work. The analysis are made over data from the official site of the Financial Supervision Commission. The available information consists in data for the incurred claims about insurance events during the year 2019.

The information about the number of the claims in cumulative values is shown in Table 1.

Table 1. Claims loss settlement data presented as a run-off triangle

Occurrence year	Development year					
	0	**1**	**2**	**3**	**4**	**5**
2018	12054,655	11548,548	9845,658	8565,548	6582,544	4583,498
2019	11583,548	9845,589	5486,548	4588,286	2654,349	
2020	12698,942	10695,612	8954,578	5645,258		
2021	9634,681	8694,652	5987,357			
2022	8543,658	5984,546				
2023	10696,371					

Source: made by author over data from the official site of the Financial Supervision Commission

In the first stage, the damages are calculated in each year of origin, the cumulative data being also presented in a development table:

Table 2: Cumulative claims loss settlement data presented as a run-off triangle

Occurrence year	Development year					
	0	1	2	3	4	5
2018	12054,655	23,603,203	33,448,861	42,014,409	48,596,953	53,180,451
2019	11583,548	21,429,137	26,915,685	31,503,971	34,158,320	C19,5
2020	12698,942	23,394,554	32,349,132	37,994,390	C20,4	C20,5

2021	9634,681	18,329,333	24,316,690	C21,3	C21,4	C21,5
2022	8543,658	14,528,204	C22,2	C22,3	C22,4	C22,5
2023	10696,371	C23,1	C23,2	C23,3	C23,4	C23,5
Development factor		1,88321	1,15546	1,5285	1,74211	1,64262

Source: made by author over data from the official site of the Financial Supervision Commission

Further using the development factors we estimate the cumulative used damages by multiplying the last cell of each year by the related development factors for each blank cell.

The second stage involves determining the development factors by dividing the accumulated sums on each column by those in the previous column without the last term.

The development table of the initial and estimated cumulative unliquidated damages is as follows (the data are expressed in thousands of Euros):

Table 3. Development table - cumulative data estimated damages

Occurrence year	Development year					
	0	**1**	**2**	**3**	**4**	**5**
2018	12054,655	11548,548	9845,658	8565,548	6582,544	4583,498
2019	11583,548	9845,589	5486,548	4588,286	**2654,349**	**21950,926**
2020	12698,942	10695,612	8954,578	**5645,258**	28196,198	**18119,528**
2021	9634,681	8694,652	**5987,357**	23170,238	17194,976	**11049,889**
2022	8543,658	**5984,546**	16786,796	15995,353	11870,388	**7628,186**
2023	**10696,371**	20143,535	23275,100	22177,756	16458,440	**10576,573**

Source: made by author over data from the official site of the Financial Supervision Commission

The reserve for unliquidated claims (RDN) at the end of 2023 is obtained by summing the differences between the last cell of each year and the last known cell of that year:

RDN2023 = (10576.573 - 10696.371) + (7628.186 - 5984.546) + (11049.889 - 5987.357) + (18119.528 - 5645.258) + (21950.926 - 2654.349) = 38357.221 thousand euros.

This recorded value of the reserve for unliquidated claims is calculated without taking inflation into account.

Chain Ladder method with inflation

The Chain Ladder method with inflation involves taking into account the inflation index applied to claims from previous years as well as the forecast index applied to estimated claims. The Basic Chain Ladder is applied to inflation-adjusted claims data to estimate the claims that will be paid in subsequent years, after which the forecasted index is applied to convert those amounts to the corresponding monetary values for each year. So this method differs from the basic one in that the data is expressed in current terms, while the basic method uses the data in constant terms. In the balance sheet of SC ALFA for 2023, the claims reserve has the level of 255,088 thousand euros.

The annual inflation rate, in the middle of each year, during the analysed period was:

Table 4. The annual inflation rate

Year	The annual inflation rate (%)
2018	4,6
2019	3,8
2020	2,6
2021	5,1
2022	13,8

Source: INS

This model involves going through the following steps to find the reserve for unliquidated claims taking inflation into account. In the first step, the previous inflation matrix is calculated, starting from the previous inflation.

Table 5. Inflation Matrix

2018	2019	2020	2021	2022	2033
0,5910	0,4580	0,4570	0,3450	0,2250	0,0000
1,5910	1,4580	1,4570	1,3450	1,2250	1,0000
5,5685	3,5001	2,4005	1,6476	1,2250	1,0000

Source: made by author over data from the official site of INS

The development table for inflation is shown below:

Table 6. Development table

Occurence year	Development year					
	0	1	2	3	4	5
2018	5,5685	3,5001	2,4005	1,6476	1,2250	1,0000
2019	3,5001	2,4005	1,6476	1,2250	1,0000	
2020	2,4005	1,6476	1,2250	1,0000		
2021	1,6476	1,2250	1,0000			
2022	1,2250	1,0000				
2023	1,0000					

Source: made by author over data from the official site of INS

Inflation-adjusted damages are calculated by cell-by-cell multiplication of the data in the development tables containing the original damages and inflation. The newly obtained table contains the damages expressed in current prices.

Table 7. Development table – inflation-adjusted data

Occurence year	Development year					
	0	1	2	3	4	5
2018	67126.35	82613.57	80293.99	69222.94	59531.27	53180.45
2019	40543.58	51440.64	44346.28	38592.36	34158.32	
2020	30483.81	38544.87	39627.69	37994.39		
2021	15874.10	22453.43	24316.69			
2022	10465.98	14528.20				
2023	10696.37					

Source: made by author over data from the official site of INS

The basic Chain-Ladder method is applied with the last development table as input data. Thus the damages are accumulated, obtaining the following development table:

Table 8. Development table - cumulative data

Occurence year	Development year					
	0	1	2	3	4	5
2018	67126	149740	230034	299257	358788	411969
2019	40544	91984	136331	174923	209081	
2020	30484	69029	108656	146651		
2021	15874	38328	62644			
2022	10466	24994				
2023	10696					
Development factors	2,27409	1,54023	1,30695	1,19758	1,14822

We estimate cumulative unliquidated damages using the previously calculated development factors.

Table 9. Development table - cumulative data

Occurence year	Development year					
	0	1	2	3	4	5
2018	67126	149740	230034	299257	358788	411969
2019	40544	91984	136331	174923	209081	240071,7
2020	30484	69029	108656	146651	175626,4	201658,1
2021	15874	38328	62644	81873,14	98049,84	112583
2022	10466	24994	38496,86	50313,64	60254,74	69185,84
2023	10696	24324,56	37465,49	48965,68	58640,44	67332,27

Source: made by author over data from the official site of INS

To determine the estimated damages in simple values, subtract the cumulative damages from the previous table, column by column, and get:

Table 10. Development table – inflation-adjusted data

Occurence year	Development year					
	0	1	2	3	4	5
2018	67126.35	82613.57	80293.99	69222.94	59531.27	53180.45
2019	40543.58	51440.64	44346.28	38592.36	34158.32	30991
2020	30483.81	38544.87	39627.69	37994.39	1567	26032
2021	15874.10	22453.43	24316.69	19229	16177	14533
2022	10465.98	14528.20	13503	11817	9941	8931
2023	10696.37	13628	13141	11500	9675	8692

Source: made by author over data from the official site of INS

Inflation in the analyzed period is between 8.1% and 12.4%, and the one forecasted for the period 2023-2027, in the middle of each year, is presented in the following table:

Table 11. Inflation rate

2023	2024	2025	2026	2027	2028
0	0,119	0,090	0,066	0,048	0,079
0	1,119	1,090	1,066	1,048	1,079
1	1,119	1,219	1,300	1,363	1,470

Source: made by author over data from the official site of INS

The development table for future inflation is built based on the data:

Table 12. Development table

Occurence year	Liquidation delay in years (development year)					
	0	1	2	3	4	5
2018						1,000
2019					1,000	1,119
2020				1,000	1,119	1,219
2021			1,000	1,119	1,219	1,300
2022		1,000	1,119	1,219	1,300	1,363
2023	1,000	1,119	1,219	1,300	1,363	1,470

Source: made by author over data from the official site of INS

Adjusts non-cumulative damages for future inflation by multiplying the data, cell by cell, from the development tables for future inflation and the estimated damages in simple values.

Table 13. Development table

Occurence year	Liquidation delay in years (development year)					
	0	1	2	3	4	5
2018	67126.35	82613.57	80293.99	69222.94	59531.27	53180.45
2019	40543.58	51440.64	44346.28	38592.36	34158.32	34678.397
2020	30483.81	38544.87	39627.69	37994.39	1753.407	31732.727
2021	15874.10	22453.43	24316.69	21517.158	19719.392	18893.142
2022	10465.98	14528.20	15109.497	14404.655	12923.420	12173.095
2023	10696.37	15249.946	16018.789	14950.253	13186.697	12776.989

Source: made by author over data from the official site of INS

Based on the previous table, the cumulative damages are determined by summing the data column by column:

Table 14. Development table - cumulative data

Occurence year	Development year					
	0	1	2	3	4	5
2018	67126	149740	230034	299257	358788	411969
2019	40544	91984	136331	174923	209081	243759.397
2020	30484	69029	108656	146651	148404.407	180137.134
2021	15874	38328	62644	84161.158	103880.550	122773.692
2022	10466	24994	40103.497	54508.152	67431.572	79604.667
2023	10696	25945.946	41964.734	56914.987	70101.684	82878.674

Source: made by author over data from the official site of INS

The reserve for unliquidated claims on 31.12.2003 is: RDN = (82878.674-10696)+(79604.667-24994)+(122773.692-62644)+(180137.134-146651)+ (243759.397 - 209081) = 1885,251 thousand euros
RDN=188115.295

4.Conclusions

One of the most important operations carried out by the insurer consists in substantiating the technical reserves because I believe that:
- any analysis of the financial situation is based on the method of establishing the technical reserves;
- their undervaluation leads to the decrease of the profit made from the investment activity;
- the use of ineffective methods can influence the financial soundness and profitability of the insurance company.
It is noted that in the case of an insurance company, the reserves were rigorously substantiated, taking inflation into account. The establishment of an inadequate reserve for unliquidated damages could generate imbalances at the insurer level through the unfounded distribution of dividends because it influences the size of the profit and it is possible that in reality the company will register losses. Also, the insurer may appear solvent, but the solvent is still based on the improper establishment of reserves for unliquidated claims. Essentially, the laddering method works under the assumption that patterns in past damage activity will continue to be seen in the future. For this assumption to hold, the data from past loss experiences must be correct. Several factors can impact accuracy, including changes in product offerings, regulatory and legal changes, periods of high severity claims, and changes in the claims settlement process. If assumptions built into the model differ from observed claims, insurers may need to make adjustments to the model. Creating estimates can be difficult because random fluctuations in claims data and a small data set can lead to forecast errors. To solve these problems, insurers combine both company claims data and data from the industry at large.
I also believe that insurance companies that do not base their premium rates on scientific bases and adapt them to those of other insurers on the market are put in front of the danger of having a small volume of insurance due to too high premiums or a large volume of insurances that lead to losses because the premiums are too low.

5. Acknowledgements

In our paper, we have followed the empirical credibility approach and estimated the structural parameters from the portfolio data. Therefore, we could not do a credibility estimate based on the trapezoid of the portfolio data.

References:

1. Adair, J., *Effective time management: How to save time and spend it wisely*, London: Pan Books,1988
2..A. Carrato et al. Claims reserving with R: ChainLadder-0.2.2 Package Vignette, 2015. https://cran.rroject.org/web/packages/ChainLadder/vignettes/ChainLadder.pdf
3. B. Weindorfer. A practical guide to the use of the chain-ladder method for determining technical provisions for outstanding reporting claims in non-life insurance. Working papers series by University of Applied science BFI Vienna, 2012.
4.R. J. Verrall, Statistical Methods for the Chain Ladder Technique, New York (2012).
5.Officialsite of FinancialSupervisionCommission, http://www.fsc.bg.
6.Officialsite of Financial Supervisory Authority, https://asfromania.ro/
7. Officialsite of National Institute of Statistics, https://insse.ro/cms/

FACTORS INFLUENCING THE ACCOUNTING INFORMATION REPORTING OF NON-PROFIT ORGANIZATIONS – A THEORETICAL APPROACH

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Abstract: *In the activity of any economic entity, the efficiency of the use of resources, especially new investments, has a primary place in making decisions to achieve the proposed objectives. The same approach can be found in non-profit entities. The mission of non-profit organizations is not to make any profit but to help others, to protect human and moral values, or to protect the environment. The funds necessary for carrying out the activity do not represent income from the carrying out of the object of activity but primarily represent the participation of civil society and natural or legal persons interested in partnerships with non-profit organizations by offering them donations or sponsorships. The annual reporting of these organizations reveals more and more aspects regarding the efficiency and effectiveness of resources and the way of fulfilling their missions. This research has as its primary objective the identification of users of accounting information provided by non-profit organizations and the factors that can influence how they report their activity. The research directions aimed to find answers regarding the users of accounting information, the mandatory and voluntary information presented in the annual reporting, the availability of disclosure of information to stakeholders, and the increase of trust and sustainability of NGOs. In this regard, the specialized literature and the legislation in the field regarding mandatory reporting information was studied, as well as the transparency of the voluntary ones in response to the management's responsibility towards the stakeholders in the organization's mission. The conclusions formulated concern the stakeholders, the influencing factors, and the types of information on which they could present presentation claims in the annual reporting.*

Keywords: *financial accounting; non-profit organizations; reporting; transparency; accountability*

JEL Classification: *M41; M10*

1. Introduction

Lately, the increasingly active presence of non-profit organizations in society has led to a more profound inclination of professional accountants on issues regarding the efficiency of non-profit organizations and how they invest the funds obtained, wanting to be as transparent as possible in presenting financial information.

Non-profit organizations play an essential role in society by addressing social, cultural, educational, or environmental issues and promoting sustainable development. Given NGOs' mission, values, and particular characteristics, the responsibility reflects a reliable picture of their performance for stakeholders. This topic looks at the financial characteristics of non-profit organizations and potential manipulators who would like a climatization of the results in their favor.

NGOs in many countries are governed by specific legislation defining their financial reporting objectives, activities, and procedures. In addition, these organizations may be subject to monitoring and evaluation by the competent authorities or their funders to ensure that resources are used responsibly and that the organization's objectives are achieved efficiently and effectively. The structure of non-governmental organizations may vary from country to country, depending on local legislation and culture, but there are generally certain common elements. Among them, we mention the users of accounting information who are interested in the financial situation of the entities but also in their performance. Another common element is that of presenting in the annual financial statements mandatory information that is regulated by the relevant accounting and financial reporting standards, as well as by the legislation and regulations applicable to non-profit organizations in each country. In addition to the mandatory information provided in the financial statements, non-profit organizations also provide other helpful information to funders.

In this context, accounting information is essential to assess these organizations' financial performance and social impact. However, the reporting of accounting information of non-profit organizations can be influenced by several factors. The paper aims during its course to obtain the answers to the following questions:

QR1: Who are the accounting information users interested in non-profit organizations?

QR2: What is the mandatory information that non-profit organizations present in their financial statements?

QR3: What are the voluntary information and the influencing factors in its presentation?

QR4: Can transparency in annual reporting help increase the trust and sustainability of non-governmental organizations?

2. Research methodology

Since we focus on the quality of accounting information in our research, we decided to examine its relevance in the literature using the method of bibliometric analysis. We have gathered relevant information from the Web of Science database, a platform for global scientific publications used by many researchers. We opted for this source because it contains high-quality publications in terms of accuracy and relevance of scientific research. The result of searching the Web of Science Core Collection by specific keywords was exported and then processed with VOSviewer software.

Also, the legislation in the field was studied, and the valuable information for achieving the research objectives and formulating the conclusions was centralized. Finally, since the approach of the research topic is theoretical, the research methodology is descriptive.

3. Literature Review

In identifying the scientific papers on our research topic, we searched in the scientific database Web of Science for the key terms: "accounting" and "socio-economic." We refined the search to select only the information about the publications that appeared in the period 2011-2021 from the categories: "environmental reporting," "consensual corporate," "social responsibility," "corporate sustainability," and "economic analysis ."Following these filters, we have identified 381,659 scientific papers, most of which are written in English. The evolution of the number of scientific publications on the subject of this research is shown in Figure No. 1.
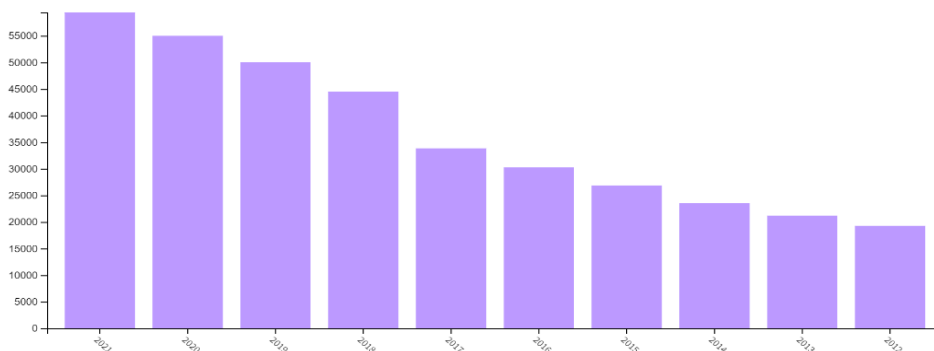
Figure 1. Number of scientific papers on research published in 2012-2021
Source: Web of Science

The interest in the research of non-profit organizations has steadily and significantly increased from year to year during the analyzed period. Thus, while in 2012 and 2013, 19,262 and 21,178 papers on this topic were published, respectively, in the Web of Science database, in 2019, their number increased to 54,992, and in 2021 to 59,372.

Figure 2, obtained by processing bibliometric information using VOSviewer software, illustrates the importance of the essential keywords identified in the study sample through the extent to which they are related to other keywords in terms of simultaneous appearance in the same work. Groups of keywords related to each other are plotted in the same color. The figure conveys the relevance of each keyword using circles whose size indicates the degree of importance; the more significant the process, the more critical the word it represents in the demonstration. The links between two words, graphically represented by curves, signify the frequency of occurrence of the two terms they connect: the thicker the curved line of connection, the more frequent the appearance of the two keywords joined by that line. At the same time, the shorter the connecting curve, the stronger the two terms connection. (Mateş & Pordea, 2021)

The most relevant keywords in scientific publications are: "economic analysis," "performance," "management," "environmental reporting," "determinants," and "economic growth."
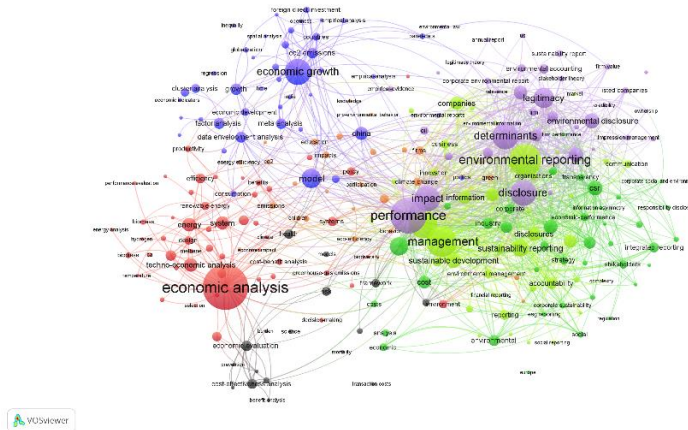
Figure 2: Map of links between non-profit-making keywords.
Source: authors projection using VoSViewer in processing data extracted from WoS database

The graphic reveals seven differently colored groups that share the links between the keywords. After analyzing the information through VOSviewer, we identified seven distinct groups of keywords (Figure 3).
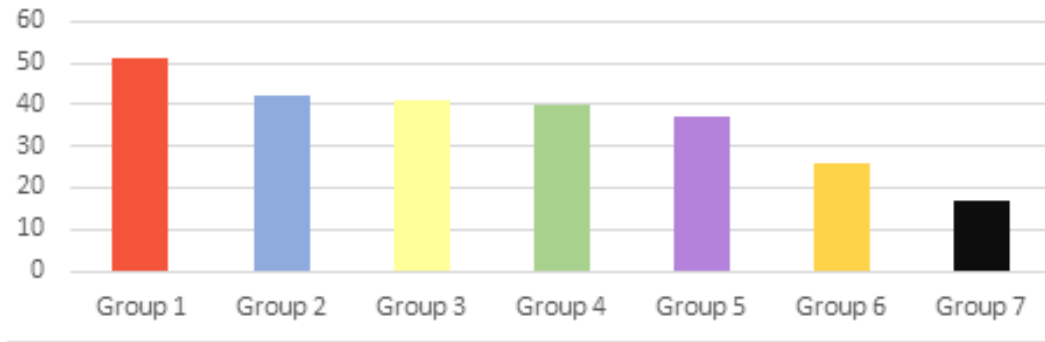
Figure 3: Keyword grouping
Source: authors projection using VoSViewer in processing data extracted from the WoS database

The red group (Group 1) contains 51 words, with the most keywords associated with the concept of a non-profit organization. In this group, the most significant node corresponds to the concept of "economic analysis," which has close links with the following essential words from the same group: "cost-benefit analysis," "productivity," "energy," "system," "performance evolution" and others, but also with the most prominent nodes in the following groups, such as: "performance" and "management." These associations underscore the strong links between the keywords on which research in the field is based.

Because non-profit organizations are present on the entire planet and not only in a particular country or just a specific continent, it is natural to collaborate in research between professionals from as many scientific centers as possible. The effective approach of NGOs requires collaboration between researchers from different countries or even continents, given the specificity of each nation, which incorporates different values and principles. For example, to analyze the collaboration between researchers interested in NGOs, we conducted a quantitative bibliometric analysis using the same information from the Web of Science that we processed with VOSviewer requesting output on the authors and their countries.

We have identified 46 countries for authors who have articles on NGOs, these countries being divided into eight different groups; the most numerous writers are from the following countries: China, U.S.A., U.K., Australia, and Italy; authors from these countries have many collaborations given that the links between countries are graphically represented with a very pronounced line of connection. Romania is also graphically represented with a less pronounced circle but has a strong collaboration connection with researchers in Italy.

Research in the field has revealed that for a good quality of the information collected and made public, several factors are worthy of consideration: various internal factors, political and economic regimes, the autonomy of civil society, quality of regulations,

exposure to socio-cultural influences, aid flows, or globalization. (Bloodgood et al., 2022). Moreno-Albarracín et al. (2021), researching the motivation for transparent disclosure of information by non-profit organizations, organizes their research around the importance of disclosing information and why not all organizations disclose transparent information, and the means used in disclosing this information. The research highlights the lack of transparency legislation in the publication of information, prompting organizations to adopt disclosure policies based on users or stakeholders. They also draw attention to the Sustainable Development Goals, which influence the responsibility of companies towards the transparent provision of information.

4. Users of NGOs' financial information

Users of accounting information interested in non-profit organizations (NGO) need accurate and relevant information to make informed decisions. Therefore, transparency and adequate financial reporting are essential to maintain the trust and support of users of accounting information and to ensure the long-term viability of the non-profit. It is also essential for non-profit organizations to have mechanisms in place that allow users of accounting information to assess how the funds received by the organization have been used, aligning these funds with their social mission (Hale, 2013), guaranteeing the fulfillment of the mission in society being ensured the maintenance of the necessary support in carrying out the activity, but also strengthening the credibility perceived by the different stakeholders (Moreno-Albarracin, 2020).

Many individuals, internal or external users, entities, and stakeholders are concerned about the organization's financial well-being. External users of a non-profit include individuals or organizations who are not engaged or directly involved in the organization's activities but with interest in the organization's growth.

Board members of non-profits are generally not paid but can receive any compensation allowed by the organization's bylaws. The Council is responsible for the organization's policies and is granted powers through the Articles of Incorporation of the organization. Founding members, donors, or sponsors are interested in partnership with non-profit organizations that respect the social field or the environment, being specifically interested in information on costs related to the management of social and environmental activities such as legal expenses, environmental protection expenses, decontamination costs of affected areas, pollution control costs, etc. (Popovici, 2019).

Management needs accounting information to verify subordinates' efforts, ensuring that those who work hard are adequately motivated. (Popovici, 2019) Founders and

managers use accounting information to understand the organization's financial health, set organizational goals, assess progress toward organizational goals, and take corrective action where necessary. Managers have a distinct advantage over other users of financial-accounting information since they have direct and unhindered access to accounting information without having to wait for the publication of financial statements or to limit themselves to this public information. (Feleagă & Feleagă, 2007)

In addition, the published financial statements provide information to other categories of users about the activity and managerial skills of the team or person leading an organization. Therefore, managers use the information in the financial statements not to make management decisions but to communicate. (Oprean, 2002) Employees who serve in the organization's mission are interested in accounting information because their salary valuations, bonuses, and other monetary and non-monetary benefits are attached to the position or financial performance of the organization.

As users of accounting information, the beneficiaries of the programs carried out by NGOs are also interested in information on the continuity of the organization's activity with which they collaborate in the long term or on which they are dependent. They are interested in finding out if the organization is viable, has enough resources to pay off its committed debts, and can efficiently and promptly provide goods and services so that it can continue to operate in the long term (Feleagă & Feleagă, 2007). The state, through its decentralized institutions responsible for reporting, analysis, and control, is interested in the possibility of allocating resources, especially in the case of organizations with national interest, and implicitly in their activity. The state requires information to regulate organizations' work and determine tax policy in that area. These institutions use the accounting information provided by the accounting for the analysis of different applications aimed at granting subsidies or loans with subsidized interest in the name and account of the Romanian state for different activities. Also, by structuring the information received by geographical sectors, one can assess the effects of the operations carried out by multinational enterprises on the economy, including in terms of job creation or maintenance, tax implications, supervision, and implementation of competition policy (Popovici, 2019)

The public uses financial-accounting information to track and understand the evolution of organizations carrying out activities of public interest, as well as to obtain information about their activity. For example, the public may consist of beneficiaries, suppliers, creditors, or others interested in the organization (Feleagă & Feleagă, 2007).

They can use financial information to form an opinion about the organization's financial situation, its performance, or its credibility in society. The public can also use financial information to ensure that the organization complies with ethical and legal standards.

Written and audio-visual media have an essential role in providing information to the public through requests for information or by organizing interactive broadcasts with the managers of organizations. These activities enable the public to be informed and to make informed decisions about the necessary services from organizations, be they users or applicants for services of a social nature. (Popovici, 2019)

5. Mandatory information presented in the financial statements

In Romania, according to OMFP 3103/2017, the accounting regulations on non-profit organizations provide for the obligation to prepare annual financial statements. Some of the components of financial statements are similar to those prepared by companies that aim to achieve profit, but there are some significant differences. The components of the financial statements to be prepared by NGOs depend on the activity carried out, as follows:

- if they do not carry out economic activities: Abridged balance sheet and Abbreviated profit or loss account for the financial year

- if they also carry out economic activities: Balance sheet and Profit or loss Statement for the financial year.

Non-profit organizations are also responsible for their donors when preparing these financial statements; they must follow basic accounting practices and find ways to present the information intelligibly to donors or sponsors. Sharing information with donors through financial statements is one of the best ways to ensure transparency and build trust.

The mandatory information presented in the *Balance Sheet* refers to the organization's financial position and takes the form of assets, liabilities, and equity. Like commercial companies, assets are presented at net book value, grouped by useful life (fixed and current assets). Mandatory information shall be provided on the liabilities of the organization based on maturity (less than one year or more than one year), provisions constituted by accrued expenses, and income. The equity of non-profit organizations consists of capital, revaluation reserves, reserves, and result – current and previous – (OMFP 3103 / 2017).

The main elements, the amounts of which are presented in *the Profit and Loss Statement of the year, illustrate the* organization's performance, grouping income and expenses by types of activities and by their nature. The year's result takes the

form of a surplus or loss from non-patrimonial activity, respectively, profit or loss from economic activity (OMFP 3103 / 2017).

The financial statements may be accompanied by various reports or statements requested by the Ministry of Finance.

6. Influence factors and voluntary information presented in the financial statements of non-profit organizations

Voluntary information provided by non-profit organizations includes information about the organization's activities and mission, organization history, financial data, donors and volunteers, and information about the organization's impact on the community. Among the factors that influence the presentation of voluntary information by non-profit organizations can be mentioned:

Transparency: Non-profit organizations wishing to build trust among donors and the community will be more transparent about their activities and provide relevant and easily accessible information about their activities (Ortega-Rodriguez et al., 2020).

Commitment to mission: Non-profit organizations that are engaged in a cause and want to fulfill their mission will be more willing to provide voluntary information to promote their cause and achieve their goals (Abdullah Hadi et al., 2022).

Responsibility towards donors and volunteers: As intermediaries between donors, volunteers, and beneficiaries of charitable services, providing relevant and up-to-date information about the activities of non-profit organizations and how donated funds are used will influence the decision of donors to continue supporting the organization (Li & Feng, 2021).

Regulations and legislative requirements: Non-profit organizations must comply with laws and regulations governing the non-profit sector, including reporting and financial transparency requirements (Bloodgood et al, 2023).

7. Transparency in the annual reporting as a factor of trust and sustainability in the NGO sector

In fulfilling their mission, non-profit organizations face many challenges. One of the most complex is demonstrating the efficient management of resources and the public information of the projects carried out with these resources. The excellent coordination of the project teams and the transparency in publishing information, financial or non-financial, are valuable aspects of the organization's sustainability. (Moreno-Albarracin et all, 2020). "Transparency" and "Good Governance" are important allies in generating public trust, trust recognized as essential to the long-term success of the organization (Keating & Frumkin, 2003). Transparency is a

factor of accountability and accountability of the organization through which it makes known to the public how it carries out the good governance of its resources and mission.

A web of science search for papers containing the terms "influence factor," "non-profit organization," and "transparency" pointed out in Figure 4 that there is a link between "information," "management," "content analysis," "civil society" and "performance."
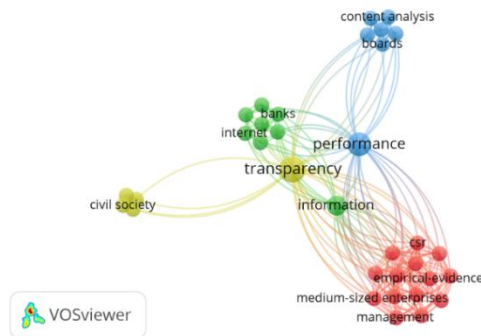
Figure 4: Mapping the relationship between "influence factor," "non-profit organization," and "transparency"

Source: authors projection using VoSViewer in processing data extracted from the WoS database

These links allow us to observe that the presentation of information in a transparent manner, taking into account the interest and responsibility of the management team and the civil society, can ensure the performance of the non-profit organization. Measuring performance can be carried out in different ways, but in fulfilling the social mission, success cannot be expressed financially (Ortega-Rodriguez et al., 2020). The performance of a non-governmental organization refers to how it achieves its objectives and to what extent it positively impacts the community or the problem it addresses. The following can be considered information about the performance of NGOs:

- *Clear and measurable* smart objectives (Specific, Measurable, Attainable, Relevant, and Time-bound) as the most practical measure of an effective strategic plan (Liket & Maas, 2015).

- *Reports and evaluations of activities and programs* provide specific data on the impact of their programs.

- *Monitoring and evaluating the impact* using appropriate tools and methods to measure impact and identify opportunities for improvement or promotion practices (Dascălu et al. l, 2011).

• *Community involvement and participation* in their program and community perspectives in the organization's decisions, thus helping to ensure the relevance of their programs and increase community support (Carvalho et al., 2019).

Performance evaluation should be an ongoing process, and NGOs should consider the feedback and suggestions of those interested in improving the program and services offered. In response to stakeholders' expectations and concerns, the responsibility is aimed at disclosing helpful information that allows participation in the organization and evaluation of the organization's performance.

FitzGibbon (2021) pursues the balance between responsibility and stakeholders in the non-profit organization by highlighting researchers who argue that these organizations must achieve a ranking of stakeholders by value, importance, or legitimate claim in the performance of its mission (Ortega-Rodriguez et al., 2020); but also of researchers who propose that some compromises can be made in providing accounting information based on the fact that the information provided will satisfy, to some extent, the interests of each interested party.

Responsibility is the duty of a person or organization to be responsible for their activities, accept responsibility for them and transparently disclose the results. Some types of responsibility involve clear expectations for an organization's activities, such as submitting annual reports. In contrast, others involve the position of responsibility exercised in managing internal and external audiences. In addition, organizations must develop different systems of accountability to meet the needs and expectations of different stakeholders and according to the reasoning for which an essential user is considered morally and/or legally. (Carvalho et al., 2019). In addition, NGOs should focus on functional and strategic responsibility based on the use of resources, as this use will impact society and other organizations.

Moore (1999) suggests a new form of NGO responsibility: the use of the strategic relationship between financial performance, social value, and organizational survival. Success in NGOs depends on a strategy based on three main points that bind together: social value creation, economic sustainability, and social responsibility. There are also suggestions that the accountability of NGOs should be based on the ethical mission of the organization and not a limitation on compliance. (Amélia O. Carvalho, 2019). Responsibility requires that professional or financial reports on the work carried out be provided to interested parties. The presentation of this information implies the willingness of the organization to accept advice or criticism and even to modify its practices in light of this advice. Therefore, responsibility for a non-profit organization means employees and managers who, through authority and spirit of responsibility, can improve the management of human

and financial resources and the fulfillment of the organization's objectives and mission (Srinivas, 2015).

The accountability mechanisms used in the practice of non-profit organizations are actions or reports that can take different forms: financial reports, non-financial reports, performance evaluations, financial position assessments, self-regulation regarding the disclosure of information, or social audits (Ebrahim, 2003).

Ortega-Rodriguez et al. (2020) highlight some of the features of the information contained in the accountability mechanisms that non-profit-making organizations can use. Thus, in developing management practices, providing information on the use of money increases the degree of transparency and ensures that funds do not deviate from the social mission. Also, the visibility of the organization's actions favors avoiding suspicions about tax advantages or raising funds.

8. In conclusion

Research demonstrates that donors' or sponsors' requests to present financial or non-financial information are motivated by their legitimate interests in risk mitigation, control, and provision of grants, influencing NGO projects, and obtaining/maintaining reliable partners in the sector. Furthermore, the multitude of requests and the diversity of donors can require NGOs to adjust their identity presentation; the notions of compliance and consistency with their requirements could highlight the credibility and reliability of organizations and make a significant contribution to the securitization of funding over a long period (Goncharenko, 2021). Our research approach has achieved its objectives by identifying answers to questions about accounting information users, mandatory and voluntary information in the financial statements of non-profit organizations, and how financial transparency can contribute to increasing the trust and sustainability of NGOs. Thus, we can formulate the following answers:

A1: Users of accounting information interested in non-profit organizations include funders, donors, sponsors, members, service recipients, employees, government, and media.

A2: Non-profit-making organizations shall mandatorily disclose information on the financial position in the financial statements through the preparation of the Balance Sheet and the financial performance through the preparation of the Result Account for the year.

A3: Voluntary information presented by non-profit organizations may include management reports, social impact reports, budgets, and strategic plans, and influencing factors in their presentation may include donor requirements, the

expectations of members and recipients of services, competition with other organizations, and applicable laws and regulations.

A4: Financial transparency can help increase the trust and sustainability of NGOs by ensuring better control over spending and improving communication with different users of financial information.

We conclude that the factors of influence in accounting reporting do not relate to the type of user but rather to responsibility to stakeholders. So, the presentation of accounting information and its role in understanding the fulfillment of the non-profit organization's mission is a subject of interest. However, questions can also be raised in addition to those investigated: *Can the NGO's public reports be influenced by prioritizing the importance of the need for stakeholder satisfaction? Is there an impact of accountability in providing accounting information or just regulatory compliance or required reporting?* These questions are a starting point for future research.

References

1. Abdullah Hadi, H., Bakar, A. N.., Noor Mohd, N. H., & Ashfahany, A. E. (2022) *The Value of Financial and Non-Financial Information towards Non-profit Organisations*. Environment-Behaviour Proceedings Journal, *7*(21), 349-355. https://doi.org/10.21834/ebpj.v7i21.3693

2. Bloodgood EA, Bourns J, Lenczner M, Shibaike T, Tabet J, Melvin A, Wong WH. (2023*) Understanding National Non-profit Data Environments. Non-profit Volunt Sect Q*. 2023 Apr;52(2), 281–303. two: 10.1177/08997640221085731. Epub 2022 Apr 25. PMID: 36974198; PMCID: PMC10037545.

3. Carvalho, A. O., Ferreira, M. R., & Silva, P. A (2019) *Partners in a caring society – a non-profit organization case study*. Economics and Sociology, 12(2), 129-146. doi:10.14254/2071-789X.2019/12-2/8

4. Dascălu Cornelia, Caraiani Chirața, Gușe Gina Raluca, Lungu Camelia Iuliana, Codreanu Anca (2011) *Social and Environmental Aspects in Corporate Management: The Case of Romania,* Theoretical and Applied Economy Volume XVIII, No. 12(565), pp. 70-87

5. Ebrahim Alnoor (2003) *Accountability in practice: Mechanisms for NGOs.* World Development, Volume 31, Issue 5, Pages 813–829, ISSN 0305-750X, https://doi.org/10.1016/S0305-750X(03)00014-7

6. Feleagă Liliana, Feleagă Niculae (2007) *Financial accounting. A European and international approach, second edition,* Volume 1, Editura Economică, Bucharest.

7. FitzGibbon, DA. (2021) *Non-profit theatre managers as multi-stakeholder managers: The plate-spinning of accountability*. Financial Accountability & Management; 37: 440– 459. https://doi.org/10.1111/faam.12284

8. Goncharenko, G. (2021) *The multiplicity of logics, trust, and interdependence in donor-imposed reporting practices in the non-profit sector*. Financial Accountability & Management, 37: 124– 141. https://doi.org/10.1111/faam.12241

9. Hale, K. (2013) *Understanding non-profit transparency: The limit of formal regulation in the American non-profit sector*. International Review of Public Administration, 18, 31–49.

10. Keating, E.K.; Frumkin, P. (2003) *Reengineering non-profit financial accountability: Toward a more reliable foundation for regulation.* Public Administration Review, 63, 3–15. https://doi.org/10.1111/1540-6210.00260

11 Li X, Feng L (2021*). Impact of donors' financial fairness perception on donation intention in non-profit organizations after COVID-19 outbreak*. PLoS ONE 16(6): e0251991. https://doi.org/ 10.1371/journal.pone.0251991

12. Liket, K. C., & Maas, K. (2015). *Non-profit Organizational Effectiveness: Analysis of Best Practices*. Non-profit and Voluntary Sector Quarterly, 44(2), 268–296. https://1711i31ik-y-https-doi-org.z.e-nformation.ro/10.1177/0899764013510064

13. Mateş Dorel, Pordea Daniela (2021) *Quality of accounting information – a bibliometric analysis*, CECCAR Business Review, No 10, pp. 9-17, DOI: http://dx.doi.org/10.37945/cbr.2021.10.02

14. Moore Mark. (2000). *Managing for Value: Organizational Strategy in For-Profit, Non-profit, and Governmental Organizations*. Non-profit and Voluntary Sector Quarterly, 29. 183-204. 10.1177/089976400773746391.

15. Moreno-Albarracín AL, Licerán-Gutierrez A, Ortega-Rodríguez C, Labella Á, Rodríguez RM. (2020) *Measuring What Is Not Seen - Transparency and Good Governance Non-profit Indicators to Overcome the Limitations of Accounting Models*. *Sustainability.* 12(18):7275. https://doi.org/10.3390/su12187275

16. Moreno-Albarracín, A. L., Ortega-Rodríguez, C., Licerán-Gutiérrez, A., Labella, Álvaro, & Martínez, L. (2021). *Transparency indicators to improve accountability for non-profit organizations: a Spanish case study*. Technological and Economic Development of Economy, *27*(3), 763-782. https://doi.org/10.3846/tede.2021.14821

17. Oprean Ioan (2002) *Control and financial accounting audit,* Intelcredo Publishing House, Deva

18. Ortega-Rodríguez C, Licerán-Gutiérrez A, Moreno-Albarracín AL. (2020) *Transparency as a Key Element in Accountability in Non-Profit Organizations: A Systematic Literature Review*, *Sustainability,* 12(14):5834. https://doi.org/10.3390/su12145834

19. Popovici Daniela Mărioara (2019) *Management and accounting of legal entities without patrimonial purpose*. Eurostampa Publishing House, Timisoara, consulted online at the address http://eurostampa.ro/img/file/Economie%202019%20Daniela%20Marioara%20Popovici%20Gestiunea%20si%20contability%20personlor%20 juridic%20fara%20scope%20patrimonial.pdf

20. Srinivas, Hari, *The Concept of Accountability: Implication for NGOs*. GDRC Research Output E-054. May, 2015, Kobe, Japan: Global Development Research Center. Retrieved from https://www.dgrc.org/ngo/accountability/accountability.html on Saturday, 8 April 2023

21. ***Order of the Minister of Public Finance no. 3103 / 2017 regarding the approval of the Accounting Regulations for legal entities without patrimonial purpose, published in the Official Gazette no.984 of December 12, 2017, with subsequent amendments and completions.

FINANCIAL FORECASTS FOR WORKS CONTRACTS. A CONTENT ANALYSIS OF ROMANIAN RULES ON VALUE ADJUSTMENTS

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Abstract: *Unpredictable events, such as: international market prices evolution of construction materials, fuel and energy, changing rules regarding labour, wages and mobility of goods may lead to cost escalation during works contracts implementation. A proper value adjustment formula may contribute on managing emerging financial risk. Generally, those formulas are subject to national rules, but only for public investments, of great value and long duration, the rest remaining to the contracting authorities' decisions. Looking for the right formula in those cases of non-regulated situations induces stress for personnel, and also the risk of affecting investments performance through wrong decision.*
The paper's objectives are both qualitative and quantitative, searching, through a relevant Romanian legal frame content analysis for answers at two research questions: how a works contract value could be adjusted, and how can be choose the most appropriate one among different value adjustment formulas? A selection of contemporary relevant national rules and regulations on value adjustment formulas was studied to answer at these questions, revealing specific approaches on treating adjustments. Results of this content analysis refers to the presenting and discussing various models of value adjustment approach in Romanian works contracts. Paper's conclusions could be used by researchers in further investigation of relationship between various value adjustment formulas and investment's performance. Conclusions could be also useful for practitioners, in selecting the appropriate value adjustment formula in case of non-regulated such as relatively small value and short duration works contracts. As a personal contribution, a model on selecting a value adjustment formula is here presented.

Keywords: *COVID 19; works contract; statistical price index, unpredictable events occurrence.*

JEL Classification: *G17; H41; H72.*

1. Background

The paper is organized as the subject of works contract value adjustments may be easily to follow and understand. In this section is presented a Romanian legal background of this topic. In the next section is presented a relevant literature review, with an accent on studied factors that may affect a contract's value escalation, followed by a description of the research methodology. Next are presented the findings on the topic, including a model on how a choice may be made among different adjustment formulas, and finally are presented the conclusions.

Public works are contracted in Romania for execution mostly to private firms, selected after procurement procedures. Specific procurement procedure to be used is selected according to the intended contract type and value, following the public procurement law provisions. The outcome of procurement procedure is the works contract, mostly of a closed type. As foreseeing legal, technical and financial risks, the tender charged personnel feel a lot of pressure in drafting works contracts. Regarding financial risks, the most important is the effect of future unpredictable events such as prices variations on construction materials, fuel, labour, machinery and goods. Without a proper form of the works contract, the contractor may ask for unpredictable and fishy payments, affecting the contract economy and investment efficiency. This is why an accepted and already tested contract form, including an appropriate value adjustment formula is desirable. Recognizing the probability of unpredictable future events financial risks materialization, the Government imposed to all contracting authorities the use of adjustment formulas in all contracts having duration of more than twelve months.

Mandatory rules on procurement contracts are settled by the public procurement law, followed by Government Decisions and Instructions issued by central authorities. These rules could be also complemented with best practices models such as FIDIC, even they are no longer, or have never been enforced in Romania.

In the last ten years, for important contracts, the Government tried to implement FIDIC and also to enforce some adjustment value formulas. Even if there are no longer in force, past adjustment formulas may be an inspiration for new formulas to be included in smaller value and short contracts, not covered by actual law.

The Romanian Government tried to support contracting authorities by national implementing the models of the International Federation of Consulting Engineers (FIDIC), so in 2008, general and specific works contracts conditions were imposed, together with some national explanatory clauses. The FIDIC models were adopted in Romania, but for just one year, being repealed in 2009. In 2010 the Government returned to FIDIC, approving just a part of the models (Red and Yellow) strictly for

national interest transport infrastructure.

Seizing the necessity of methodological support for a broader area of works contracts, the Government issued in 2018 the Decision no. 1, referring to general and specific conditions of works contracts financed by public source. Two value adjustment formulas were introduced and further imposed.

After the effects caused by COVID 19 pandemic were felt on prices, as a reaction on the construction materials generalised prices increase, the Government proposed by the means of the Ordinance 15 and Orders 1336 and 2050 of 2021, another formula for value adjustment calculation.

In 2022 as the financial crisis and the Black Sea war overlapped to the effects COVID 19 pandemic on increasing construction materials prices, the issue of value adjustments has needed to be analysed in a broader perspective, so that the risk in contracts to be better treated. A new adjustment formula was introduced in the 64 Government Emergency Ordinance (G.E.O.), later modified by the G.E.O.109 and 117. This new formula, applied to all Romanian EU financed contracts has also a non-mandatory indication to be used in further contracts. Recognizing that some statistical indexes are no longer calculated, and thus old contracts adjustment formulas cannot be applied because of losing support for those indexes, by the provisions the G.E.O. 101/2022, the Government accepted to reimburse the amount of value corrections applied to Contracting authorities for using substitutes to older formulas that cannot be longer used by cause of missing values for certain indexes.

Initial regulatory framework, in force prior the overlapped crisis started in 2019, was focused on the matter of big and long-term contracts value adjustments, as long as setting up conditions for adjustments of smaller value and shorter duration contracts were let mostly at the Contracting authority's decision. In those cases, sound reasoning regarding economy and efficiency of implementing public works contracts should support the Contracting authorities' decision on designing, adopting and further use of the value adjustment formula.

2. Literature review

A consensus exists on the fact that contractor's bids are dependent on the value of materials, labour, energy, transport, recognized as critical factors in contracts cost escalation (Qadeer, Z. et al, 2019). Works contracts are attributed through public tenders, on the base of specific criteria, including the offer's price that may be or not subject of further justified adjustments. Works contract adjustments based on price escalation clauses were studied in the case of bridges construction by (Mishra, A. K., 2023), recommending a series of three coefficients for critical factors: labour,

materials and equipment that should be further used in justifying adjustments.

Beside these critical factors, some other factors were recognized by another study focused on owners, consultants, and contractors' perception (Enshassi A., et al. 2009) as affecting the performance of the construction projects: escalation of material prices, availability of resources as planned through project duration, the average delay caused by shortage in construction materials, etc. More recent studies, based on deep neural networks usage (Wang R., et al., 2022) insists on more factors contributing at contracts cost escalation, namely the economic factors such as: inflation rate and consumer price index. Also (Linlin Z., et al., 2021), concludes that certain identified external factors, the so called "complexities" may influence both directly and also indirectly the construction final cost. It became obvious that contract cost escalation depends on various factors, beside the critical ones already described, but because of uncertainly of extent of materialization, these non-critical factors are seldom treated inside closed contracts adjustment formulas, their approach being more appropriate within open contracts.

A rigid model of tendering closed works contracts, based only on the criterion of the lowest price was studied in Czech Republic (Ochrana F. Hrncirova K., 2015). Conclusions shows that in the case an only criterion – the lowest price – is used, even if the contract is attributed faster, the works quality may suffer, and further repairments of such apparently less expensive works comes with important further costs. Ignoring so the critical factors on cost escalation determines weak performance on infrastructure projects and finally financial losses. Aspects on cost escalation in public works contracts implementation were already studied, (Dogar C., 2022) presenting briefly in conclusion a risk approach analysis as a choice among: acceptance of some minor value increase, use of an adjustment formula or lastly termination of contracts.

3. Research methodology

Works contract value escalation due to unpredictable events occurrence represents a financial risk that may be managed if prior the contract was drafted, a value adjustment formula was properly selected to be used. Selecting such a formula requests a descriptive – exploratory approach consisting first on a content analysis of the existent relevant legal frame, establishing the basic hypothesis for the intended contract/investment, preselecting some relevant formulas, testing their impact and analysing it as a decision may be taken on the most appropriate value adjustment formula.

This research has two objectives. The qualitative one is about the possibility of updating works contract value, and the quantitative one is about the way that different existent formulas could be evaluated in order to facilitate the selection of an appropriate formula for contract value adjustment. There are two research questions to be answered to, each connected to a specific research objective:

•   How can a contract value be legally adjusted? and

•   How can be choose the appropriate one among different value adjustment formulas?

Conclusions were drafted related to the use of the most significant updating formulas. These should be relevant for contracting authorities' personnel and for consultants as well, in risk assessment on the early stages of drafting works contract including here proposition of value adjustment formulas for works contracts, in cases not entirely covered by the existent legal frame.

4. Findings and discussions

With reference to cost escalation as effect of unpredictable events, the open contracts type let space to contract parties in settling the unpredictable, as long as, the closed type contracts, as defined by the Romanian Law, let just a small margin of action, through the use of the initial adjustment formulas, limiting so the risk approach during contracts implementation. Estimating the contract financial risk involves so, foreseeing of some future realities determined by some unpredictable future events, and as a mean of treating risk stays only the value adjustment formula together with a clause of termination if contract implementation becomes too onerous. As long as including in contracts a value adjustment formula is mandatory, in case of works contracts of big value and long-time the Government imposed models for it. For the small value and short period contracts, the contracting authority has to decide on the most appropriate contract form, including adjustment value formula. In the prior case of non-mandatory formulas, estimation of future realities may be model within the contract design phase, by testing various value adjustment formulas against the most likely critical factors to be modified in time, by reporting to appropriate statistical indexes' evolution.

How much risk may be considered as acceptable is a question the contracting authorities management should answer through the selection and use of the most appropriate adjustment formula. This is inducing stress to local's authorities designated personnel, about how to test and choose for further usage of the most appropriate value adjustment formulas on the purpose of respecting the principles of economy, efficiency and effectiveness on spending public money. By comparing

available formulas output using an estimate of the monthly works value and appropriate statistical indexes, a conclusion may be formulated on the way the most appropriate formula may be selected to be used in the future works contracts. Such a decision model is presented, as a personal contribution, at the end of this section.

4.1. FIDIC contract clauses in Romania

Introduced in 2008, repealed in 2009, and reintroduced in 2010 for certain contracts, the FIDIC clauses are allowing for a contract value to be updated in certain conditions, but only if in the tender (procurement) procedure the tenderer submitted a data updating table. If such a table has been accepted by the beneficiary evaluation committee, the dedicated modification clause (no. 13) may enter in force. This clause is stating that a formula of the following type should be used to adjust the contract value in case of updating prices due to modification of legal framework or of the prices of materials, goods, labour or in other cases:

$$Pn = a + \Sigma \left(ai \times \frac{\text{index in}}{\text{index i0}} \right) \qquad (1)$$

Where "Pn" is the update index to be applied to the value of the works realized in the period n, "a" is a fixed coefficient, explained in the updating data table, representing the part of the value it is not to be updated, "ai" are coefficients that are expressing the estimate share of each relevant element of works (labour, goods, type of materials, energy, transport, etc., as described in the updating data table), "index in" represents current prices indexes and "index i0" represents reference data indexes, as stated in the contract. In order to be applied, update of FIDIC contracts values formula is to be accepted as general rule in the updating data table, as part of the offer, stating the "a", the "ai" and the reference period. The described formula is then mandatory, the parts cannot renegotiate a modification of this formula. This formula may be appreciated as a comprehensive one, as long as it takes into consideration necessary updates to all components identified as critical factors in modification of an estimate: materials, labour, transport and machinery needed. Setting up indexes refines the outcome, the adjusted value. This formula was used for a short period of time, being replaced by another one, introduced by the newest Romanian Law of public procurement no. 98/2016, as described below.

4.2. Government Decision nr. 1/2018 contract clauses in Romania

As a result of renewing the public procurement legal framework, the Government of Romania issued in 2018 the Government Decision nr.1 referring to works contract

clauses. Under this, value of works contracts shorter than 12 months should not be adjusted, and the longer ones should use a polynomial formula:

$$An = av + m \times \frac{Mn}{Mo} + f \times \frac{Fn}{Fo} + e \times \frac{En}{Eo} \qquad (2)$$

Here An is the adjustment index to be applied to the value of the works realized in the period n, av is the advance share of total works contract, the m, f, and e are the shares in total works, Mn, Fn and En are the appropriate statistical indexes in the month 60 days prior to payment request (works situation), and Mo, Fo and Eo are appropriate statistical indexes in the reference month for material, labour and equipment. This formula introduces a more accurate link between the contract adjustment index, the advanced paid to the contractor, and costs variation from contract signature to payment request of identified critical factors in price escalation: materials, labour, and equipment. The used indexes for material, labour and equipment are provided by the national statistical service for each month, so determination of the contract value adjustment index is transparent enough for all parties involved (beneficiary, contractor, engineer - supervisor, financial partners, auditor, etc.). Use of a simplified formula is allowed in certain conditions, using one single type of index, the general construction index published for each month in the monthly statistical bulletin at the point 15:

$$An = av + (1 - av) \, x \, \frac{In}{Io} \qquad (3)$$

In this case, taking into consideration the percentage of advance provided to the contractor (av), a simple comparison between the reference date construction index (Io) and the current one (In - 60 days prior to payment request) provides a simple and transparent adjustment index for the contractor's payment request value.

4.3. Overlapped crisis of COVID 19, materials shortage and induced increased prices, energy and financial crisis as unpredictable events recognised as licit reason to adjust EU financed works contracts values in Romania
As a response of increasing construction material prices in the COVID 19 pandemic period, in 2021 the Government issued the Ordinance no. 15, introducing so a formula to support all beneficiaries and contractors that didn't have an unpredictable events value contract adjustment formula. The introduced formula was:

$$Va = C \, x \, Vo \qquad (4)$$

Here Va is the actual value, Vo is the initial value and the adjustment index C.

$$C = P \times \left(\frac{ICCMo}{ICCMjan2021}\right) + (1 - P) \tag{5}$$

C is calculated using the percentage of materials in the Payment request (P) and the construction material cost index at the month 30 days prior to payment request (ICCMo) reported to the construction material cost index in the month of concluding the works contract if the contract is newer than January 2021 or at January 2021 if works contract is older (ICCMjan2021).

As effect of the need to introduce a common application of this Ordinance, the Ministry of Development introduced a new formula, inspired from the G.D no.1/2018, but shorter:

$$An = av + m \times \frac{Mn}{Mo} \tag{6}$$

Here m is the share of material in total estimate cost, Mn is the statistical index for material in the month 30 days prior to payment request and Mo is the material statistical index at the reference date (January 2021 or later). The legal text imposed to all contracting authorities to use this formula in the new concluded works contracts but also in on-going procurement procedures as well.

Later, in 2022, confronted with continuation of the crisis, the Government decided that already established adjustments for materials are not enough, as effect of interrelated effects of energy crisis, of financial crisis and trade difficulties caused by the Ukrainian war. The G.E.O no. 64/2022 introduced another formula for adjustment calculus, needed to follow the new market reality due to all these overlapped crises. According to law, this formula should be applied at builder's requests to all contracts, irrespective of already used adjustment formulas, based on the fact that nobody had could forecast at the contract signature the amplitude of overlapped crisis impact on markets and contracts as well.

$$Vapl = Vm \times \left[(\%av + \%p) + (1 - \%av - \%p) \times \frac{ICCmr}{ICCmlr}\right] + (Vpl - Vm) +$$
$$(1 - \%cpm) \times \left\{(Vpl - Vm) \times \left[(\%av + \%p) + \frac{(1 - \%av - \%p) \times ICCr}{ICCplr}\right] - (Vpl - Vm)\right\}$$

$$\tag{7}$$

Here Vapl is the payment request value (with adjustment), Vm is the value of materials in the Vpl - real executed works. %av, %p and %cpm and are the percentages of advance payment, of contractor declared profit, and of materials share in total contract. ICCmr and ICCmlr are the construction cost index for materials

realized in the prior month of request of payment (ICCmr) and index realized in reference month (ICCmlr). ICCr and ICCplr are the construction total cost index realized in the prior month of request of payment (ICCr) and the index realized in reference month (ICCplr). This formula can be used to all contracts with no adjustment formula, or whose with initial formulas financial impact is lower with at least 5% than the impact of this new formula, as stated in the latest updated legal text form, in E.G.O. 99/2022. The relevant legal framework is still in development, so the E.G.O. 117/2022 introduces modifications of E.G.O. 64.

4.4. A model on choosing among different value adjustment formulas.

The feasibility study provides important information on expected total value of the intended investment, of its components (material, labour, equipment, transportation, goods, design) and of its monthly calendar progress. As a first step, a decision on correction of the investment calendar should be taken, in terms of duration and value allocation over time as analysing the exogenous factors of the contract such as: expected seasonality during the investment execution calendar, prior conditionalities on availability of construction site, lessons learned on recent similar investments implementation, local availability of necessary labour force, existence of local experimented potential contractors, etc.

Second it should establish the contract conditions correlating them to the exogenous factors: if advance payments are permitted and in what extent, what is the deadline for submitting offers, how much the tender procedure is expected to last, how long the works will last, how long the works reception will last and when it will the last payment be done. Then a selection of possible to be used formulas may be done, according to all basic hypothesis on the intended investment.

For testing the intended value adjustment formulas, the most recent period of time for which all indexes are published is to be selected, and used as model implementation duration, according to the corrected investment cash-flow.

For a new works contract with an estimate contract value of about 1,000,000 RON, having a period of implementation of about one year, choosing the appropriate value adjustment formula may start with preselecting adjustment formulas. Then after applying the already known recent statistical indexes in preselected formulas outputs are compared and analysed before a decision is taken. The base hypothesis for comparing formulas outputs here is: contract value 1,000,000 RON, from this value 40% represent costs with material, 10% contractor's profit, implementation is considered as being linear, with a monthly value of executed work of 100,000 RON, with no payments in advance for this contract. Four formulas are to be tested. The first formula is based on consumer price index (inflation):

$$Pn = Po \; x \; Consumer \; price \; index/100 \tag{8}$$

This formula is a simple one, and tempting because is easy to use in relationship with the contractor. The consumer price index covers the period between contract signature and each payment request, information being available on the National Statistics Services' site.

The second tested formula is formula (3), the third is formula (6) and the fourth is formula (7). Outputs are presented in the tables below, as absolute values (Table 1) and in comparison, (Table 2). Evolution over time is presented in Figure 1.

Table 1: Value adjustments with the formulas (8), (3), (6) and (7) in RON

Month	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
Formula 3	9495	10530	12234	13877	9921	9799	10834	11990	12538	13999
Formula 8	7560	8380	9340	9950	11410	12840	14250	14680	15070	16190
Formula 6	6391	7139	7963	8994	5025	4149	4793	5231	3170	3273
Formula 7	6231	7214	8468	9890	5129	4304	5195	5936	2393	2900

Source: own processing study-case data with the formulas (8), (3), (6) and (7)

Table 2: Comparison of value adjustments with the formulas (8), (3), (6) and (7) in RON

Month	Total adjustment value with formula	% from total contract value
Formula 3	115216	11.52%
Formula 8	119670	11.97%
Formula 6	56128	5.61%
Formula 7	57660	5.77%

Source: own processing study-case data with the formulas (8), (3), (6) and (7)
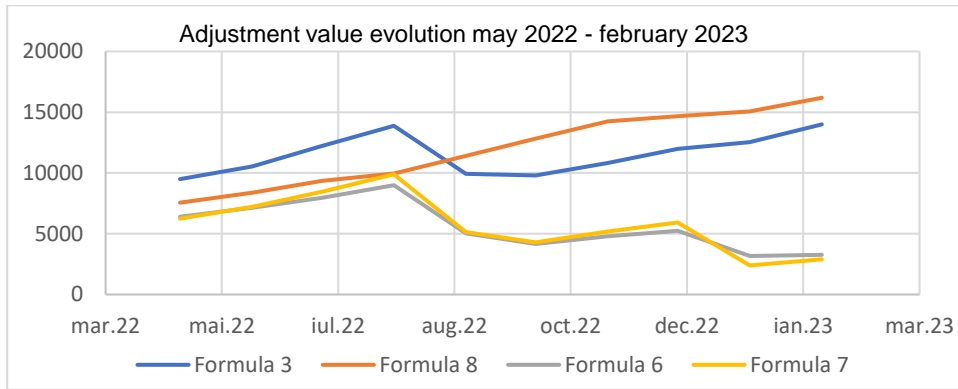
Figure 1: Different impacts in modelling the choice of adjustment formula
Source: own processing study-case data with formula no. 8, 3, 6 and 7

Even if formulas (3) and (8) looks like easier to be used, they imply more costs than the other two that have approximately a similar output. A decision in switching between the formulas 6 and 7, having in this case an approximately similar output, may be based on choosing between the ease of use (6), and a more reliable and complete output, with the risk of some of the indexes that may lose support in time leading at an unapplicable formula (8). Introducing too many indexes may affect the fairness of the value adjustments, by the way of shady index manipulation. Even if formula is accepted, this may affect the contractor's capacity of realizing the object of the contract since the adjustments he may receive in the contract period may not be enough to support the current works. As long as the State is assuming some parts of the adjustments, avoiding deficits may appear as a justified decision, and the moments of that decision may be observed in the figure 1 as the inflexion points of all curves depending on statistical construction indexes, as long as until than the inclination of all curves was approximately the same with the inflation based one, represented by formula (8).

This study case reflects, from the economy and efficiency perspective, the quality of reasoning in using a certain formula, which is directly connected to the presented base hypothesis. Too much economy (formula 7) may lead the contractor to a financial impossibility to finish the works, so the efficiency may be directly and badly affected. In this case the contract may be delayed or even terminated, without finishing the investment, meaning supplementary costs in works conservation, in legal actions, and more time and a greater budget in later works after a later tender procedure. Switching toward efficiency (formulas 3 and 8) may lead to a loss in terms of economy with significant values (as the surface between curves 3 – 8 to 6-7, meaning in this example about 5% of the contract value). Changing base hypothesis leads to other results, but the principle in choosing remains the sound financial management of public works contracts.

5. In conclusion

Materials, labour, energy and transport are recognized as critical factors in public works contracts cost escalation. Establishing a value adjustment formula is a must for contracts, in periods of crisis, irrespective of their value or duration, even if the legal framework does not request it imperatively. If there are legal provisions applicable, the value adjustment formula should follow those rules. As reality shows, in time, some of the indexes proposed to be used in mandatory formulas are losing support, being no longer available. Based on this finding, if there is room for choosing between different mandatory formulas, a formula with less number and more stable indexes should be selected. In case there is no a mandatory value adjustment formula to be use, a choice should be done among tested formulas.

Value adjustment formula is based on indexes applied to general estimate components (materials, labour, energy and transport), so an initial study in terms of values, trends and communicational stability throughout time of the most common applicable indexes should be a must, prior the contract drafting. A stable value adjustment formula will allow works contract's parties to agree on deserved, not on some doubtful payments.

As regarding the works general estimate components (also recognized as critical factors in contracts price escalation), their initial weight is known for a certain investment, so each of one could be analysed against risks. For example, the minimum wage legal framework is to be expected to be modified in the future, so risk in increasing labour costs in the next three years is very high. On the other hand, energy costs, already very high are likely improbable to increase significantly in the near future.

The reasoning on choosing an adjustment formula should involve certain criteria such as: a fair contribution to both economy and efficiency of works contract, ease of use and stability over time. The mix and weight of used criteria should be considered in close relationship with the base hypothesis: the general estimate value and associated cash-flow, but also with some "complexities" such as: lessons learned about the competence of local builders, their financial stability, their results in similar contracts in terms of quality and timing, the competence and prior results in similar contracts of local management teams and of engineers (works supervisors), the stability of economic environment, the climate change, the local unemployment, etc.

References

1. Dogar C. "*Performance approach of European Union funded works contracts in Romania, a case study* ", The Annals of the University of Oradea. Economic Sciences, Tom *XXXI* 1st issue, July 2022, p 172 - 182, ISSN: 1582-5450;

2. Enshassi A., Mohamed S., Abushaban S., (2009). "*Factors affecting the performance of Construction projects in the Gaza Strip.* " Journal of Civil Engineering and Management. 15. 10.3846/1392-3730.2009.15.269-280.
https://www.researchgate.net/publication/42622404_Factors_affecting_the_performance_of_Construction_projects_in_the_Gaza_Strip

3. Linlin Zhao, Jasper Mbachu, Zhansheng Liu, Xuefeng Zhao, Bill Wang, "*Investigating the Causal Relationships between Project Complexities and Project Cost: An Empirical Study from New Zealand*", Advances in Civil Engineering, vol. 2021, Article ID 6624647, 17 pages, 2021. https://doi.org/10.1155/2021/6624647

4. Mishra A. K., Chaudhary N., & Aithal P. S., (2023). "*Evaluation of Price Adjustment Coefficient for Construction Contracts.* "International Journal of Management, Technology, and Social Sciences DOI: https://doi.org/10.5281/zenodo.7646098

5. Ochrana F. Hrncirova K., "*Does the Lowest Bid Price Evaluation Criterion Make for a More Efficient Public Procurement Selection Criterion? (Case of the Czech Republic)*", 2015, NISPAcee Journal of Public Administration and Policy, DOI:10.1515/nispa-2015-0003

6. Wang R., Asghari V., Cheung C., Hsu S-C., Lee C-J. (2022). "*Assessing effects of economic factors on construction cost estimation using deep neural networks. Automation in Construction.* "134. 104080. 10.1016/j.autcon.2021.104080.
https://doi.org/10.1016/j.autcon.2021.104080

7. Qadeer Z., Memon N., Leghari M., Memon A., Siddiqui, F. H., (2019). "*Identification of Critical Factors Influencing Cost Escalation in Public Sector Construction Projects* "(PTK-051).
https://www.researchgate.net/publication/338501145_Identification_of_Critical_Factors_Influencing_Cost_Escalation_in_Public_Sector_Construction_Projects_PTK-051

HOW ARE THE CONCEPTUAL FRAMEWORK HYPOTHESES REFLECTED INTO PRACTICE? A SHORT REVIEW OF THE CURRENT LITERATURE.

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Abstract: *The IFRS implementation has marked an important milestone in the history of accounting. Since the beginning, there have been both advocates and critics, debating whether the initial objectives were, in fact, met in practice. The present article examines the Conceptual Framework, which constitutes the basis for IFRS implementation, and identifies the main results of the recent studies on the topic. The research is theoretical, analysing relevant literature and bringing forward up to date concepts, beneficial for future research. Policymakers proclaim their policies are rooted in evidence and often turn to academic researchers for impartial and reliable evidence. In view of the fact that a significant number of studies have been conducted thus far, the present paper attempts to summarize the outcomes and present the conclusion.*

Keywords: *IFRS, COMPARABILITY, FINANCIAL REPORTING*

JEL Classification: *G14, G15*

1. Introduction

Many scholars have studied how the objectives presented in the Conceptual Framework are met in practice. The results are not always homogenous; however, it can be safely stated that, fifteen years following the implementation of IFRS, improvements in financial reporting can be recognized.

Specialized literature is intended to assist the standard setters, that are directly involved in the elaboration and improvement of the IFRS, and, also, for the major players on the market, such as investors or financial analysts.

The present paper is proposing a review of the main concepts illustrated by the Conceptual Framework, while also pointing out the results of studies conducted along the course of several years on whether or not, in the case of IFRS, practice truly meets theory.

2. How IFRS started? A review of the Conceptual Framework

The basis for the IFRS implementation is the Conceptual Framework which presents the main concepts that constitute the basis for preparing and presenting the financial statements for external users.

The main purposes of the Conceptual Framework are: to give guidance to the Board in the scope of the development of future IFRSs and also to review the existing ones; to reduce the number of alternative accounting treatments permitted by IFRSs by harmonizing the regulations, accounting standards and procedures; to create and to develop national standards; to guide preparers of financial statements through the IFRSs standards and how to handle different topics which are in scope of IFRS; to help auditors defining whether financial statements comply with IFRSs; to adapt the information contained in the financial statements in compliance with IFRSs for the users; and to provide information of the IASB and its approach to the formulation of IFRS. (IASB, Conceptual Framework, 2018)

Given the aforementioned purposes of the Conceptual Framework, it is important to keep in mind that it is not an IFRS and it does not define any standards. The scope of this paper is to define the main objectives of financial reporting as well as the qualitative characteristics of the financial information. Moreover, it has also the target to emphasise the definition, recognition and measurement of accounting elements and the concepts of capital together with the capital maintenance.

2.1. Objectives of financial reporting

The objectives of the International Financial Reporting Standards are: improved transparency and comparability, better functioning of the internal market, the efficient and cost-effective functioning of the capital market, the protection of investors and maintenance of confidence in capital markets, and helping EU companies compete on an equal footing for capital within the EU and on world capital markets. These objectives are derived from the main objectives of the financial reporting: to give useful and accurate information about an entity, to provide information regarding the resources of the entity, claims against the entity, and how efficiently and effectively the entity's management and governing board have discharged their responsibilities to use the entity's resources and to ensure an information set that will meet the needs of the maximum number of primary users. (IASB, Conceptual Framework, 2018)

The International Accounting Standards Board (IASB) promulgated, in 2018, a revised and refined Conceptual Framework aimed at guiding financial reporting practices with the means of robust and clearly defined guidelines. It stipulates that the cardinal objective of financial reporting is that of providing financial information,

that is both pertinent and transparent, that sheds light on the reporting entities' financial situation, which proves beneficial to potential and existing investors, as well as to all participants in the financial world.

Coherent and truthful financial information assists stakeholders in decision-making processes by enabling them in appraising the company's' future net cash inflow and in evaluating the management's stewardship of the company's financial resources. Any alteration in economic assets and obligations that occur due to the entity's financial activities and other events should be reflected in the financial statements. The revised framework emphasizes on the importance of accrual accounting. Accrual accounting is translated in a key principle that refers to the acknowledgement of events and transactions, more specifically, the effects of transactions and other events must be recognized at the time they occur, not when cash or its equivalent changes hands. Based on this principle, these transactions and other events are reflected in the entity's accounting records and reported in the financial statements that correspond to the time periods they are associated with. The framework states that, except for cash flow information, an entity is required to use the accrual basis of accounting in the preparation of its financial statements. This means that an entity should recognize assets, liabilities, equity, income, and expenses only when they meet the recognition criteria and satisfy the definitions laid out in the Conceptual Framework, and this recognition is not purely tied to payment of cash, or receipts. That said, when an entity sells services or goods on credit, the income must be recognized at the time of the sale, not when the payment is later received. Likewise, when the entity receives a bill for utilities used over a specific period of time, the expenses should be acknowledged for the timeframe in which the utilities were consumed, not when the bill is actually paid. In the 2018 revision, the IASB emphasized on the concept of stewardship, highlighting the amplified demand for transparency and accountability in terms of company management. Stewardship encompasses management duty in regard to entrusted resources, and involves the necessity to provide information that aids users in assessing management's decisions and actions. (IASB, Conceptual Framework,2018)

2.2. Qualitative characteristics of useful financial information

The qualitative characteristics of useful financial information apply to the financial information provided in the financial statements, as well as in other ways. For the financial information to be useful, it should be on one hand relevant and faithfully represented, and on the other hand comparable, verifiable, timely, and understandable.

The fundamental characteristics are relevance and faithful representation. Financial information is relevant if it can make a difference in the decisions made by users. It must have a predictive and/or confirmatory value. The predictive value implies that the information represents an input to processes employed by users to predict future outcomes. The confirmatory value refers to ability of the information to provide feedback about previous evaluations. Both values are interrelated.

Faithful representation means that the financial statements should be complete, neutral, and free from error. A complete representation includes all the necessary information for a user to understand the phenomenon being depicted, with descriptions and explanations. Neutrality in representation refers to unbiased selection or presentation of the financial information. Neutrality suggests a certain level of caution, referred to as prudence, which implies a conservative approach when making judgements under conditions of uncertainty. However, while dealing with uncertainty, if prudence translates into bias in reporting, the concept would end up being incompatible with neutrality, due to misrepresentation of gains, losses, assets, liabilities, income, expenses or the overall equity. The 2010 Framework omitted any direct reference to the concept of "prudence", which was heavily criticized, as the lack of such quality was perceived as inadvertently encouraging over-optimistic reporting. The return of the concept of prudence addressed critiques targeted at the 2010 Framework, whilst reaffirming that prudence, is indeed a crucial element of providing a faithful representation. Faithful representation translates in financial statements that are free from errors or omissions in the description of the phenomenon, and the process used to produce the reported information has been selected and applied without errors. Besides the fundamental qualitative characteristics of financial information, some enhancing qualitative characteristics are worth mentioning, such as: comparability, verifiability, timeliness, and understandability.

Comparability is the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items. Unlike the other qualitative characteristics, comparability does not relate to a single item. A comparison requires at least two items. Consistency, although related to comparability, is not the same. Consistency refers to the use of the same methods for the same items, either from period to period within a reporting entity or in a single period across entities. Comparability is the goal; consistency helps to achieve that goal.

Verifiability assures users that information faithfully represents the economic phenomena it represents. Verifiability means that different knowledgeable and independent observers could reach consensus, although not necessarily complete agreement, that a particular depiction is a faithful representation. Quantified

information need not be a single point estimate to be verifiable. A range of possible amounts and the related probabilities can also be verified. Verification can be direct or indirect. Direct verification means verifying an amount or other representation through direct observation. Indirect verification means checking the inputs to a model, formula or other technique and recalculating the outputs using the same methodology.

Timeliness means having information available to decision-makers in time to be capable of influencing their decisions. Generally, the older the information is the less useful it is. However, some information may continue to be timely long after the end of a reporting period because, for example, some users may need to identify and assess trends.

Classifying, characterizing, and presenting information clearly and concisely makes it understandable. Financial reports are prepared for users who have a reasonable knowledge of business and economic activities and who review and analyse the information diligently. At times, even well-informed and diligent users may need to seek the aid of an adviser to understand information about complex economic phenomena.

The quality of the financial information presented in the financial statements also implies a cost. There are several types of costs and benefits to be considered. Providers of financial information expend most of the effort involved in collecting, processing, verifying, and disseminating financial information, but users ultimately bear those costs in the form of reduced returns. Users of financial information also incur costs of analysing and interpreting the information provided. If needed information is not provided, users incur additional costs to obtain that information elsewhere or to estimate it. Reporting financial information that is relevant and faithfully represents what it wants to represent helps users to make decisions with more confidence. This results in more efficient functioning of capital markets and a lower cost of capital for the economy as a whole. An individual investor, lender or other creditor also receives benefits by making more informed decisions. However, it is not possible for general purpose financial reports to provide all the information that every user finds relevant.

2.3. Concepts of capital and capital maintenance

A financial concept of capital is adopted by most entities in preparing their financial statements. There are two main concepts of capital defined. Under a financial concept of capital, such as invested money or invested purchasing power, capital is synonymous with the net assets or equity of the entity. Under a physical concept of capital, such as operating capability, capital is regarded as the productive capacity of

the entity based on, for example, units of output per day. The selection of the appropriate concept of capital by an entity should be based on the needs of the users of its financial statements. Thus, a financial concept of capital should be adopted if the users of financial statements are primarily concerned with the maintenance of nominal invested capital or the purchasing power of invested capital. If, however, the main concern of users is with the operating capability of the entity, a physical concept of capital should be used. The concept chosen indicates the goal to be attained in determining profit, even though there may be some measurement difficulties in making the concept operational.

From the concept of capital, the definition of capital maintenance can be split as follows: financial and physical capital maintenance. For the first one, the profit is considered only if the financial amount of the net assets at the end of the period exceeds the one at the beginning of the period (we need to exclude any distributions or contributions from owners during that time frame). For the physical capital maintenance, the profit is being taken into consideration only when the physical productive capacity (or operating capability) of the entity at the end of the period exceeds the one at the beginning of the period.

The concept of capital maintenance is concerned with how an entity defines the capital that it seeks to maintain. It provides the linkage between the concepts of capital and the concepts of profit because it provides the point of reference by which profit is measured; it is a prerequisite for distinguishing between an entity's return on capital and its return of capital; only inflows of assets in excess of amounts needed to maintain capital may be regarded as profit and therefore as a return on capital. Hence, profit is the residual amount that remains after expenses (including capital maintenance adjustments, where appropriate) have been deducted from income. If expenses exceed income the residual amount is a loss.

The physical capital maintenance concept requires the adoption of the current cost basis of measurement. The financial capital maintenance concept, however, does not require the use of a particular basis of measurement. Selection of the basis under this concept is dependent on the type of financial capital that the entity is seeking to maintain. (IASB, Conceptual Framework, 2018)

3. Literature review

As reporting according to IFRS became over the years mandatory in more and more countries, the question whether the initial objectives stated in the Conceptual Framework were met was asked more often. One can say that the impact of IFRS has remained controversial since its implementation. The costs and benefits of

mandatory IFRS adoption appear to provide an ideal topic on which researchers might support the work of policymakers through their studies. In the upcoming section a brief literature review on the subject is presented.

In order to ensure successful budgeting of capital, companies and investors alike, must rely on efficient and practical tools that help provide relevant financial documentation and information which would allow said companies and investors to accurately assess financial multinational situations. In June 2003, due to a growing need of companies to compare financial data of worldwide business organizations, a financial set of reporting standards has been issued. It has since been adopted by 167 international jurisdictions and is regarded as an efficient and reliable tool in setting guidelines for transparent financial statements. (Hwang et al. 2018) It is safe to state that, ever since the adoption of International Financial Reporting Standards (IFRS), the world of accounting has changed for the better, with long-standing impacts on companies located in countries that ensure reliable outside investor protection (i.e., the United Kingdom, or Australia), however, in Asian countries in which statutory law systems are in place, along with low outside investor protection, the early effects of IFRS adoption do not pass the test of time.

While South Korea has been requesting companies to comply with the IFRS standards with the purpose of narrowing the "Korea Discount" - which stands for a propensity South Korean companies have to being undervalued, which translates in an under-priced stock market -, it was all to no avail. Since the adoption of IFRS, South Korean companies have been proved to invariably lack in terms of accounting transparency, and several fraud scandals have transpired.

In China, the IFRS agenda has been heavily pushed by the Chinese government in hopes of aiding its "Open Door" policy. More than 30% of domestic companies are committed to submit IFRS compliant statements, due to dual listings in Hong Kong and international markets, however, as foreign companies do not yet trade in Chinese securities markets, it is yet to be determined whether these companies will be allowed to adopt and fully implement IFRS standards. (Hwang et al. 2018)

Domestic companies from countries that follow statutory law systems, such as France and Germany, have sustained the quality of earnings (QoE) that was displayed following the IFRS adoption. In countries that follow common law systems, such as Australia and the UK, where outside market capital investors benefit from outstanding legal support, companies have been proved to maintain similar QoE as displayed following the adoption of IFRS.

It's widely accepted that the adoption of IFRS by a jurisdiction is no straightforward commitment. Many variables come into play when classifying jurisdictions – should IFRS be applied to all industries? should all listed companies comply to the

standards? should parent company statements also comply? While it's no easy task, experts agree, that, in emerging economies, the adoption processes determine just how much of a relevant role IFRS will play.

IFRS adoption does not come with guaranteed benefits. Although IFRS are financial reporting standards that are internationally regarded as being first-rate, the specific methods for implementing the rules for certain situations are seldom not indicated, which could potentially lead to interpretations of the rules. Moreover, IFRS limit reporting methods, which could be detrimental in a company's performance review. In answering the question of whether or not the IFRS effects continue with the passage of time, the answer largely depends on each country's legal system and relevant institutions.

Developing countries, more specifically ex-communist countries, could widely benefit from adopting IFRS, as Albu et al. (2011) presented in the study "A story about IAS/IFRS implementation in Romania" considering it could help signal foreign investors that said countries have evolved into trustworthy places of business. From 1947 to 1989, Romania was one of Central and Eastern Europe's communist states. After the fall of communism, the country underwent a series of reforms, that also tackled the matter of financial reporting from the French accounting model to the International Accounting Standards (IAS), and finally to the European Directives (ED) concerning this topic – as a result of the country's desire to adhere to the European Union.

In 2005, it was decided to only focus on coordinating Romania's accounting regulations with the EDs, while IFRS implementation was to be requested from listed companies and institutions of the financial system. One could assume that, in the case of emerging or transitioning economies, switching between accounting models should not have major, palpable impacts on the financial sector, however, the lingering after taste of the fallen regimes, has proven itself a much greater hindrance in the convergence process, than the collective need to succeed in progressing.

It's clear that IFRS implementation is influenced by economic development, but historical precedents, as well as the country's heritage, have a say in the process. A generational instinct for fraud, lack of expertise and transparency, and old school mindsets of professionals, entwined with poorly allocated resources, can only result in roadblocks. Education could be the cornerstone of this paradigm, but it should be a constant aspect embraced by every participant in the financial game, from shareholder to auditor. (Albu et al. 2011)

For a stakeholder, one of the most important factors that influence financial related decisions lays in the accounting information that sheds light on the company's financial health, thus, it's only natural to raise questions in terms of how relevant the

adoption of IFRS in providing quality accounting data, in comparison to following domestic standards.

The backbone of decision-making European countries for adopting IFRS, can be summarized by "the contributions of environmental determinism theory and isomorphism theory"

The Environmental determinism theory defines accounting as a consequence of its environment.

In early 2000s, prior to the mandatory IFRS adoption, Europe's accounting and financial state was seen as clustered with various policies and accounting methods, in dire need of standardization and harmonization. Several high-profile scandals led countries to impose laws on transparency and security, such examples are the Metallgesellschaft scandal, in Germany in 1993, in which one of the country's largest industrial firm "reported staggering losses of about 1.3 billion USD on positions in energy futures and swaps" (Edwards, 1995), or the Enron scandal (still used today as a case study for corruption and corporate greed) from 2000, which led the French Parliament to pass a financial security law three years later. Belgium also soon followed, in 2003, by passing a law that targeted accounting.

Regardless of the domestic laws imposed by the aforementioned countries, the traditional measures to reform accounting systems fell short of meeting the demands of financial globalization, and as a result, all EU-based publicly traded companies have been mandated to align their financial reports with the International Financial Reporting Standards (IFRS).

Incorporating IFRS into practice has engendered adjustments of the accounting policies, which highly contrast the domestic standards (DS).

Adopting the IFRS led to changes in accounting choices and policies, which differed from the previously used domestic standards. The International Accounting Standards Board's (IASB) aim is to promulgate a universally accepted accounting lexicon. This profound transformation in accounting methodologies exemplifies the theory of environmental determinism, as postulated by scholars such as Gernon and Wallace (1995) and Rodrigues and Craig (2007).

The concept of isomorphism is used to expound the mechanism that led to the mandatory adoption of IFRS in European countries.

As presented by DiMaggio and Powell (1983), here are three forms of isomorphism: coercive, mimetic, and normative. Coercive isomorphism refers to the political pressure that all publicly listed firms need to prepare their financial statements according to international and IASB standards. Mimetic isomorphism consists of the process in which companies adopt behaviours from organizations perceived as prosperous. Normative isomorphism, revolves around professionalism and funding,

with the Big Four (the four largest accounting firms - Deloitte, EY, KPMG and PwC) having played a major role in shaping international standards. (Kouki and Mundy, 2018)

The concept of value relevance, which pertains to the capacity of accounting information to express a firm's market value, is seldomly addressed, as only accounting information that reflects the reality of the firm's financial status is considered value relevant.

In discussing value relevance literature, it's worth mentioning that the mandatory IFRS implementation in Europe has led to a shift in focus from analysing and comparing the legal origins of countries, or accounting systems across different countries, to examining the value relevance of accounting information pre- and post-IFRS adoption, comparing the results between countries that voluntarily adopted IFRS versus countries in which IFRS implementation was imposed, or analysing the contrasts between countries that based their accounting statements on IFRS, and countries that referred to their domestic standards when preparing such reports.

In truth, as determined and presented by Kouki and Mundy (2018), voluntary IFRS implementation did not improve the value relevance of equity book value and earnings. In the cases of Germany and Greece, it has been concluded that companies listed on the stock exchange ended up losing in terms of relevance post mandatory IFRS adoption. In other regions, countries such as Spain or Norway, the mandatory implementation of IFRS had no effect on improving the value relevance of their financial statements. It is, therefore, safe to state that voluntary IFRS adoption did not improve the value relevance of equity book value and earnings.

Barth et al. (2008) found that companies complying to IFRS standards exhibited more value-relevant financial statements compared to firms following domestic standards. Based on a study by Suadiye (2012), same applies to Turkey. Moreover, scholars Iatridis and Rouvolis (2010), reported, that, for companies listed on the Athens Stock Exchange, the transition to IFRS transpired in an increase of value relevance of earnings.

However, Kouki and Mundy (2018) concluded in their study "IFRS and value relevance: a comparison approach before and after IFRS conversion in the European countries", - which adds to the existing body of knowledge by showcasing a comparative analysis across pre- and post-IFRS adoption timeframes in three code-law origin countries, namely Germany, France, and Belgium - that while the value relevance of equity book value and earnings does, in fact, increase as a consequence of the transition to IFRS, the relevance of earnings and changes in earnings do now show great signs of improvement prior to adoption.

5. Methodology and contribution

The present article examines the Conceptual Framework, which constitutes the basis for IFRS implementation, and identifies the main results of the recent studies on the topic. The research is theoretical, analysing relevant literature and bringing forward up to date concepts, beneficial for future research. Policymakers proclaim their policies are rooted in evidence and often turn to academic researchers for impartial and reliable evidence. In view of the fact that a significant number of studies have been conducted thus far, the present paper attempts to summarize the outcomes and present the conclusion reached until now, while also proposing further area of future research.

6. In conclusion

The IASB Conceptual Framework presents the main objectives of IFRS implementation, the qualitative characteristics of financial information, the elements that constitute the financial reports and the concepts of capital and capital maintenance. It is important to note that all these elements are interrelated, as the financial reports should satisfy the qualitative characteristics in order to be able to meet the IFRS objectives. Finally, quality cannot be achieved without knowing what elements to recognize and how to appropriately measure them.

As the Conceptual Framework represents the basis for IFRS reporting it is important to analyse how the objectives presented are met in practice. As it was stated earlier, the research evidence on the benefits of mandatory IFRS adoption is generally not conclusive. But on balance it seems likely that there were overall benefits to transparency, comparability, the cost of capital, market liquidity, corporate investment efficiency and international capital flows following adoption. The research evidence also clearly shows that these benefits were unevenly distributed among different firms and different countries. Due to differences in institutions and incentives, there may have been negligible benefits or even negative effects rather than benefits for particular firms or countries.

Although isolating the effects of IFRS implementation from other events during a specific time period (different government regulations, financial/ health crisis), is no easy task, a really interesting area for future research would be a comparison between Eastern and Western European countries before and after IFRS implementation. It is known that in 2005, IFRS became mandatory for all European companies listed at the stock exchange, but did that mean that the comparability between companies in these two different parts of Europe increased? Did Eastern Europe become more

attractive to investors once they had access to financial reporting done based on similar regulations as in Western Europe? Does comparability improvement differ depending on whether Eastern European companies adopted IFRS mandatory or voluntary, depending on the industry sector, or depending on the level of legal enforcement of the country?

Has the difference in accounting quality and accuracy between developed and emergent countries decreased? Are capital investors more confident to invest in emergent countries now? These questions could constitute a basis for future research and hopefully more conclusive results.

References

1. Albu, N., Albu, C.N., Bunea, S., Calu, D.A. and Girbina, M. M. (2011*) "A story about IAS/IFRS implementation in Romania. An institutional and structuration theory perspective"* Faculty of Accounting and Management Information Systems, Bucharest Academy of Economic Studies, Bucharest, Romania, pp. 76-95

2. Barth, M.E., Landsman, W.R. and Lang, M. (2008) "International Accounting Standards and Accounting Quality", Journal of Accounting Research, Vol. 46(3), pp. 467-498

3. DiMaggio, P.J. and Powell, W.W. (1983) *"The iron cage revisited: institutional isomorphism and collective rationality in organizational"*, American Sociological Review, Vol. 48, No. 2, pp. 147–160

4. Edwards, F.R. (1995*) "Derivatives can be hazardous to your health: The case of Metallgesellschaft"*, Derivatives Quarterly, Vol. 1, pp.1

4. Gernon, H. and Wallace, R.S.O. (1995), *"International accounting research: a review of its ecology, contending theories and methodologies"*, Journal of Accounting Literature, Vol.14 (1), pp. 54–106

5. Hwang, I.T., Hur, K.S. and Kang S.M. (2018) "Does the IFRS Effect Continue? An International Comparison", Sustainability, MDPI, Vol. 10(12), pp. 1-20

6. IASB, Conceptual Framework, 2018.

7. Iatridis, G. and Rouvolis, S. (2010*) "The post-adoption effects of the implementation of international financial reporting standards in Greece"* Journal of International Accounting, Auditing and Taxation, Vol. 19(1), pp. 55-65

8. Kouki, A. and Mundy, J. (2018) *"IFRS and value relevance: a comparison approach before and after IFRS conversion in the European countries",* Journal of Applied Accounting Research, Vol. 19(1)*,* pp. 1-31

9. Rodrigues, L.L. and Craig, R. (2007) *"Assessing international accounting harmonization using Hegelian dialectic, isomorphism and Foucault"*, Critical Perspectives on Accounting, Vol. 18(6), pp.739–757

10. Suadiye, G. (2012) *"Value Relevance of Book Value and Earnings under the Local GAAP and IFRS: Evidence from Turkey"*, Ege Akademik Bakis (Ege Academic Review), Vol. 12(3), pp. 301-310

THE INFLUENCE OF ECONOMIC AND FINANCIAL INDICATORS IN THE ASSESSMENT OF ECONOMIC PERFORMANCE

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Abstract: *The continuous evolution of accounting imposed it as a model of description and modeling of an economic entity, becoming the most important system of information and assistance in issuing effective economic decisions. The process of evaluating an entity's performance requires the highlights a system of indicators that complies with the degree of satisfaction of the internal and external users' information needs of the annual financial statements. The objective of the research is to establish the determinants factors of the financial performance of economic entities, the research made analyzing the correlation between the profitability of the companies that are part of the BET and a number of other indicators. The financial performance was quantified by the accounting indicators: return on assets (ROA) and return on equity (ROE).Factors through which the impact on financial performance was analyzed are: capital structure (short-term indebtedness, long-term indebtedness, leverage), liquidity, capital intensity, growth opportunities, effective tax rate, net margin rate, market indicators (EPS, PER).The time period considered for our analysis covers 5 financial years for the period 2017-2021, with the necessary data being extracted for each company for the mentioned period. Following the analysis we found a negative correlation between the return on assets and the effective tax rate. Regarding the existing correlation between leverage and long-term debt, current liquidity, and capital intensity, we can see that it is moderate.*
The results of the present study are in line with other research in this field, with the indicators used as a reference forsupporting decisions.

Keywords: *financial performance, accounting information, annual financial statements, return on assets, return on equity*

JEL Classification*:M41, C33, O10*

1. Introduction

Accounting information, the source material in the decision-making process, is the key to developing the economic entity. Its quality has an important role in the substantiation of the managerial decisions, helping to achieve the main objective of management, to maintain the entity as a going concern.

The current developments of modern society require continuous improvement of economic and financial information. It must be constructed in such a way as to meet both the management's decision-making requirements and the information needs of the company's partners. (Puican,2014)

Accounting has a privileged status in the accounting information market, given the double role it plays.

• Legal representative of the entity, producer of accounting information;

• Lead accounting information user responsible for preparing and publishing financial statements;

In the current economic context, the idea of measuring performance based on the creation of added value subordinated to the goal of sustainable development is encouraged and promoted, performance being a harmonising and associating relationship between efficiency and effectiveness.

The role of financial statements is to provide information on the financial condition of the entity, which provides internal and external users with an overview of the entity's performance. This allows the assessment of past and current positions, prediction of future development, to make an analysis of the dynamics over time of the economic and financial activity, providing the opportunity to take the necessary measures to intervene in time to prevent a possible financial difficulty (bankruptcy risk) that could affect the good progress of the economic activity.(Puican,2014)

2. Review of the literature

Performance can be considered as a particular result achieved in management, economic, commercial, etc., involving efficiency,effectiveness,and competitiveness of companies and their procedural and structural behaviours. (Verboncu and Zalman, 2005)

Economists M, Achim and S, Borlea define the concept of performance in terms of the existing relationship between the company and stakeholders, considering performance as the ability of an economic entity to create added value for stakeholders, to meet the demands of consumers, employees, and environmental protection.

Hada and Avram (2013), highlights that the financial statements provide information leading to the determination of the indicators of appreciation of the financial position (by calculating some indicators on assets and liabilities and comparing them with values considered normal for the sector).

Frank, J, N, states that each category of stakeholders has its own image on the concept of financial position. Still furthermore, Taulea (Samara) S, (2009) motivates that there are different images of financial position even in the same category of stakeholders (for example, commercial creditors perceive performance differently from financial creditors).

Thus, managers are interested in the overall performance of the company, investors (actual and potential) will perceive performance in terms of return on investment, employees and clients will show interest in the stability of the company,, and creditors are considering solvency and liquidity. (Ştefănescu, 2005),

Simplistically, a positive financial position is perceived when one encounters an entity in which equity is greater than or at least equal to debt, so that the entity can meet its undertaken obligations.In this respect (Ospishchew et al.),it suggests that an entity's financial position is measured by three attributes: reliability, solvency and financial stability.

The importance of the analysis of the concept of financial position and its influence on the decisions of the interested parties is underlined by the study by Martínez-Carrascal C, and Ferrando A, (2008) which proved that financial position of the entities, can be significantly influence the actions of the interested parties.

3. Research methodology

The objective of the research is to establish the determinants factors of the financial performance of economic entities, the research made analysing the correlation between the profitability of the companies that are part of the BET index and a number of other indicators.

Starting from different indicators to measure the financial position and performance, according to the information needs of all categories of stakeholders, they can build their own models of appreciation regarding the interdependence between them. An example in this sense is given by Beletu (2013), who presents how the rate of economic profitability as a performance assessment indicator is influenced by other indicators such as the fixed asset rate, the financial autonomy rate, the financial leverage, and the liquidity rate (research conducted for the forest sector). A similar scientific approach was undertaken by Romanian economists Anghelache and Anghel (2019), which highlighted the interdependence between the main economic indicators calculated at the entity level.

To measure companies' performance, we used as indicators the return on capital (ROE) and the return on assets (ROA), analysing the correlation between them and the Short-Term Debt (GITS), Long-Term Debt (GITL), Current Liquidity (Liquid_crt), Net Margin Rate (NPM), Price-to-Earn Ratio (PER), Results per share invested (EPS).

To perform a meaningful analysis of the relationship between the variables, namely the profitability of the companies and the indicators mentioned above, we selected a sample of 19 companies that were included in the BET index, namely Fondul Proprietatea, BANCA TRANSILVANIA S,A, OMV PETROM S,A, N,G,N, ROMGAZ S,A, BRD - GROUPE SOCIETE GENERALE S,A,, S,N, NUCLEARELECTRICA S,A,, MedLife S,N,T,G,N, TRANSGAZ S,A, Digi Communications N,V ENERGY, ELECTRICA SA, TERAPLAST SA, Transelectrica SA, TTS(TRANSPORT TRADE SERVICES), ALRO SA, PURCARI WINERIES PUBLIC COMPANY LIMITED, to preserve the viability of statistical analysis by ensuring a high degree of data homogeneity.

The time period considered for the analysis covers 5 financial years related for the period 2017-2021, the necessary data being extracted for each company separately for the mentioned period.

The selected indicators express in concrete terms the economic and financial situation of the commercial companies that are part of the BET index, and in a correlated manner express how it evolves from one period of time to another.

BET represents the local capital market benchmark (Romania), BET reflects the evolution of the 19 most traded companies in the BVB BVB Regulated Market. excluding financial investment companies. It is a price index weighted with the capitalisation of the free float, the main selection criterion of the companies in the index being liquidity. The information provided by the annual financial statements for the 19 entities allows the collection of data needed to calculate the economic and financial indicators found on the Bucharest Stock Exchange website.

A first step in this analysis is the presentation of the variables used in the econometric model (Table 1).

Table No.1 Variables used in the empirical analysis

Variable Name	Method of calculation	Symbol
Performance variables-dependent variables		
Return on assets	Net profit/Total assets	ROA
Return on equity	Net Profit/Equity	ROE
Independent variables		
Capital structure variables		
-Short-term indebtedness	Short-term liabilities/Total assets	GITS
Long-term leverage	Long-term liabilities/ Total assets	GITL
Leverage	Total liabilities/Equity	LEV
Liquidity		
-Current liquidity	Current assets/Current liabilities	Liquid_crt
-Capital intensity	Non-current assets/Total assets	Intense
Growth Opportunities		
Relative evolution of turnover	(CA1-CA0)/CA0	Evol_CA
Performance indicators		
- Net margin rate	Net Profit/Turnover	NPM
Market indicators		
Earning per share	Net Profit/Number of Shares	EPS
Price earning ratio	Price/(Net profit/number of shares)	PER
Taxation		
- Effective tax rate	Income tax expense/Gross profit	ETR
Control variables		

(Source: Gănescu,2016)

Data Analysis and Interpretation

Using the statistical program Eviews 12 Student Lite I made a descriptive statistics (deals with the collection, classification, characterization and presentation of numerical data) of the 12 variables (ROA, ROE, Liquid_ crt, Intens, Evol_CA, NPM, GITS, GITL, EPS, PER, ETR) and we created two econometric models using unbalanced panel data.

Panel data models consist of regression equations, in which series that are used at the same time, both chronological chronological time series and cross-sectional data series. Since this situation frequently occurs in the analysis of socio-economic phenomena and processes taking place at regional level, the author opted for the

application of this type of econometric models in this paper. The study of the data in panel- type data means the joint analysis of cross-sectional observations (regions, countries, sectors, households, firms, etc.) made in several periods of time.

After applying multivariate analysis methods, linear or non-linear econometric modeling, single or multiple, can be applied based on the results obtained, Among these, we chose multiple linear regression as a method for analyzing economic and financial profitability in relation to others indicators considered to be its determining factors.

$$ROA_{it} = \alpha0 + \alpha1 GITS_{it} + \alpha2 GITL_{it} + \alpha3 Liquid + \alpha4 Modif\_CA_{it} + \alpha5 ETR_{it} + \alpha6 EPS_{it} + \alpha7 PER_{it} + \varepsilon_{it}$$

$$ROE_{it} = \alpha0 + 1 LEV_{it} + 2 Intensity + 3 Liquid + NPM_{it} + 5 ETR_{it} + 6 EPS_{it} + 7 PER_{it} + it$$

Where: α0 = the constant term; the free term of the model;

α1, ,,,, α7= slope parameters; obtained by the method of least-squares are functions of the selection data (from the sample);

εij = the term error, which quantifies the influence of factors with random action,

t = 2010, 2011,,,,, 2014;

i = 1, 2,,,,.

4. Findings

In order to ensure the accuracy of the data, a descriptive analysis of the variables was performed as detailed in the table below. Asymmetry and Kurtosis (Kurtosis in statistics is used to describe the distribution of the dataset and describe how much the data set points of a particular distribution differ from the data of a normal distribution, It is used to determine whether a distribution contains extreme values) are the two important characteristics of distribution that are studied in descriptive statistics. As we can see, in the econometric analysis, the distribution of the variables used is characterized by a positive skewness, since it records positive values, except for the ETR variable only, Kurtosis provides information on the distribution of the variables. Thus, in the table below, it can be observed that all variables have a coefficient higher than 3, which implies a leptokurtotic distribution (When the kurtosis is positive in terms other than zero, the data is leptokurtic, Leptokurtic has strong steep curves on both sides, indicating the abundant population of outliers in the data set).This suggests that the probability of an extreme event is greater than the probability of that event implied by a normal distribution. The Jarque-Bera test (This test first calculates the coefficient of asymmetry (Skewness) and the coefficient of bolting (Kurtosis) for the residuals obtained by applying the least squares method) considers both the skewness and the flattening coefficient and checks to what

measure the empirical distribution can be approximated with a normal distribution. We can find that most variables do not have a normal distribution, since they have a probability of less than 0,05. Given the results presented in Table 2, we can see that the economic profitability (ROA) varies between -0,077 and 1,20, while the financial profitability of the ROE varies between -0,214 and 1,47 (Table 2).

Table no.2 Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Std, Dev,	Skewness	Kurtosis	Jarque-Bera	Probability	Obs
TIME	0,08	0,06	1,20,	-0,077	0,14	6,07	47,90	8113,547	0,00	90
ROE	0,14,	0,11,	1,47	-0,214	0,18	5,00	37,59	4683,483	0,00	90
NPM	14,01	0,13,	1125,24	-0,146	118,79	9,24	87,00	27743,74	0,00	90
GIST	0,13,	0,08	0,73	0,00	0,15	1,50	5,02	729,55	0,00	90
GITL	0,13,	0,05	0,74	0,00	0,18	1,41	4,16	45,56641	0,00	90
LEV	1,44	0,24,	12,37	0,00	2,93	2,43	7,52	38,71943	0,00	90
LIQUID_CRT	3,99	2,08	43,16	0,00	6,13	3,85	21,16	165,4696	0,00	90
EVOL_CA	0,15,	0,02	10,10,	-0,965	0,19	2,94	23,10	18329,80	0,00	90
ETR	0,07	0,14,	1,12,	-7,547	0,84	-8,51	78,57	22500,76	0,00	90
EPS	5,20	0,99	154,36	-4,673	19,17	6,18	44,57	7052,67	0,00	90
PER	4,70	0,86	60,31	-6,980	10,57	3,39	15,14	725,4551	0,00	90

Source: Own calculations in Eviews

Table No. 3 Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1ROA	1	0,900	0,068	0,207	-0,006	-0,040	-0,110	-0,177	0,115	-0,035	-0,846	0,022
2ROE	0,900	1	-0,084	0,147	-0,042	0,238	0,018	0,087	-0,044	-0,083	-0,762	-0,027
3LIQUID_CRT	0,067	-0,084	1	-0,129	0,014	-0,298	-0,224	-0,255	0,349	0,028	-0,058	-0,085
4EVOL_CA	0,207	0,147	-0,131	1	-0,113	-0,024	-0,002	-0,021	0,103	0,003	0,006	-0,014
5NPM	-0,006	-0,042	0,014	-0,113	1	-0,077	-0,085	-0,058	0,105	-0,122	0,012	-0,032
6GITS	0,040	0,238	-0,298	0,024	-0,077	1	0,545	0,314	0,193	-0,122	0,114	0,274
7 GITL	-0,110	0,018	-0,224	-0,003	-0,085	0,5448	1	0,432	0,260	0,055	0,176	-0,043

8LEV	-0,177	0,087	-0,255	-0,021	-0,058	0,314	0,432	1	-0,135	-0,110	0,139	-0,027
9INTENSE	0,115	-0,044	0,349	0,103	-0,105	0,193	0,260	-0,135	1	0,068	0,030	0,088
10PER	-0,035	-0,083	0,028	0,003	-0,122	-0,122	-0,055	-0,110	-0,068	1	0,032	-0,117
11 ETR	-0,846	-0,762	-0,058	-0,006	-0,012	0,114	0,176	0,139	0,030	0,032	1	-0,007
12 EPS	-0,022	-0,027	-0,085	-0,014	-0,032	0,274	-0,043	-0,027	0,088	-0,117	-0,007	1

Source: Own calculations in Eviews

In order to analyze of the correlation between variables, we used the correlation matrix as shown in Table 3. The correlation matrix is used for the analysis of multilinearity. Usually:

- the value of coefficients between 0 and 0,30 marks a weak correlation;
- 0,30 to 0,70 moderate correlation;
- and between 0,70 and 1, a high correlation,

By analysing the data presented in the table, we can find that there are:

- Strong correlation between return on assets and return on capital of 0,9;
- moderate correlation between leverage and long-term leverage of 0,43;
- long-term indebtedness and short-term indebtedness of 0,54;
- current liquidity and capital intensity of 0,34;

On the contrary, the correlation between the return on assets and the effective tax rate of -0,84 exists.

To test whether the model with fixed or random effects model is appropriate, by identifying the presence of endogeneity in the explanatory variables,, we used the Hausman test,, a statistical test used in econometric to compare a concurrent predictor under the null hypothesis and the alternative hypothesis and a concurrent and efficient estimator under the null hypothesis but do not converge under the alternative hypothesis. The Hausman test hypothesises that the double least -squares estimator is significantly different from the usual least -squares estimator).

The Hausman test is also useful for panel data when comparing model estimates with fixed and random effects. The choice of model in panel data should be based on information about the individual specific components and the exogeneity of independent variables. In order to decide which model provides the most accurate results considering the data type panel (appropriate panel data model, either fixed effects method or random effects), we conducted a Hausman test that showed values

for Prob>chi2(Chi-square test, also called Chi-square (PATH2), is in tests of descriptive statistics, in particular descriptive statistics applied to the study of two variables) higher than 0,05, which indicated the use of the random effects model .(Figure 1)

| View | Proc | Object | | Print | Name | Freeze | | Estimate | Forecast | Stats | Resids | |

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.577132	7	0.4742

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LEVIER	0.017881	0.012667	0.000064	0.5146
INTENS	0.173614	0.057543	0.005989	0.1336
LICHID_CRT	-0.001715	-0.002830	0.000002	0.3705
NPM	-0.000008	-0.000045	0.000000	0.2954
ETR	-0.164694	-0.166444	0.000017	0.6722
EPS	-0.001746	-0.000960	0.000000	0.0581
PER	0.000270	-0.000287	0.000000	0.3715

Figure no.1 Hausman test
Source: Own calculations in Eviews

The parameter estimation and model significance testing are performed using the EViews statistical-econometric analysis program and the results are presented in Figure 2.

```
Cross-section random effects test equation:
Dependent Variable: ROE
Method: Panel Least Squares
Date: 04/01/23   Time: 12:48
Sample: 2017 2021
Periods included: 5
Cross-sections included: 18
Total panel (balanced) observations: 90
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041144	0.057653	0.713648	0.4780
LEVIER	0.017881	0.009717	1.840230	0.0703
INTENS	0.173614	0.094088	1.845240	0.0696
LICHID_CRT	-0.001715	0.002463	-0.696208	0.4888
NPM	-7.66E-06	0.000104	-0.073707	0.9415
ETR	-0.164694	0.014246	-11.56036	0.0000
EPS	-0.001746	0.000790	-2.209613	0.0307
PER	0.000270	0.001350	0.199726	0.8423

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.770312	Mean dependent var	0.142377
Adjusted R-squared	0.685505	S.D. dependent var	0.176644
S.E. of regression	0.099062	Akaike info criterion	-1.556014
Sum squared resid	0.637860	Schwarz criterion	-0.861622
Log likelihood	95.02063	Hannan-Quinn criter.	-1.275994
F-statistic	9.083047	Durbin-Watson stat	2.181631
Prob(F-statistic)	0.000000		

Figure no.2 Results of multiple regression analysis between ROE, LEVERAGE,,LIQUID_CRT,
,LEVERAGE,INTENSE,PER,EPS,ETR variables
Source: Own calculations in Eviews

Interpreting the data in Figure 2 we could observe that the parameters recorded in the second column (Coefficient column) are significantly different from zero for the free term and for the capital intensity, its value being $0,17*,10^4$ which shows that this factor under study has an influence in the evolution of profitability.

On the other hand, if we follow the F-statistical test we can find that its value, F=9,083, is much higher than the tabular value for the threshold of significance considered $\propto= 0,05(F_{t=4,26})$, which indicates that the results obtained are significant.

Also, the R-squared correlation coefficient (Pearson correlation coefficient) is often used to measure the statistical relationship and association between certain data. The result that this coefficient offers can be negative or positive. When the Pearson correlation coefficient has a positive value, it means that in each increase of one of the variables analyzed there is also an increase of the other correlated variable. A negative value of the Pearson coefficient tells us that in each increase of one variable, there is a decrease of the other,) has the value 77% close to the unitary one, thus indicating a probability of 77,03% that this model is correct. With respect to the value of 2,18 recorded in Figure 2 for the Durbin-Watson test (Durbin-Watson test (DW) is used to perform an AR self-correlation test (1) on a dataset.This contrast focuses

on the study of residues of MCO (Ordinary Least Squares), DW is a statistical test that contrasts the presence of autocorrelation in residues of a regression),, this indicates a positive autocorrelation of residual values, being lower than the tabular value $d_{1=0,14}$ for a series of 90 observations, with a materiality threshold $\propto$=0,05 and a number of factors k=7.

According to the data contained in Figure 2 we can estimate theoretical values of the endogenous variable according to the relation:

$$ROE = 0,041144 + 7,66E * 10^{\wedge}(-6) * NPM + 0,017881 * LEVIER$$
$$+ 0,173614 * INTENS - 0,001715 * LIQUID\_CRT - 0,164694$$
$$* ETR - 0,001746 * EPS + 0,000270 * PER$$

For the ROA variable, the Hausman test showed values for Prob>chi2 (Chi-square test, also called the Chi-square test (PATH2), is in descriptive statistics tests, in particular descriptive statistics of the study of two variables. Descriptive statistics, in turn, focus on extracting information about the sample. In contrast, inferential statistics extract information about the population.The chi-square statistic will take a value equal to 0 if there is a perfect agreement between the observed and expected frequencies; in contrast, the statistic will take a large value if there is a large discrepancy between these frequencies and consequently the null hypothesis must be rejected,) greater than 0,05 that indicated the use of the random effects model .(Figure 3),

| View | Proc | Object | | Print | Name | Freeze | | Estimate | Forecast | Stats | Resids | |

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.805986	7	0.3500

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
GITS	0.104681	0.170254	0.001944	0.1369
GITL	-0.098828	-0.040738	0.007909	0.5136
LICHID_CRT	0.000035	0.001799	0.000002	0.2459
EVOL_CA	0.021411	0.025902	0.000014	0.2250
ETR	-0.135403	-0.140443	0.000014	0.1753
EPS	-0.001171	-0.000731	0.000000	0.0862
PER	0.000398	0.000052	0.000000	0.4222

Figure no. 3 Hausman test
Source: Own calculations in Eviews

The parameter estimation and model significance testing are performed using the EViews statistical-econometric analysis program and the results are shown in Figure 4.

```
Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 04/01/23   Time: 12:59
Sample: 2017 2021
Periods included: 5
Cross-sections included: 18
Total panel (unbalanced) observations: 80
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.091205	0.021418	4.258277	0.0001
GITS	0.104681	0.079682	1.313739	0.1944
GITL	-0.098828	0.105613	-0.935751	0.3535
LICHID_CRT	3.47E-05	0.002323	0.014927	0.9881
EVOL_CA	0.021411	0.007546	2.837410	0.0064
ETR	-0.135403	0.009390	-14.41966	0.0000
EPS	-0.001171	0.000491	-2.386481	0.0205
PER	0.000398	0.000873	0.456156	0.6501

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.871711	Mean dependent var	0.083941
Adjusted R-squared	0.815731	S.D. dependent var	0.147056
S.E. of regression	0.063126	Akaike info criterion	-2.437059
Sum squared resid	0.219170	Schwarz criterion	-1.692675
Log likelihood	122.4823	Hannan-Quinn criter.	-2.138614
F-statistic	15.57168	Durbin-Watson stat	2.133942
Prob(F-statistic)	0.000000		

Figure no.4 Results of the mulyiple analysis between the ROA, LIQUID_CRT, GITS, GITL, LEVER, INTENSE, PER,EPS,ETR variables
Source: Own calculations in the reviews

By interpreting the data in Figure 4 we could observe that the parameters recorded in the second column (Coefficient column) are different from zero for the free term and for the short-term indebtedness, and for the factor the relative evolution of turnover is very close to zero, its value being 0,021411 which shows that this factor subject to study has a very small influence in the evolution of profitability.

On the other hand, if we follow the F-statistical test we can find that the value F=15,571 is much higher than the tabulated value for the threshold of significance considered ∝=0,05, which indicates that the results obtained are significant.

Additionally, the R-squared correlation coefficient is 87% close to the unit value, indicating a probability of 87,17% that this model is correct.

Regarding the figure of 2,13 recorded in Figure 4 for the Durbin-Watson test, this indicates a positive self-correlation of residual values, lower than the tabular value (calculated degrees of freedom) d (1=0,08) for a series of 80 observations with a materiality threshold = 0,05 and a number of factors k=7.

According to the data contained in figure 4 we can estimate theoretical values of the endogenous variable according to the relationship:

$$ROA = 0,091205 + 3,47, E * 10^{\wedge}(-5) * LIQUID\_CRT + 0,104681 * GITS$$
$$- 0,098828 * GITL + 0,021411 * EVOL\_CA - 0,135403 * ETR$$
$$- 0,001171 * EPS + 0,000398 * PER$$

5. Conclusion

The analysis revealed a negative correlation between asset return rate and the effective tax rate,are in terms of the current correlation between leverage and long-term indebtedness, current liquidity and current capital intensity, we can see that it is moderate one.

The results of this study are consistent with other studies in this field, indicators used as a basis for decision- making.

Based on the above, we find that information on the entity's economic situation performance is useful for assessing potential changes in economic resources that it may control in the future and for anticipating the ability to generate revenue streams with existing resources. In addition, position and performance are used to formulate judgements on how effectively the entity can use new resources..

The models used represent definite analytical tools provided that they are used in accordance with the existing methodology, based on definite data, lead to the achievement of parameters that make it possible to estimate the results in the short, medium or even longer term. The results obtained through the use of econometric models are tools for analysing but also to predicting the economic activity of the entities. In this sense the, management must take into account these results   which they can concentrate in a program of measures aimed at recovering the situation in case of the economic agent encounters difficulties or ensure a high degree of accuracy in the future development of the activity as a result of the measures taken.

The information provided by the annual financial statements is a source of valuable data in the diagnosis of the financial condition of an economic entity in terms of visibility and credibility, the structures specific to the financial position and performance through liquidity, but also the profitability that ensures the optimal conditions for maintaining the financial balance and at the same time the efficiency of the activity.

The role of financial statements in the decision-making process of each user of the information provided by any economic entity derives from the level of information presented, depending to a large measure on its quality.

Starting from different indicators to measure the financial position and performance, according to the informational needs of all categories of interested parties, they can

build their own models of appreciation regarding the interdependence between these two concepts.

Financial statements are a fundamental tool for managers and financial analysts being essential in examining the effectiveness of the risk management process at the level of an enterprise. They represent the starting point that provides clues for future analyses, the changes occurred in time at the level of economic-financial indicators determined on the basis of financial statements providing a dynamic vision of the company's performance.

References

1. Achim, M,V and Borlea, S, N;(2011), *Analiza financiară a entității economice [Financial analysis of the economic entity],* Risoprint Publishing House Cluj-Napoca;

2. Anghelache, C;Anghel.,M.,,G. (2019*), Statistică economică* generală, ediția a doua, revizuită și adăugită, [General Economic Statistics, Second Edition, revised and added], Economică Publishing House , Bucharest;

3. Beletu, E,C, (2013), *Studiu despre interdependența dintre poziția financiară și performanță în cadrul Regiei Naționale a Pădurilor-Subunitățile Romsilva [Study on the interdependence between financial position and performance within the National Forests-Romsilva Subunities],* Annals of the University of Economics Craiova, Volume 1, pp 154-165;

4. Gănescu ,E,A(2016), *Analiza factorilor determinanți ai performanțelor financiare ale companiilor* [*Analysis of Financial Performance Determinants of Companies*,]ABC Financial World ,W,P No 4 ;

5. Frank, J, N, (1959), *Accounting for investors, The Fundamental Importance Earning Power*, The Journal of Accountancy;

6. Hada T,, Avram ,T,M (2013), *Bilanțul sursă de informații pentru determinarea poziției financiare a entităților listate la Bursa de Valori Bucureşti, [The source balance sheet for determining the financial position of entities listed on the Bucharest Stock Exchange*], Annals of Apulensis University Series Oeconomica Alba Iulia , Volume 2, Issue 15, page 550-579;

7. Martínez-Carrascal, C,, and Ferrando, A,, (2008), *'The impact of financial position on investment: an analysis for non-financial corporations in the euro area'* Working Papers 0820, Banco de España;

8. Ospishchev, V, I, and Nagornaja, I, V,, (2009), *Fundamentarea teoretică a principalelor elemente constitutive ale poziției financiare a întreprinderi: fiabilitate, solvabilitate, and stabilitate financiară [Theoretical foundation of the main constituent elements of the financial position of an enterprise: reliability, solvency,and financial stability],* Danubius University of Galati, EuroEconomica Journal, Volume 22, No 1 ;

9.Puican,L.(2014),Situațiile financiare anuale ,sursă de informații credibilă pentru stakeholderi[Annual financial statement ,source of credible information for stakeholders],Craiova

10. Ștefănescu, A, (2005), *Performanţa financiară a întreprinderii între realitate şi creativitate,[The financial performance of the enterprise between reality and creativity],* Economică Publishing House, Bucharest;

11.Taulea (Samara), S.(2009), *Consecinţele standardizării şi armonizării contabile asupra conceptului de poziţie financiară [Consequences of accounting standardisation and harmonisation on the concept of financial position],* Annals of the University of Economic Sciences Petrosani, Volume 9, Part IV, p. 283-288.

12. Verboncu, I; Zalman, M;(2005), *Management şi performanţă, [Management and Performance],* Economică Publishing House , Bucharest ;

13. https://bvb,ro

BUSINESS VALUATION AND ESG FACTORS – AN INTEGRATED APPROACH

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Abstract: *Considering the rising popularity of reporting ESG (environment, social, governance) related actions, a natural curiosity was born among investors, and other parties, whether it can affect the business value or not. The answers regarding the integration of ESG factors into business valuation are still contradictory, with the tendency towards those who positively support this statement. This study aims to observe some of the potential correlations between ESG factors reported and business valuation. To understand the connectivity, we reviewed key works from the literature regarding this topic and looked for the optimal approach for integrating ESG factors into the business valuation. In this regard, an empirical study case on Romanian companies was developed. The investigated period was from 2020 to 2022. The purpose of the study was to identify the correlations between the most used profitability indicators, price multiples, EV/EBITDA, and ESG Scores. Results showed that the company with the highest ESG score had better profitability, and was the best performing on the market. However, because ESG reporting is still a new challenge for Romanian companies, and measuring the ESG score is still in its infancy stage, we proposed that domestic companies should prepare better to report and disclose sustainability data and regulators should support the companies by developing and promoting sustainability and ESG reporting and disclosure principles, ethics and guides.*

Keywords: *ESG; business valuation; integration; discounted cashflow*

JEL Classification: *M41; G32; Q56*

1. Introduction

In the past years, the ESG (Environment, Social, Governance) term has become more and more popular among both investors and other interested peers. The reason why this nonfinancial factor gained so much popularity is determined by its impact on a firm's value. When we talk about ESG, we refer to a company's approach to becoming more sustainable. The non-financial criteria that are most commonly known are: how a company manages its carbon emissions and waste, how they use its resources, the relations with employees, clients, and stakeholders, how they avoid fraud and corruption, and incorporating the environmental and social factors. Nevertheless, it can be noticed the controversial opinions on the integration of ESG items in a firm's value, recently conducted works proved a positive correlation between the proxies. So, companies that have a higher ESG score are less inclined to risk and can obtain higher returns (Chan et al., 2021). Judging by this premise, we can agree that it is necessary to incorporate ESG factors into the valuation of the company.

Traditional or quantitative active investors who take into consideration the ESG factors when assessing a firm's value or use them in their investment selection process are employing an integration approach. This study is based on finding what methods of firm valuation can integrate ESG factors to later be able to receive the most relevant and close to the actual value of a firm.

2. Literature review

Considering that the essentiality of ESG is growing and that this is still a new term in the economic world, progress towards reaching universally accepted sets of standards to integrate ESG factors into business valuation is still in its infancy stage (Woo, Tan, Deloitte 2022). International organizations like, The IFRS Foundation, The CFA Institute, and The European Financial Reporting Advisory Group (EFRAG) (Prall, IVSC 2021) had established tasks to develop better nonfinancial reporting standards, for the information provided by these standards to be comparable, relevant, and reliable.

In what concerns ESG factors' relevance in business valuation, many researchers (Aydogmus et al., 2022; Friede et al., 2015; Egorova et al., 2021; Alareeni and Hamdan, 2020) found positive correlations between ESG information and business performance. According to Aydogmus et al. (2022), in a meta-analysis conducted by Whelan et al. (2021), more than 1000 papers published between 2015-2020, focused on analysing the link between ESG and financial performance. Results found that 58% of investigated works observed positive relationship between ESG and financial

performance (FP), 21% showed mixed results, 13% did not find any correlations, and 8% found negative correlations. The study concluded that even if the majority of researchers found a positive correlation between ESG and FP, there were still mixed opinions and a lack of consistency prevailed.

IVSC published perspective papers in which they consider that the best approach to integrate ESG factors in business valuation is through the discounted cash flow and the discount rate. Based on these International Valuations Standards (IVC), companies from the Big Four, like Deloitte and KPMG published works regarding this approach, arguing that this is the best way for ESG integration in business valuation. However, independent researchers (Aydogmus et al., 2022; Egorova et al., 2021; Alareeni, Hamdan, 2020; Ionescu et al., 2019; Naeem et al., 2022) chose to integrate ESG factors in business valuation by correlating the following three dimensions (Alareeni, Hamdan, 2020): operational (ROA – return on assets), financial (ROE – return on equity), and market (Tobin's Q) performance with the ESG scores.

Further on, a discussion on the approaches to integrating ESG factors into business valuation will be highlighted.

3. Current approaches used on ESG factors integration into business valuation

Traditionally, there are three valuation methodologies: the income, the market, and the cost approach, but from the perspective of ESG factors integration into business valuation, this study will refer to the first two.

3.1. The income approach

As stated in the IVS 105: Valuation approaches and methods, *„The income approach indicates value by converting future cashflow to a single actual value"*. To account for ESG considerations (Deloitte, 2022) valuation under the income approach should take into consideration the impact of ESG factors in the discount rate or cash flows themselves.

The traditional approach of calculating DCF

This is the most frequently applied valuation tehnique and assumes that the firm's estimated perpetual free cash flow is discounted at a rate equal to the expected cost of capital (that consists of both the cost of equity and the cost of debt), under the formula:

$$V_{DCF} = \frac{CF_1}{(1+a)^1} + \frac{CF_2}{(1+a)^2} + \cdots + \frac{CF_n}{(1+a)^n} + \frac{V_T}{(1+a)^n}$$

where: V_{DCF} - company's value; CF - expected cashflows in time; V_T - terminal value; n - number of years for the analyzed period; a - discount rate.

ESG and the Discounted Cashflow

The economic theory recognizes numerous methods that help determine the intrinsic value of a company or a business, through which the discounted cash flow (DCF), which is a method that helps to determine the actual value of a firm, relying on the forecasted cashflow, discounted for the value of money in time (Țîrlea, Birca, 2022). In the traditional approach of the DCF, there are a few indicators that have to be kept into account, like, EBITDA, EBIT, net profit margin, or the investments that the company is planning to make. The new approach, which integrates the ESG factors into valuation, recommends that the traditional approach to DCF should keep account of certain risks and opportunities presented in Table 1 (Petre et al., ANEVAR 2021):

Table 1: Risks and opportunities related to ESG

Risks	Opportunities
• Retracted or suspended operating license; • Fees or other sanctions are given for disobeying the law; • The cost of eliminating waste accounted for the bad management on that matter; • High risk of dissatisfaction regarding employees, clients, suppliers, and stakeholders; • The practice of corrupt actions; • Loss of financing, etc.	• Cost savings resulted from energetic efficiency and good management of resources; • Better investment plans for long term • Gaining loyalty from employees, clients, and stakeholders; • Trademark value; • Providing easier long-term access to capital of international institutional investors; • A better understanding of the stakeholders' needs, etc;

Source: ESG reporting guide (BSE, 2022)

To attain a fair value for the company, based on the DCF approach which integrates the ESG factors, it is very important to acknowledge, income adjusting, supplementary investments necessary for diminishing the impact of implementing or supporting ESG initiatives, adjustments regarding authorities imposed taxes and fees for disobeying the law, and other factors, each specific to the field in which activates the analyzed company. In the case of the plastics industry, for instance, possible adjustments to the cash flow elements are as follows:

Table 2: Adjustments that could be made to cashflow items

Pillars	Cash Flow Items	Adjustments
E	Operating revenues	The increase in sales and other income was driven by: -increasing the quality of products as a result of the implementation of modern technologies and the increase in the level of training of employees, -reducing the number of complaints received from customers, -increasing the degree of waste recovery, promoting the circular economy
	Operating costs	Reduction of material expenses as a result of the increase in the amount of recycled plastic used in the production process -reduction of energy and water expenses, through the use of green energy, local lighting in the technological flow, replacing high-power motors with low-power, and variable speed motors, reducing water consumption, and judicious management of water resources
	Capital expenditures	Additional expenses and investments for the modernization of existing machinery and the purchase of machinery with higher performance, to implement modern technologies, as well as to strengthen the adaptability to climate change
	Taxes	The amount of paid taxes can be reduced by using energy and water-saving equipment, organizing actions to promote among the population the importance of waste selective collection, and participating in the implementation of some investment projects in the community, including sponsorship actions.
S	Operating costs	To reduce the risk of workplace injury, companies offer more training programs for employees, increasing operational costs. To increase the training level of the staff, opportunities were identified for qualification in trades such as plastic processing operator or confectioner, thus reducing the share of unqualified staff. Increasing the average number of training hours per employee generates additional costs.
	Working capital	Companies with increased ESG performances also have higher market credibility and viability, so they can operate with lower working capital requirements.
G	Taxes	Payment of additional fees as a result of the violation of certain regulations. Payment of fines imposed for possible incidents of bribery and corruption.

Source: authors' projection based on ROCE and TRP analyzed sustainability reports

ESG and the discount rate

In what concerns ESG items including in the discount rate, studies on the topic indicate two approaches (Woo, Tan, 2022):

Beta	**Alfa**
This entails the analysis of comparable companies, by incorporating aspects regarding ESG factors into the analyzing process, each factor being relevant to the industry in which the subject company activates.	This entails an incremental adjustment to the discount rate, as a completion to beta. Therefore, for a company that has a lower ESG score compared to its peers, the discount rate will be higher and vice versa.

The biggest challenge in what concerns putting into practice these methods is the quantification of the adjustment that has to be applied to the discount rate because there is limited research on what concerns this aspect.

3.2. The Market Approach

According to the IVS 150: Valuation approaches and methods, *„The market approach indicates value by comparing the asset with identical or comparable (that is similar) assets for which price information is available.”*

ESG and the identification of comparable companies. Because disclosing data regarding ESG performance is becoming a standard for public companies, the vast majority of the companies that become subject to valuation are private ones. Therefore, to include ESG variables into the valuation, experts must consider (Prall, IVSC 2021):

a)   identifying and assessing relevant ESG criteria for the comparable companies, activating in the same industry (understanding the size of the company, the geographic zone, the risks, the future development, the comparability of the business model, etc);

b)   appraise the performance of companies regarding the criteria that were mentioned above;

c)   calibrate the market inputs, such as the EBITDA multiple, to the analyzed company, to assess the relevant performance in comparison with the other peer companies.

As a completion to identifying the relevant comparable companies, in the valuation process by integrating ESG factors, there can be integrated adjusting through price multiples (Chan et al. 2021). The most commonly adopted price multiples are, price-

to-earnings ratio (P/E), price-to-book ratio (P/B), and enterprise value to EBITDA (EV/EBITDA). When looking at the previously mentioned price multiples, one can add a price premium to the companies which are good ESG performing, or opposite, apply a discount for the poorly ESG performing companies.

Discounts for Lack of Marketability should be applied when the comparable companies have a larger exposure on the market than the analyzed company (Pratt, Niculita, 2008). For example, the shares of a trading company on the stock market are more liquid, easier to transform into cash, and have smaller administrative and transaction costs than a private company, which has to go through several steps, and procedures to sell its stocks.

Control Premiums and Discounts for Lack of Control. (IVS 105: Valuation approaches and methods) are applied to reflect the differences between the analyzed company and the comparable companies, regarding their ability to make decisions. For instance, generally, the shares of public companies do not offer the ability to make decisions inside of that company, which means that they lack control.

4. Models applied in the analysis of correlations between company value and ESG variables

Researchers like Aydogmus et al. (2022), Egorova et al. (2021), Alareeni et al. (2022), Ionescu et al. (2019), Naeem et al. (2022) used modified versions of the Ohlson model (1995) to link the ESG factors to a business's value. Each of them used the same principle, the same formula that we presented below, modified in their way by adding several factors, in which way they managed to find answers and seek results: $FP = \beta_0 + \beta_1 ESG\_Score + \beta_2 Control\_variabiles + \varepsilon$.

Concerning the specific literature, a firm's performance (FP) is mainly calculated based on three dimensions: operational - ROA = Net income/Total Assets), financial - ROE = Net income/Equity, and market performance - Tobin's Q = (Equity market value + Liabilities market value)/ (Equity book value + Liabilities book value) (Alareeni, Hamdan, 2020), which are considered *dependent variables*, because according to other studies, they serve as proxies for the financial performance of corporations (Naeem et al., 2022). To include ESG in the calculation and to get a more precise visualization of the impact of ESG factors, the ESG Score is usually separated into three different sub-ESG scores, such as ENV (environment), SOC (social, also abbreviated as CSR) and GOV (governance). These are considered to be *independent variables*. Lastly, the formula usually also contains *control variables*, which are corporation characteristics, added into the formula to avoid biased assessments and to obtain the actual impact of ESG performance on a company's

value. A few of these control variables might be, the size of the firm, the ratio of cash dividend per share, the ratio of sales to average total assets, the relations with customers, suppliers, and many more.

Aydogmus et al. (2022) conducted a study on 1.720 companies from 2013 to 2021, and they used Tobin's Q and ROA as proxies for the company's FP (dependent variables). As for independent variables, they used four variables: ESG combined score (ESG_Score), Environment score (ENV), Social score (SOC), and Governance score (GOV). The control variables they chose are the company's Size (Log_TASST) and Leverage (TDTA). To assess the impact of each ESG factor, they developed eight models: the first four formulas use Tobin's Q as FP, individual ESG(1), ENV(2), SOC(3), GOV(4) scores, and both size and leverage for all four. In the following models, they used ROA as FP, individual ESG(5), ENV(6), SOC(7), GOV(8) scores, and both size and leverage for all four. The authors concluded that the ESG combined score, Social score, and Governance score have a highly significant correlation with the firm's value. However, the Environment score has no relationship with the firm's value, and they agree with the stakeholder's opinion to exclude the environment score from a business valuation.

Egorova et al. (2021) used only Tobin's Q as the company's FP indicator, and included ROA into the formula, along with the individual factors that provide ESG combined score (ENV, SOC, GOV). They applied their analysis of ESG factors to IT companies. Even if this study did not use actual data, the obtained results by Egorova et al. (2021) proved that ESG rating can positively affect the FP of IT companies. Therefore, most studies have shown that the companies that have higher ESG scores have better operating performance, and financial results, and investors have higher interests in them. Also, most of the studies found that the companies that are trying to initiate, develop and implement ESG components are increasing their position on the market and their value is increasing. Ionescu et al. (2019) conducted a study on 73 companies from the travel and tourism industry, from 2010 to 2015, grouped by country of origin in three regions: Europe, Asia, United States, and used Tobin's Q model presented above. The conclusions of these authors are the following: ENV presents a weak correlation with FP, except for the US companies, and even that is negative; the results for the SOC factor's influence are also negative because the costs of implementing social initiatives exceed the value of the obtained benefits; regarding the influence of the GOV factor, the study showed some inconsistencies, because it has a positive impact on the FP of US companies, and a negative impact on European, and Asian companies.

Also, in their study on the S&P 500 listed companies, from 2009 to 2018, Alareeni et al. (2022) used ROA, ROE, and Tobin's Q to mark a company's FP, as dependent

variables, ESG general score, ENV, SOC, and GOV, as independent variables, and for control variables, they used Firm Size (FS), Financial Leverage (FL), Asset Turnover (AT) and Asset Growth (AG). The authors concluded that ESG disclosure has a significant and positive impact on the company's operational, financial, and market performance. Results showed that companies with high disclosure levels of ESG, ENV, and SOC information have better financial, and operational performance (ROE and ROA) and companies with low lever disclosure of GOV have higher levels of ROA. However, the firm's market performance (Tobin Q) is better for companies that have low levels of ESG, ENV, SOC, and GOV disclosure. Naeem et al. (2022) used the same model as Alareeni et al (2022), except they did not use the overall ESG score, and only used the Firm's Size (FS) and Firm's Leverage as control variables, and also showed that the companies with higher ESG scores have positive and significant relationships with FP; higher ESG performance positively impacts profitability, and contributes to the increase in the market value of companies.

To contribute on the matter, we conducted a study on two Romanian companies, aiming to observe if the ESG score should be integrated into business valuation.

5. Data analysis and research design

The analyzed companies are Teraplast (TRP), and Romacarbon (ROCE). Both have the NACE code, 2221 – *Manufacturing of plates, foils, tubes, and profiles out of plastic material*. The purpose of the investigation is to examine if the ESG score affects the company's value, for the period 2020-2022. The study used a comparative analysis regarding the profitability, and market performance indicators followed by a correlation analysis between EV/EBITDA, and the ESG Score. Data was collected from **https://bvbresearch.ro/**. As far as we know, ESG reporting and disclosure in Romania is still in an early stage, so the publicly available data on ESG scores is limited.
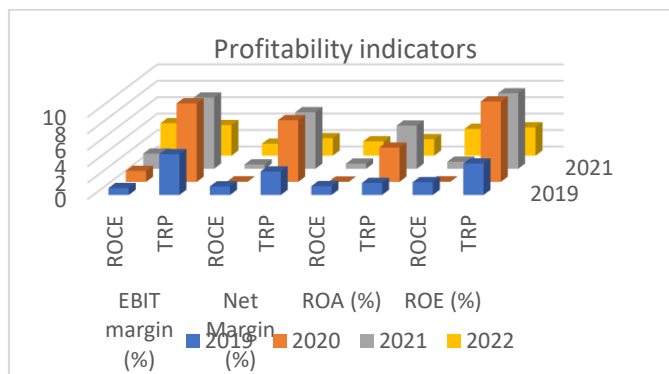
Figure 1: Dynamics of profitability indicators
Source: https://www.bvbresearch.ro/ReportDashboard/CapitalCube

The analysis of the profitability ratios under the period 2019-2021 indicated a higher performance of TRP company over ROCE. In terms of profit margin and relative capital efficiency, if in 2022, ROCE recorded an increase in value compared to previous years, then in the case of TRP, profitability is decreasing, therefore, the balancing value of profitability proxies for the analyzed companies analyzed is achievable. The market expects in case of TRP to grow faster, and the company to improve its current rentability.
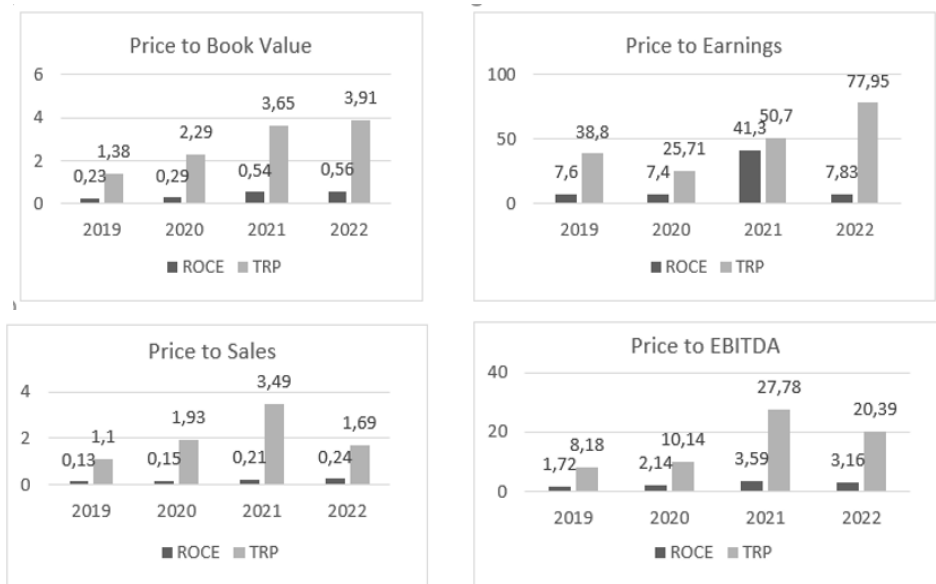
Figure 2: Dynamics of market multiples
Source: https://www.bvbresearch.ro/ReportDashboard/CapitalCube

Analyzing the evolution of market multiples that can be used in the enterprise's evaluation, TRP registers higher values than ROCE company. While ROCE shares are trading at a sub-unit Price to Book ratio, TRP shares are trading at a super-unit rate. The higher and rising P/E ratio values for TRP suggest superior growth expectations from the market, and the values of lower P/E ratios recorded by ROCE suggest that the market has some doubts about the company's long-term strategy. And the P/S and P/EBITDA multiples are higher in the case of the TRP company, but decrease in 2022.
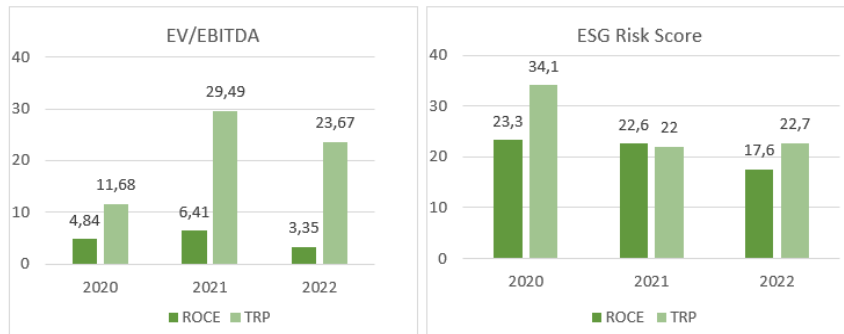
Figure 3: Comparative dynamics EV/EBITDA, ESG Risk Score
Source: https://www.bvbresearch.ro/ReportDashboard/CapitalCube

Where: EV (enterprise value) = Market Capitalization + Total Debt – Cash and cash equivalents; EBITDA - earnings before interest, taxes, depreciation, and amortization.

EV/EBIT ratio shows the multiplier of company value over the resources that a company generates regardless of its financial structure, tax rate, and depreciation policy. Thus, it determines whether the company incorporates more or less value than that directly related to the resources generated. If the ratio increases, it means that the company is generating fewer profits per unit of company value. ESG Risk Score measures the amplitude of unmanaged ESG risks by the company, with a lower score signifying a more limited extent of unmanaged ESG risks (https://bvbresearch.ro/ReportDashboard/CapitalCube). While the ESG Risk Score values registered by the two analyzed companies are relatively close, the EV/EBITDA ratio values are very different, much lower for ROCE. This could mean undervaluing ROCE stock or overvaluing TRP stock. In what concerns the TRP company, an increase in the EV/EBITDA ratio is associated with a decrease in the ESG risk score, then the decrease in the EV/EBITDA ratio is accompanied by a decrease in the ESG risk score, but in the case of ROCE, this correlation is valid only for the period 2020-2021, the next period recording a decrease in both the EV/EBITDA ratio and the ESG risk score.

6. Conclusions

As we found from reviewing the works on ESG factors integration into business valuation, lots of ongoing analysis can be found on the topic and whether is this going to become a new standard or not. Therefore, there are strong opinions that consider integrating ESG factors into business valuation necessary even regulators, and the Big 4 companies are trying to comply and find ways to make it possible. Two

main approaches have been used to value a business by integrating ESG items, the discounted cash flow and the modified Ohlson model.

The present study conducted on two Romanian companies from the same plastic materials industry, for the period 2020 to 2022, found that, overall, the company with a higher ESG score has better general performance, and is performing better on the market. However, because ESG is still a new concept in Romania, and measuring the ESG score is still a challenge, we think that Romanian companies should prepare more thoroughly ESG reports, and regulators should impose clearer ESG reporting and disclosure requirements, and ethics. This would allow agency ratings and other entities to provide correct and complete ESG scores, as investors and interested parties to have a complete view of a company's performance and academics, but also other researchers to conduct more relevant, valid, and up-to-date studies.

References

1. Alareeni, B.A. & Hamdan, A. (2022) "ESG impact on performance of US S&P 500 listed firms", *Corporate governance*, vol. 20, no. 7, pp. 1409-1428, DOI 10.1108/CG-06-2020-0258.

2. Aydogmuș M., Gulay G. & Ergun K. (2022) „Impact of ESG performance on firm value and profitability", *Borsa Istanbul Review*, Vol. 22, S2, pp. S119-S127, https://doi.org/10.1016/j.bir.2022.11.006

3. Chan, K., Yeung, K. & Kong, A. (2021) „Unlocking ESG Opportunities: Explore how ESG impacts Business Value", JLL, Available: https://www.vrg.net/wp-content/uploads/2022/06/unlocking-esg-opportunies-explore-how-esg-impacts-en.pdf

4. Egorova, A., Grishunin, S., Karminsky, A. (2022) „The impact of ESG factors on the performance of Information Technology Companies", Procedia Computer Science, vol. 199, pp. 339-345, https://doi.org/10.1016/j.procs.2022.01.041

ESG reporting guidelines (2022) Available: https://m.bvb.ro/info/Rapoarte/Ghiduri/ESG_Reporting_Guidelines.pdf/ [28.03.2023]

5. Friede, G., Busch, T. & Bassen, A. (2015) „ESG and financial performance: aggregated evidence from more than 2000 empirical studies", Journal of Sustainable Finance & Investment, Vol. 5, No. 4, 210-233, http://dx.doi.org/10.1080/20430795.2015.1118917

6. Ionescu, H.G, Firoiu, D, Pirvu, R. & Vilan R.D. (2019) „The impact of ESG factors on market value of companies from travel and tourism industry", Technological and Economic Development of Economy, Vol 25, no. 5, pp. 820-849, DOI: https://doi.org/10.3846/tede.2019.10294

7. IVSC (2016) „IVS 105: *Valuation Approaches and Methods*", International Valuation Standards Council, Available: https://www.ivsc.org/wp-content/uploads/2021/10/IVS105ValuationApproaches.pdf

8. Naeem N., Cankaya S., Bildik R. (2022) „Does ESG performance affect the financial performance of environmentally sensitive industries? A comparison between emerging and

developed markets*"*, Borsa Istanbul Review, Vol. 22, S2, pp. S128-S140, https://doi.org/10.1016/j.bir.2022.11.014.

9. Petre S., Stoica R. & Ropotă D. (2021) *„Evaluarea din perspectiva factorilor ESG"*, *Valoarea, oriunde este ea*, Revista ANEVAR no. 30, 03.2021

10. Prall Kevin (2021) *„Perspectives Paper: ESG and business valuation"*, IVSC Perspectives Paper, Available: https://www.ivsc.org/wp-content/ uploads/ 2021/09/Perspectivespaper-ESGinBusinessValuation.pdf

11. Pratt, S. & Niculita A. (2008) *„Valuing a Business. The analysis and appraisal of closely held companies"*, Fifth edition, The McGraw-Hill Companies

12. Stănciulescu, E. & Vuță Mihai (2022) *„Raportarea nonfinanciară – element-cheie pentru afacerile din prezent şi din viitor"*, CECCAR Business Review, No. 10/2022, pp.3-8, DOI: http://dx.doi.org/10.37945/cbr.2022.10.01

13. Țîrlea, M.R & Birca I. (2022) *„Theoretical aspects on the use of discounted cash flows"*, *Univers Strategic*, No. 4(52), pp. 69-79, https://iss.ucdc.ro/revista-pdf/us52.pdf

14. Woo, L. & Tan, D. (2022) *„Considering ESG in business valuation",* Deloitte, Available: https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/ finance/sea-fa-esg-business.pdf [24.02.2023]

15. www.bvbresearch.ro [12.04.2023].

16. www.bvb.ro [01.04.2023]

AN EMPIRICAL ANALYSIS OF THE EFFECTS OF THE 2007-2008 FINANCIAL CRISIS ON CHANGES IN THE VALUE CREATION OF FIRMS IN THE FINANCIAL AND REAL ECONOMIES OF COUNTRIES WITH ANGLO-SAXON AND CONTINENTAL FINANCIAL SYSTEMS

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Abstract: *In writing this article, I would like to answer the question of how the determinants of company value vary across groups of countries and economies, and how the global financial crisis of 2007-2008 has influenced the mechanisms of these determinants. Are there differences in the impact of the crisis across the groups of countries and economies under study? In my study, I have tested the validity of my hypothesis using the available database, which I have developed in the light of the literature and my research objectives. After a theoretical review and a presentation of previous empirical research, I conducted independent statistical tests to answer my question. The structure of the article is as follows. First, I identify the determinants of firm value based on the major literatures I have reviewed. The next sectionis the empirical section, in which I describe the database used for my empirical investigation. After describing the panel regression model and the methodology used, I present the empirical tests carried out and their results, and finally I draw my conclusions. In my study, I do not seek to compare my results with those of existing, previously conducted research.*

1. Literature review

1.1. Creating value of the company

"The process of creating value is the acquisition, management and use of resources in order to produce value for the consumer." (Chikán and Demeter, 2006: 3)
Porter's (1998) value chain theory focuses on value creation. According to this

theory, all companies perform activities in order to create value. These activities can be divided into two broad categories, primary and secondary activities. Primary activities affect the quality and cost of production of the product/service and include inbound logistics, the production process, outbound logistics, marketing and sales, after-sales services. Secondary, supporting activities, which promote the efficiency of primary activities and improve business efficiency, include company infrastructure, human resource management, technology development and procurement.

1.2. Identifying the value creators

According to Rappaport (1998), the primary task of managers is to increase shareholder value, which they can achieve by setting strategy and operational performance criteria.

The shareholder value approach is considered universal, and can be used to analyse public and private limited companies, business units, strategies and product lines. The direct link between strategy and shareholder value analysis is illustrated by "converting" business strategy into the amount of money they generate. For operational managers, one of the most important results of a shareholder value- based analysis is that it helps to identify the activities that require the most attention in the operation of the company. The 7 financial value drivers of business value, which Rappaport (1998: 171) calls macro-level value drivers, are:

1. an increase in revenue,
2. the operating profit margin,
3. investment in fixed assets and
4. in current assets,
5. the corporate tax rate,
6. the cost of capital,
7. the length of growth period.

Accordingly, the main evaluation characteristics of the performance measurement system will be the returns of the shareholders at the corporate level, the shareholder's added value and value prediction indicators at the operational level, and the key value creation drivers at the lower organisational level (Rappaport 1998).

Copeland et al (1999) argue that the value of a firm is determined by its ability to generate cash flow and the return on cash flow on investment and refer to the factors that determine value as key value drivers. When comparing corporate performance indicators, they point out that there are two methods, the entity DCF model and the multi-year economic profit model, which meet the criteria of achieving a long-term perspective and capital intensity.

Damodaran (2006) identifies four approaches to evaluation:

(1)   discounted cash flow valuation, which focuses on the present value of expected future free cash flows and is the basis for all valuation methods;

(2)   relative valuation, which uses the price of similar assets as a basis for comparison;

(3)   option valuation, which is used to determine the value of assets with option features; and

(4)   the asset-based valuation model, which includes the liquidation value and the replacement value.

Fernandez (2007: 1) distinguishes the following methods of company evaluation:

1.   balance sheet-based, asset value type procedures;
2.   income type procedures based on the income statement;
3.   procedures based on goodwill;
4.   discounted cash flow based valuation;
5.   value added type methods;
6.   options.

Damodaran (2006: 406-407) presents two methods of free cash flow derivation. In one method, all cash flows that are due to the financiers of the firm are added together, i.e. free cash flows to equity attributable to owners, principal repayments due to creditors, interest expense and new borrowings, and preferred dividends due to preferred shareholders. The other method is to add up all cash flows before allocating them to the liability holders. The use of the latter seems to be simpler.

Damodaran (2006: 10) considers discounted cash flow valuation as the basis for all valuation methods, on which all other approaches are based. In order to understand and use either relative or option pricing models, we need to start with the DCF procedure.

To summarise the theoretical and practical lessons from the above sections, it can be concluded that, based on Porter's (1998) value chain theory - that is, that the purpose of a company's operations is to create value, and therefore the source of corporate value creation is operations - Rappaport's (1998) net of owner value and shareholder value maximisation - through which value creators can be identified, Copeland et al's (1999) key value drivers - which are value determinants closely linked to the firm's cash flow generating capacity - to Damodaran's (2006) valuation models - which are discounted cash flow based, relative and option valuation based, and asset based valuation models - there is a logical link between the processes. Based on all these theoretical insights, the value drivers of a company can be defined as follows:

I. **FCFF = EBIT ∗ (1 – T) − Net Capital Expenditures −**
Change in non cash Working Capital the free cash flow of a company, which is the amount of cash flow that is generated for an investor in the company. Since it is a complex value creator, it can be broken down into the following factors:
1. EBIT (Earnings Before Interest and Taxes)
2. T=Tax Rate, the marginal rate of corporate income tax
3. Reinvestment=   (Net Capital Expenditures + Change in non cash Working Capital), the additional investment which is the sum of the net capital outlay and the change in the working capital without cash

II. **Invested capital**
It means capital invested in the core activity.
4. Invested capital = Net working capital + Net tangible assets

III. **Return on invested capital**
5. ROIC (Return on Invested Capital): return on invested capital,

$$ROIC = \frac{EBIT(1-t)}{Invested\ Capital}$$

IV. **Net Margin**
6. Net Margin: profit margin, which is the ratio of net profit (profit after tax) to revenue: $Net\ Margin = Net\ Income\ /\ Sales$

V. **Cost of capital**
7. Market ROA: return on assets at market value, which I use as a proxy for WACC, Market ROA= $\frac{Net\ Income}{Market\ Values\ of\ Equity + Market\ Value\ of\ Debt}$

VI. **Sales growth rate**

1.3. The Anglo-Saxon vs. the Continental concept of value and financial system

There are a number of reasons for the widespread adoption of the ownership value theory in the world. The increasing liberalisation of markets, the rise of private capital and the information revolution have all contributed to the spread and widespread application of the theory (Black et al., 1999; Marján, 2004).

In the US, it has become fully accepted that managers maximise shareholder value. In Europe and Japan, however, all stakeholders, i.e. owners, consumer advocacy, customers, competitors, media, employees, political interest groups, environmentalists, suppliers, government and local communities are also given a high priority in analysis and evaluation (Freeman – McVea, 2005:193; Béresné and Maklári, 2021).

Copeland and colleagues (1999) cite the different ownership structures in countries, the way in which ownership is controlled, the legal form of firms, and the

concentration of capital resources as reasons for the theories' practical application. In the US, public limited companies are characterised by fully fragmented ownership, whereas in Europe ownership is in the hands of several large corporations, banks, families, companies are private and cross-ownership between companies is not uncommon.

We need to distinguish between Anglo-Saxon and continental concepts of value. The source of the differences is primarily the different financial systems (Black et al., 1999; Sulyok-Pap, 1998).

Vigvári (2011) traces the emergence of different financial systems back to the 18th and 19th centuries. He sees the reason for the differences in the proportion of external and internal sources involved in financing corporate activity, on the one hand, and in the corporate governance instruments determined by the way in which financing is provided, on the other. The literature uses the terms external and internal management systems to describe the two types of corporate governance, and direct and indirect financing to describe the method of financing. Direct, i.e. securities-based, financing is the external form of management, which is typically predominant in Anglo-Saxon countries, where investors exercise control over management through the capital markets. The internal management system, where control over management is exercised by the stakeholder with several internal interests, and which is characterised by indirect financing through banks, is mostly observed in companies in Japanese and continental European countries. In practice, none of these forms of governance exists in a pure form. The two extremes are the macroeconomic environment and the scope of the company's activities, which are the determinants of investment. The state also plays an important role in taxation, regulation and subsidies (Vigvári, 2011: 160-163).

During the 1990s, the securitisation process advanced to the point where US financial intermediation became "market-centric" as opposed to "bank-centric" on the continent. The exponential growth of the derivatives market has played a decisive role in this process. For banks, securitisation means that securities have become more important as assets, bank assets are more marketable, bank liabilities can be off-balance sheet, and the stability and transparency of the lender-debtor relationship is reduced (Lamfalussy, 2008: 85-86).

In the United States and the United Kingdom we find large and liquid capital markets, the vast majority of investors are institutional investors, competition in the markets is very important, and the key role in financing is not played by banks but by the capital market. The company is therefore worth what it exchanges hands for on the market. It is the real market price category that is decisive, and this is established if the right information is available. There is also the category of intrinsic

value, which is not always the same as the market value, as the market does not have complete information. The difference exists only in the short run, in the long run the intrinsic value and the market value are the same (Ligeti and Sulyok-Pap (eds.), 2006)

Capital markets in continental Europe and Japan are smaller and less liquid, with the majority of shares concentrated in the hands of banks, governments and families. In business, the relationship of trust and professional experience between banks and companies plays an important role. Due to the strong state involvement, the German system is top-down, which is reflected in the valuation of companies, with the market playing little role in the valuation (Béresné, 2017) In continental Europe, company valuations are carried out exclusively by audit firms, while in the Anglo-Saxon countries, consultancy firms specialise in this task. (Nagy, 2016)

Accounting and tax rules are also reasons for the discrepancy. German companies are guided by the principle of prudence, while Anglo-Saxon companies are guided by the principles of fairness and equity. German legislation allows for the creation of hidden reserves, which means that the company pension fund remains a resource of the company, is included in the equity capital, increasing its value and affecting the valuation of the company. Anglo-Saxons thus have lower equity, while without reserves the Anglo-Saxon equity ratio is higher. The two views converge, but the differences do not disappear completely (Béresné, 2018).

2. Methodology

2.1. Introduce of the database

To prove the hypothesis of the research, I examine a database of 18 European countries, 10 sectors and 1553 companies for the period 2004-2011, which can be considered as a highly balanced panel with few missing observations. The database was downloaded from Aswath Damodaran's website and has undergone several transformations.

A characteristic of Damodaran's database is that it defines data in thousands of dollars rather than in the currency of the country, which makes it easy to compare companies. For the industry categories, he modifies the Capital IQ categorisation and creates one himself based on the Value Line categories, but this was not consistent over the whole study period. Therefore, I use the Global Industry Classification Standard (GICS) classification in force in 2014 to make the sector categorisation consistent.

For firm value, I used the firm value category, which is the sum of market

capitalization - the best estimate of the market value of equity - and market debt. Among the factors influencing firm value as a dependent variable, I selected the explanatory variables that are most determinant of firm value. In selecting the variables, I started from the context that the ability of a company to create value is determined by its ability to generate cash flow. The works of Rappaport (1998), Copeland and co-authors (1999), Damodaran (2006) agree that in identifying value creating factors, firms should focus on cash flows, profit margin, growth rate, capital employed, increasing return on capital employed, and reducing tax burden and cost of capital. My model is defined using a reduced set of value creators because there are many indicators to choose from to identify each value creator. In my model, I have sought to ensure that all explanatory variables have a significant relationship with the firm value, the dependent variable.

2.2. The model, the method used

I conducted my empirical research by specifying the panel model. The most sophisticated way to use time series and cross-sectional data together is to analyse the panel model, also known as longitudinal data. The panel model allows to observe the evolution over time (time series) of the characteristics (cross-sectional data) of the same companies, since panel databases contain data from several periods and several individuals (company, industry, country) in tabular form. This fact allows us to deal with effects that, in the case of the present model, may be firm-specific factors that we cannot measure and firm-specific variables that do not vary over time. (Ramanathan, 2003: 498-501)

After conducting the tests, as the next step in my empirical research, I defined a multivariate regression model of the following form:

$$
\begin{aligned}
LnFV_{i,t} = \alpha &+ \beta_{lnEBIT} lnEBIT_{i,t} + \beta_{tax} tax_{i,t} + \beta_{lnReinv} lnReinv_{i,t} \\
&+ \beta_{lnInvC} lnInvC_{i,t} + \beta_{ROIC} ROIC_{i,t} + \beta_{NetM} NetM_{i,t} \\
&+ \beta_{MROA} MROA_{i,t} + \beta_{dlnRev} dlnRev_{i,t} + u_{i,t} + \varepsilon_i
\end{aligned}
$$

2.3. Data processing and results

After the specification of the model, the analysis was performed using the statistical program STATA 11, which is suitable for statistical, econometric calculations and graphical visualizations.

For the empirical testing, I rearranged my panel database to examine the changes in the financial and real economy in the effect of the crisis. To do this, I divided the countries in the sample into two groups based on the type of financial system in the country. One group is Anglo-Saxon, which includes the United Kingdom and

Ireland, and the other group is continental financial system countries, which includes the other countries in the sample, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the Netherlands. The results are presented in Table 1.

Table 1: Results of panel regression between 2004 and 2011 in the financial and the real economy in the European countries with Anglo-Saxon and Continental financial systems

	Anglo-Saxon financial sector	Continental financial sector	Anglo-Saxon real economy	Continental real economy
	lnFirm_V	lnFirm_V	lnFirm_V	lnFirm_V
	Coefficients	Coefficients	Coefficients	Coefficients
lnFirm_V L1.	0.2297**	0.8122***	0.7757***	0.3682***
lnEBIT	0.3995***	0.0909*	0.1434***	0.3649***
Tax_r	-0.2985 ns.	-0.1695 ns.	-0.1309*	-0.2306***
lnReinv	0.2789***	-0.0015 nsz.	0.0226***	0.0596***
lnInv_C	-0.0731 nsz.	0.0276 ns.	0.0514***	0.1666***
ROIC	0.1350 ns.	-0.6648 ns.	0.0064 ns.	0.0221***
Net_M	**-1.4415****	**-0.0138****	0.1211 ns.	0.4065 ns.
MROA	-5.1564**	**0.9637***	-1.4377***	-2.0524***
dlnRev	0.2096*	0.0889**	0.1065***	0.3244***
Dummy of 2005	0.4041**	0.4421***	0.2767***	0.4066***
Dummy of 2006	0.2446 ns.	0.1601**	0.2862***	0.4727***
Dummy of 2007	0.1011 ns.	0.1647**	0.0237 ns.	0.2401***
Dummy of 2008	**-5.4447*****	**-0.8425***	**-1.0217*****	**-1.0270*****
Dummy of 2009	-0.1099 ns.	0.2025**	0.2899***	0.3619***
Dummy of 2010	-0.2602 ns.	0.2029**	0.1877***	0.3011***

Dummy of 2011	skipped	skipped	skipped	skipped
lnEBIT*2008 dummy	**-1.1198*****	-0.0569 ns.	0.0108 ns.	**-0.1482*****
Tax_r*2008 dummy	1.0596*	1.3510 nsz.	0.0106 ns.	0.1223 ns.
lnReinv*2008 dummy	0.7040***	-0.0404 ns.	-0.0126 ns.	**-0.0831*****
lnInv_C*2008 dummy	0.7914***	0.0922 ns.	0.0443 ns.	0.2699***
ROIC*2008 dummy	0.1106 ns.	**-6.6184****	0.3093***	0.5506***
Net_M*2008 dummy	-0.5846 ns.	-0.6572 ns.	-0.1428 ns.	0.2187 ns.
MROA*2008 dummy	16.2716***	16.5110 nsz.	**-1.7768*****	-0.4030 ns.
dlnRev*2008 dummy	**-0.0747***	0.1047 ns.	-0.0124 ns.	0.0270 ns.
_constants	3. 8870***	0.8126***	0.5443***	1.4883***
R^2 overall	0.9678	0.9719	0.9792	0.9553
R^2 within	0.9333	0.7116	0.6972	0.7872
R^2 between	0.9745	0.9909	0.9905	0.9686
Wald ($chí^2$)	10214.08***	103918.65***	79072.49***	68179.86***
Number of observations	166	144	1274	956

Source: own calculation

Note: At the levels of significances *** 1 %, ** 5 %, * a 10% respectively, ns not significant.

In the analysis of **the financial sector in the Anglo-Saxon countries**, the factors affecting the firm value are the previous period's firm value, LnEBIT, reinvestment and revenue growth rate, which have a positive impact, while the profit margin and return on assets at market value have a negative impact. The other explanatory variables have no impact on the response variable. Among the years, 2008 has the largest negative impact in these countries and in this sector, while the other years have a positive or no impact on the value. When analysing the cross effects, it can be seen that the dummy variables LnEBIT*2008 and the dummy variables Revenue growth*2008 have a negative impact, while the multiples of the tax rate, LnReinvestment, LnInvested capital and MROA by the dummy variable 2008 have

a positive impact on the value.

For the financial sector in Continental countries, among the factors affecting business value, the previous period's business value, LnEBIT, return on assets at market value and revenue growth are significant and have a positive effect, and the profit margin is also significant and has a negative effect. Tax rate, LnReinvestment, LnInvested capital and ROIC have no effect on the dependent variable. Among the years, the year 2008 has a negative impact, but to a lesser extent than for the Anglo-Saxons, while the other years have a positive impact on the business value. Looking at the cross effects, it is observed that the multiplication of ROIC by the year dummy variable 2008 has a negative effect on the value.

As regards the real economy in the Anglo-Saxon countries, among the factors affecting firm value, the previous period's firm value, LnEBIT, LnReinvestment, LnInvested capital and growth rate are significant and have a positive effect, and the tax rate and return on assets at market value are also significant and have a negative effect on value. The other explanatory variables have no effect on the dependent variable. Among the years, 2008 has a negative impact, the other years have a positive impact on the firm value. When analysing the cross effects, it is striking that the year dummy variable MROA*2008 has a negative effect, while the multiplication of ROIC by the year dummy variable 2008 has a positive effect on the value of the firm.

For the real economy in continental countries, the factors affecting firm value are the significant increase in the previous period's firm value, LnEBIT, LnReinvestment, LnInvested capital, ROIC and sales growth, with positive effects and negative effects for the tax rate and return on assets at market value. The profit margin does not affect the dependent variable. Among the years, 2008 has a negative impact, while the other years have a positive impact on the firm value. Looking at the cross effects, it can be seen that the year dummy LnEBIT*2008 and the year dummy LnReinvestment*2008 have a negative effect, while the multiples of LnInvested capital and ROIC by the year dummy 2008 have a positive effect on the firm.

Summarising the analysis of the changes in the financial and real sectors in the countries with the Anglo-Saxon and Continental financial systems in the effect of the crisis, I have found the following:

There is empirical evidence that the financial sector was more affected by the 2007-2008 crisis compared to the financial and real economy. Looking at the countries with the Anglo-Saxon and Continental financial systems separately, 2008 can be seen as the year of the crisis, both in the financial and the real economy. The downturn in the Anglo-Saxon countries was much more pronounced in the financial

sector, while the real economy was almost identical in the two groups of countries.

3.Conclusions

Overall, my hypothesis is only partially valid, as in my empirical investigation, firms in the real economies of the Anglo-Saxon and Continental financial systems experienced a similar decline in business values.

In my research above, I have also provided empirical evidence that the 2007-2008 crisis had a greater impact in the financial sector, comparing the financial and real economies. Looking at the countries with Anglo-Saxon and Continental financial systems separately, it can be said that 2008 can be considered the year of the crisis, both in the financial and the real economy. The downturn in the Anglo-Saxon countries was much more pronounced in the financial sector, while the real economy was almost identical in the two groups of countries.

References

1.Béresné, M., B. (2017): *A versenyképességet befolyásoló tényezők alakulása a visegrádi országokban, kiemelve a KKV-k szerepét és lehetőségeit*, Köztes Európa: Társadalomtudományi Folyóirat: A Vikek Közleményei, Vol. 21-22, No. 1, pp 281-290.

2.Béresné, M., B. (2018): *Sustainable Competitiveness of Hungary - Focusing on the Years 2013-2017*; Annals of the University of Oradea Economic Science, Vol. 27, No. 1, pp. 269-278.

3.Béresné, M., B. – Maklári, E. (2021): *Economic and social impacts of Covid-19 in the past year in the European Union, with the special reference to Romania and Hungary*, Annals of the University of Oradea Economic Science, Vol. 30, No. 1, pp. 285-292.

4.Black, A. – Wright, P. – Bachman, J. E. – Davies, J. (1999): *Részvényesi érték: az értékközpontú vállalatirányítás*, Közgazdasági és Jogi Könyvkiadó, Budapest

5.Chikán, A. and Demeter, K. (ed.) (2006) *Management of Value-Creating Processes,* Aula Kiadó, Budapest.

6.Copeland, T., Koller, T. and Murrin, J. (1999) *Business valuation. Value measurement and value maximizing management,* John Wiley & Sons Inc., - Panem Könyvkiadó Kft., Budapest.

7.Damodaran, A. (2006) *Valuation of investments. Methods and Procedures,* John Wiley & Sons Inc., - Panem Könyvkiadó Kft., Budapest.

8.Damodaran Database (2014) http://pages.stern.nyu.edu/~adamodar/, [31 Jan 2014].

9.Fernandez, P. [2007]: Company Valuation Methods. The Most Common Errors in Valuations. IESE Business School – University of Navarra, Working Paper, No. 449., https://notendur.hi.is/~ajonsson/kennsla2006/Valuation.pdf, [17 Sep 2014].

10.Freeman, R. E. – McVea, J. (2005): *A Stakeholder Approach to Strategic Management*,

In: Hitt, M. A. – Freeman, R. E. – Harrison J. S. (eds.) (2005): *The Blackwell Handbook of Strategic Management*, Blackwell Publishing Ltd, Oxford, pp 189-207.

11. Lámfalussy, S. (2008): *Pénzügyi válságok a fejlődő országokban*, Akadémiai Kiadó, Budapest

12. Ligeti, S. – Sulyok-Pap, M. (eds.) (2006): *Banküzemtan,* Tanszék Pénzügyi Tanácsadó és Szolgáltató Kft., Budapest

13. Marján, A. (2004): *Euró, pénzügyek, globalizáció. Az európai pénzügyi szektor metamorfózisa és az euro*, Savaria University Press, Szombathely

14. Nagy, T., O. (2016): *A humán erőforrás szerepe a versenyképességben,* Taylor: Gazdálkodás- és Szervezéstudományi Folyóirat: Virtuális Intézet Közép-Európa Kutatására Közleményei, Vol. 8, No. 26, pp 77-86

15. Porter, M.E. (1998) *Competitive Advantage: Creating and Sustaining Superior Performance: with a New Introduction*, The Free Press, New York.

16. Ramanathan, R. (2003) *Introduction to Econometrics with Applications,* Panem Book Publishing, Budapest.

17. Rappaport, A. (1998) *Creating shareholder value: a guide for managers and investors,* 2nd ed., The Free Press, New York.

18. Sulyok-Pap, M. (1998): *Lehetséges-e a vállalatelemzés nemzetközi összehasonlításban?* In: Bankról, pénzről, tőzsdéről. Válogatott előadások a Bankárképzőben, Nemzetközi Bankárképző Rt., pp 411-416.

19. Vigvári, A. (2011): *Pénzügy(renszer)tan*, Akadémiai Kiadó, Budapest

ARTIFICIAL INTELLIGENCE AND JOBS' FUTURE PROSPECTS IN ACCOUNTING AND FINANCIAL AUDITING

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Abstract: *Despite all controversies, the Artificial Intelligence (AI) continues its course in becoming more and more present in our world, with a huge perspective on modelling it. Using its capacity to assist various processes, it becomes a strong support of increased productivity being also perceived as a threat for jobs, professions and society as well. The aim of this qualitative research is to explore the how AI is perceived as impacting on jobs, and about future jobs' prospects in accounting, and financial auditing. We conducted a summary recent literature review regarding AI increasing use in audit and accounting. As existing hundreds of published papers on AI robots and human labour interaction, in the purpose of selecting relevant literature and for reaching to the mainstream consensual conclusions, input from three AI bots was used, as paper further describes. This paper is structured so readers may follow and further debate this issue around three research questions: are accounting, and financial auditing suited to be assisted by AI, what about existing jobs in this phase of AI usage, and what should happen next with professional's jobs as long as AI keeps spreading and developing? Conclusions of this explanatory – predictive research are aimed to support future accounting and financial auditing related educational initiatives in the context of AI development and pervasion, but also future research on more detailed aspects of interrelations with human increasingly adapted work.*

Keywords: *artificial intelligence; auditing; accounting; automation, human labour.*

JEL Classification: *M42; C87; H83.*

1. INTRODUCTION

AI has come a long way from science fiction stories in the last century to its capabilities now. Starting with ChatGBT, and its worldwide spread through Internet, AI quickly became a matter of public curiosity, debate and concern as well. Once it

became more communicative, AI could be tested and recognized for its benefits by hundreds of millions of people, both excited and concerned about what generative AI could become in the next period. Public reactions are diverse, from acceptance and use in day – to day work to denial and banning as effect of lack of appropriate domain regulation. Irrespective of the general public or administration opinion in AI related debates facts are for sure: there is a sound increase of number of AI related patents, of AI related investments and also number of AI related research, especially in the last ten years, US, Europe and China leading the global competition with more than a half of AI development related initiatives and investments in various domains. As stated in the Stanford University AI 2022 annual index (Zhang D., et al., 2022) the number of patents granted in AI related applications is about 24,000 in 2021 (39.59% US, 7.56% EU and UK, 5.9% China). According to the same source, global corporate investment in AI increased between 2015 and 2021 from 14.99 to 176.47 billion USD and in startup activities from about 10 to 93.5 billion USD in the same period. Considering this trend, the AI started to play a significant role in changing social environment and economic sectors, being felt in the last decade as increasingly participating in peoples individual and professional lives. As a part of economy, financial audit cannot stay aside from these new AI related tendencies. New developments are changing the profession, combined business intelligence and expert systems are now used to improve auditor's work, in terms of time, cost, accuracy and reliability. AI pervasion in accounting and audit (Zakaria, H. 2021), reveals new perspectives for profession, as long as auditing programs are more spread and more sophisticated in testing: transaction, account balances, internal control, selecting and selecting samples, performing analytical tests.

2. LITERATURE REVIEW

According to (Zhang D., et al., 2022) a large number of publications are presenting researchers conclusions on AI, reaching in 2021 at 334.500 written in English, most of them in journals and conferences. Domains are mostly pattern recognition, machine learning, computer vision, algorithm and human – computer interaction, the last being treated constantly in the last years, starting from about 5000 publications in 2015, constantly increasing to 9700 publications in 2021. Human labour displacement by AI, has been largely studied, discussed and generally accepted. From the thousands of published papers, we selected some that models the AI impact on human labour displacement, concluding on ways to manage the impact: education and specialization.

For example, human labour displacement was the conclusion of a very recent Goldman-Sachs Economics Research paper (Hatzius J., et al., 2023) and presented

as an advantage in increased GDP. Estimated human labour shortage as effect of automation is estimated as 300,000 full time jobs, only in the US. The alteration of job skills demand by introducing computer work was earlier studied (Autor et al. 2003) and the conclusion was that so called computer capital may displace workers in performing cognitive and manual tasks that can be accomplished by following explicit rules and also complements workers in performing nonroutine problem-solving and complex communications tasks. The article presented model developed by using data on task input from 1960 to 1998 may explain labour demand shift in favor of employees with increased education (college) in the same period, as long as nonroutine tasks demanding flexibility, creativity, generalized problem-solving capabilities and complex communication could only be complemented by the AI. In another study, (DeCanio S.J., 2016), refearing to the technological unemployment, as Keynes defined it almost a century ago, by adapting existing model of Houthakker (The Pareto Distribution and the Cobb-Douglas Production Function in Activity Analysis) proposed a model of production function depending on labour, robots (AI) and ordinary capital. He reached to the conclusion that if the elasticity of substitution between human and robotic labour in general is greater than 1.9, an influence on wages may be perceived. He concludes also that in the manufacture even a smaller elasticity may result in declining wages as robots proliferates. Workers have different levels of qualification, and some conclusions were added furthermore (Aginon P. et al, 2021), investments in robots are associated with shrinking employment for mid-skilled workers, but with increasing employment for low-skilled and high-skilled workers, notably managerial activities, as increased productivity leads by the way of increased profits to firms' development and expansion, so more activities are to be deployed and more labour force is thus neded. Increasing workers competencies is one of the conclusions of another research of the same authors (Aginon P. et al, 2020), suggesting so a suplementary training, targeting improving competencies of those who may be affected the most by the introduction and expansion of AI in manufacture enterprises. The same opinion on human labour displacement by AI robots in industry is comprised in another study (Jung J.H., Lim D.G., 2020) concluding that extensive use of industrial robots tends to suppress employment growth, confirming the labour-substituting effect by industrial robots; but in this study, complementary the conclusion of (Aginon P. et al, 2021), the researcher observed that labour displacement trend tends to affect more low-skilled labour. Nevertheless, markets are not infinite and increased productivity and profits superposed to reduced wages determined by technology development, started to arise concerns about social and economic interactions between winners and loosers, at both local and global levels. In a relevant study (Korinek A., Stiglitz J.E., 2018) the

authors insist on the fact that progress in AI is more likely to substitute the human labour, or even to replace workers outright than to simply complement some tasks or jobs. With this perspective benefits of entrepreneurs, as AI owners or users, considered as windfall gains should be redistributed in some way to workers having diminushed wages as effect of introducing and development of AI, otherwise the authors foresee resistance to AI from the society who are losing. In fact, they conclude that missyncronization of AI wich deevelopes rapidelly, with economy and society wich are changing in a slower pace, may be adjusted by the proposed model of gains redistribution. In later research (Korinek A. et al., 2021) the perspective is changed to a worldwide level, where AI is used mostly in some developed states by some so called "superstar firms" that are superprofitable arising profits from a monopoly position deriving from the own nature of this new technology whose algoritms are trained the most by using the large amount of data they acquired in time. This becomes a risk for emerging countries and economies, as the countries leading in the advance of AI reap most of the gains, displacing human labour from emerging countries whose economies are defined by exports of goods. According to researchers' conclusions, a crossborder mechanism redistribution of AI generated gains should than put in practice, and a new model of economic analysys should be used to describe the next 50 years of a new economy, dominated by AI and R&D. Analyzing data published on private investment, in the (Zhang D., et al., 2022), it can be easily identified where and who the biggest AI players are: the US, China, the EU, India and the UK. According to the same source, figures of 2021 on private investment in AI show a consolidating position of the three first players.

Being left behind, the EU sets as objective to gradually increase investments in AI to €20 billion per year in the course of this decade. According ECA (press release March 2023), less than 8% of EU firms are using AI, in a large interval from Denmark (24%) to Romania (1%).

As for accounting and auditing, (Hasan A. R., 2022) realized an up-to-date literature review available online, concluding that AI fits everything that can be turned up into data, and those related activities will be eventually taken over by the proper AI technology. Prospects of accounting proffesion are mention by (Hasan A. R., 2022) citing (Grifin O., 2019) as accountants have 95% chances of loosing their jobs as machines take over the number crunching and data analys. Farr from being alarming, the study conclusion is on adaptability, on the need on re-skilling, as long as predicted evolutions in AI use will modify the existing labour landscape. We also note that lack of some accountants' digital competencies mentioned in (Grosanu A., et al, 2022) and (Tiron – Tudor, A et al, 2022) might create major readjustment problems as long as AI pervades firmly accounting and audit's environment.

3. RESEARCH METHODOLOGY

This exploratory study is based on literature review of multiple researces, on information provided by AI bots, and on the author's observations. All these were oriented for answers to be formulated at the following research questions:

Is financial audit as a whole suited to be assisted by AI?

What about existing jobs in this phase of AI usage?

What should happen next with professional's jobs as long as AI is continuously spreading and developing?

Being largely qualitative, and subjective by its own nature, this study is based on observation and interpretation of early research conclusions on the above-mentioned aspects, as confirmed in some aspects by bots' responses.

In a theoretically approach, the study conclusions could build cases for further debates and new researches, as this paper objectives are to observe, interpret and to raise in debate the how use of AI will change financial audit as we know it today.

4. RESULTS AND DISCUSSIONS

As an interesting general study conclusion (Autor D, 2016), AI introduction and development induces both complementarity with, but also human labour displacement, pushing forward peoples for new specializations in supporting AI. Some say that AI usage may come with pressure on reduced wages or even job cuts. In the last decade AI impacted the US audit firms not by cuts of jobs, but acted as a catalyst to more specialists with new competencies.

Impacts of AI in accounting and audit are presented below for each of the instances the three research questions are referring to, conclusions being presented in the dedicated section as answers to the three mentioned questions.

4.1. Financial audit and AI.

As the Stanford University AI 2022 annual index states (Zhang D., et al., 2022), AI has been significantly adopted in service operation for Business, Legal and professional service and also financial services as well, with an adoption rate from 26 to 40%, meaning the AI bots are undoubtlly pervasing these industries. In this context, it seemd normal to ask a bot about general opinion on AI impact in auditing and accounting. By consulting Consensus bot, a meta-analysis conducted (Berdiyeva O, et al. 2021) on a database of 150 relevant papers published between 1989 and 2020 reveals itself, with a conclusion illustrate a strong positive effect of AI systems in the accounting and finance. The authors states that through their conclusions, most

studied authors agreed about increasing efficiency in the accounting process by adopting AI systems. The study found a positive effect on accounting performance while using AI. A consensus is so being recorded about the suitability of AI to financial audit. For instance, in (Abukhader S. M., 2020), citing (Siegel and Shim, 2010) a number of at least 53 tasks can be automated, and, as the qualitative study of (Abukhader, S. M., 2020) concludes, these tasks are perceived by accountants as suited for automation in different degrees. A similar conclusion was underlined by (Kokina J., Davenport T. H., 2017), after they decomposed audit tasks and identified among them the most structured ones. Their conclusion was that from identified 332 audit tasks representing six audit phases and 50 subphases, 131 (39%) are structured, so may be automatised. They concluded so that "Auditing is particularly suited for applications of data analytics and artificial intelligence because it has become challenging to incorporate the vast volumes of structured and unstructured data to gain insight regarding financial and nonfinancial performance of companies. Also, many audit tasks are structured and repetitive and, therefore, can be automated.". In another qualitative study, auditors' perception of the AI systems type (Assisted, Augmented, and Autonomous) contribution to audit quality has been examined (Albawwat I., Al Frijat Y., 2021). Conclusions were that Assisted and Augmented AI systems were better received than Autonomus, the last being indicate in the on-line questionaire as complicated to use.

By consulting a bot, the most relevant conclusion may be extracted on auditor's tasks that may be authomatized by AI bots and compared with (Abukhader S. M., 2020) conclusions, also citing (Siegel and Shim, 2010). Being questioned ChatGBT at 18th of April 2023, it indicates that several human activities related to audit are suited, according to its knolledge, for automation through the use of AI: data extraction and analysis, risk assessment, fraud detection, sampling, document review, compliance testing, adding short descriptions on what AI can do on these examples. The bot further indicates that AI platforms could help also auditors in performing analysis, such as: financial statement analysis, transaction testing, inventory testing, accounts receivable and payable analysis, offering also here a short description on AI intervention. The data returned by ChatGBT is consistent with the conclusions of previous presented papers (Abukhader S. M., 2020), and (Siegel and Shim, 2010).

Development and deployment of bots in audit and accounting is an ongoing process, the use of automation and technology increased over the past decade, many firms starting to use bots and other tools to automate routine tasks and improve the efficiency and accuracy of their work. These tools have been developed and refined over time, and their use continues to grow as firms look for ways to improve their

activities. Being questioned about existing bots in audit, ChatGBT delivered some examples: KPMG's Clara, EY's Helix, PwC's Aura, Deloitte's Argus, EY Tesseract. Development and deployment of bots in audit is an ongoing process, and it is expected that this will follow the general pace of the AI industry, associated with increased concern on AI ethics, meaning data privacy, confidentiality, automation bias and accountability. As a response to these, IFAC published in 2022 some supporting materials stressing on the fact that auditors should continuaoslly respect the ISA, and should keep their professional skepticism, for example by asking themselves and the beneficiary how a new implemented AI platform works, the nature of the activities it performs and if it was sufficiently tested, or if is it fit for the activity is used for.

4.2. Influence of AI in accounting and auditing existing jobs.

Lots of predictions are made about human work displacement once with extending AI platforms in accounting and auditing. Some estimates (Frey C., Osborne M., 2017) shows 94% probability that AI will automate these jobs in the near future. Auditing profession exposure to AI is significant, but according to some studies (Law K., Shen M., 2020) citing (Brynjolfsson et al., 2018), auditing is in the bottom 20% of 964 occupations suitable for machine learning devices.

A consensus exists that AI is impacting audit and accounting activities, but in what extent is clear only about the past. A recent study (Fedyk A. et al., 2022) using a dataset comprising more than 310,000 resumes for the 36 largest audit firms in the US reveald that in the period 2010 – 2019 the total number of audit firms' employees doubled from 151,352 to 310,422. The accounting employees share decreased in the same period from 35,52 to 31,98% of total, as long as the share of AI specialized employees increased from 0.08 to 0.37%. It can be observed that in the 2010 – 2019 decade the need for accounting (tax and audit) decreased with 11% but the need for AI specialists in audti firms increased continousilly up to 462%. A significant increase is of share of consulting employees from 19.87 to 27.66%. Study's conclusions on labour effects on AI adoption are that AI is decreasing human error, while increasing the number of clients that can be handeled by an auditor, from 3 to 10. Introducing AI allowed audit firms to increase accounting employment in the same decade, as maintaining approximatelly the same number of audits annually. Nevertheless, the number of accountants increased in the industry with more than 45,000 people, representing 28.61% of the total employment in audit firms during the period 2010 – 2019. We may than conclude that introducing AI ment for the decade increase employment especially in AI related fields and other specialists, and also for accountants, seezing a tendency of reducing share of new employed

accountants in favour of other specialists and AI specialists. We also need to note that since automation is not an enemy of employment, it may pose a greater challenge for income distribution (Autor D. 2016).

4.3. AI impact on future developments for jobs in accounting and auditing

As we did before in this paper about AI implications in auditing, we searched for a bot opinion in the matter. Inspired by the (Frey C., Osborne M., 2017) model, a dedicated bot enthusiast delivered an instrument of estimation available online at: https://willrobotstakemyjob.com. Here, a pole is feeding the machine learning system wich traines a model having an R^2 of 0.9193. For assessing the suitability for automation, some attributes fed the system, such as: originality, creativity, persuasion, social perceptiveness, negociation, assisting and carried for others, coordination, and others for each profession labeled. As it functions at the date of this paper, the bot is offering an image about how the trained and continuously feed AI forsees the future of labelled proffesions in the US, among them the audit profession. As for auditors, the automation risk level bot returned is 71%, as the poling of more than 5,200 users estimated a 64%. As the two figures are relatively convergent, the conclusion is that auditing faces a significant threat for automation, as many of its task may be undertake by developing AI technology. Some attributes of the profession are yet difficult to automate: persuasion, social perceptiveness, negociation, originality, these ensuring a future for this profession.

Even if, as the history shows, after a new technology appear some professions may become irrelevant, others will develop later, to support and complement the new techonolgy. Low skilled accountants, responsible with entering data will certainly dissapear in less than one decade. As a number of recent studies concluded (Aginon P. et al, 2021), (Autor D. et al. 2003), (Griffin O., 2019), introducing AI will increase the need for more specialized employees, in order to use the new technology, to manage the data that bots can make available for users. Shortage in digitalisation knowledge or avoiding new technologies as (Grosanu A., et al, 2022) and (Tiron – Tudor, A et al, 2022) reveald in their studies, may have only the outcome of accounting and auditing firms' being marginalised and eventually followed by sacking their employees. As (Griffin O., 2019) cites "With more data available, the case load for judgement work is just going to increase. Do we expect repetitive work and jobs to go? We absolutely do. But an increase in AI and consulting work can help our clients to improve their businesses, too'' and "There is an expectation of rising demand for accounting businesses data analysts and business consultants in accountancy firms ". There are huge opportunities for making sense of data, whether that's corporate data or sustainability reporting,'''. As another recent study (Fedyk

A. et al., 2022) shows, in the last decade, the number of accountants in audit firms in the US (audit and tax included) increased in absolute figures, but decreased in relative ones in favour of more specialized employees.

However, soft skills, such as intuition, creativity, and communication, remain relevant in today's technological environment, if not some critical. As long as some parts of financial statements are subject to estimates, financial auditors cannot be exempted from audit procedures on such estimates, given their subjective nature. Even if, as AI pervades the profession, the auditor's role is reduced in terms of verification, it will increase about judgment, supervision, and insight. Thus, audits in the new technology's context will focus on systemic evaluation, risk assessment, predictive auditing, and fraud detection (Kroon, N. et al, 2021).

As the bot itself indicates, using the large amount of data it was trained on (ChatGBT), auditors should focus on developing skills in areas such as data analytics, machine learning, and programming languages such as Python and R. They should also gain a deeper understanding of AI technologies and their applications in accounting and auditing. In addition, auditors should learn how to work with AI tools and platforms, and understand how to interpret and analyze the results generated by these technologies. Auditors should also focus on developing soft skills that are important in a data-driven environment, such as critical thinking, problem-solving, and communication. They should be able to communicate effectively with clients, colleagues, and other stakeholders about the use of AI technologies in audit, and be able to explain the results of AI-based analyses in a clear and understandable manner. Finally, auditors should stay up-to-date with the latest developments in AI and emerging technologies, and continuously update their skills and knowledge to remain competitive in the job market. This may involve participating in training programs, attending conferences and seminars, and engaging in other forms of professional development. Academia sould play a key role on this, by offering courses and programs specifically focused on AI adoption in accounting and audit, covering both the technical aspects of AI and the ethical and governance implications of its use, by incorporating AI topics into existing accounting and audit courses and programs, so that students being exposed to AI concepts and tools throughout their education, by providing hands-on training with AI tools and software, so that students gain practical experience with these technologies and are better prepared for their use in the workplace. Academia should partner with industry professionals and organizations to provide real-world case studies and examples of AI adoption in accounting & audit and should encourage research and development in AI adoption in accounting and audit, so that it can stay up-to-date with the latest advancements and best practices in the field.

In their study (Kokina J., Davenport T. H., 2017) presented also some ways accountant and auditor should assist the percourse of AI as remained tasks for accountants: "Working alongside intelligent accounting machines to monitor their performance and results, and (if possible) to improve their performance; Overseeing the use of intelligent machines in external and internal audit processes, and determining whether more, less, or different automation tools are necessary; Working with accounting firms and vendors to develop new AI-based technologies, and to support existing ones; Carrying out tasks that are now impossible with AI-based computers, including cultivating internal and external clients, interpreting audit and financial results for senior managers and boards of directors, and so forth; Addressing types of accounting tasks that are so narrow and uncommon that it would be uneconomical to build systems to automate them".

Going back to (Griffin O., 2019) "AI is what you make it, ... "If you are working in a practice that does a lot of bookkeeping and compliance work then you do need to realise that automation is coming. For some it might be that they are of an age where it doesn't particularly matter; they have enough clients and work to carry them forward. "If you are a younger accountant coming into the profession you need to understand what's going on and what's available to help you work alongside artificial intelligence."".

Following the presented above researchers and bots converging concusions, we may then also conclude that, correlated with the market demand, the number of skilled accountants in domains as: cybersecurity, data analitycs, forensinc accounting, risk management and fraud detection, using attributes that cannot be yet replicate by the AI, will continue to grow as long as traditional bookkeepers and number-crunching accountants will become history.

5. IN CONCLUSION

As a large-scale process in rapid development, introducing AI bots in various fields is mearly at its beginning, and all information that can be transformed into data will be eventually automatized. This will accordingly apply to audit and accounting, early relevant data being already collected and interpreted by various researches. By this research we found consistent literature conclusions with the data returnd by the bots of Consensus and ChatGBT. The Big 4 embraced AI and are already using their own platforms. Concerns on ethics were lately reveald, so IFAC is assisting auditors by delivering adequate approaches.

Audit and accounting are than fit to AI usage, AI is already there, so spreading AI is affecting and will further affect the profession and jobs. (Conclusion no.1).

Even if a large number of researches are concluding that in general automatization brought by AI bots will displace human labour, as regarding labour in the US audit firms, the facts registered in the last decade shows exactly the opposite, the number of accountants increased significantly, but with much lower share than of other specialists, including AI specialists. This means that in the market, even after AI was introduced, a real need was felt of increased traditional human labour force (accountants) but also a strong need of complementary specialization for accountants and auditors, matherialized in new jobs for these new specializations. (Conclusion no.2).

There is no reason to consider there are factors that will dissrupt the accounting and auditing activities in the years to come, apart for acceleration in adopting AI. Relativelly increased share of other specialists and AI specialists employed in audit firms in the last decade indicates that those firms needed complementary skills, apart from the those of classical accounting, meaning specialization of accountants in complementary fields was expected and will probabilly be expected in the years to come. Academia has a role to play in preparing existent and future accountants in identified related competence fields by shaping its curricula, in partnership with the continuously evolving industry.

Tomorrow's professionals will have to leave to AI more and more of the present repetitive tasks for new ones, in which will put in value human occupational attributes that cannot be replicate by the AI as its evolutory stage increases, such as: persuasion, social perceptiveness, negociation, originality, creativity, empaty, communication, obviously supported by strong digital skills. In this way human labour, acting complementary with the AI platforms will be able to add long term value, to accounting and audit. (Conclusion no.3).

As a sumarized conclusion of this paper, we may consider that in the coming years AI will reshape the profession, pushing forward stakeholders to evoluate: accountants and auditors to acquire new and context-appropriate skills, Academia to adjust its curricula to AI pervasion, to deliver new specialization to students and graduates as well, and the regulators to adopt appropriate modifications of the standards and to adopt regulations as response to the identified risks on AI use. As long as economic activities continue, there will also be a need for specialized auditing and accounting services, and in the trend of the last decade, this will mean, as a whole, more specialization rather than less labour or job cuts for accountants and auditors. Wages in the industry will increase as the human labour specialization will assist AI continuous pervasion. Concern for aquiring new knowledge, and continuous specialization will define the future successful accountant, enabling him to keep the pace in assisting AI expert systems along their becoming, from repetitive

task automation, through context analysis and learning, to self-aware intelligence. As regarding concerns about human labour displacement by the AI, we consider that final conclusion of (Autor D, 2016) citing the economist, computer scientist and Nobel laureate, Herbert A. Simon: "The bogeyman of automation consumes worrying capacity that should be saved for real problems" is as valid now as it was when innitialy stated in 1960.

References

1. Abukhader, S.M. (2020) *'Extent of artificial intelligence into accounting and auditing work – an analytical attempt of job and duties'*, Int. J. Business Process Integration and Management, Vol. 10, No. 2, pp.125–136, DOI: 10.1504/IJBPIM.2021.10037973

2. Aginon P., Antonine C., Bunel S., Jaravel X, *„What Are the Labour and Product Market Effects of Automation? New Evidence from France"* Working paper 2020 https://scholar.harvard.edu/sites/scholar.harvard.edu/files/aghion/files/what_are_the_labour_and_product_market_effects_of_automation_dec_2021.pdf

3. Aginon P., Antonine C., Bunel S., Jaravel X, *„The Direct and Indirect Effects of Automation on Employment: A Survey of the Recent Literature"* Working paper 21 https://scholar.harvard.edu/files/aghion/files/direct_and_indirect_effects_of_automation.pdf

4. Albawwat I., Al Frijat Y., *„An analysis of auditors' perceptions towards artificial intelligence and its contribution to audit quality"* Accounting 7 (2021) 755–762, DOI:10.5267/j.ac.2021.2.009

5. Autor D., Levy F, Murnane R.J.,*"The skill content of recent technological change: an empirical exploration"*, Oxford Academic, The Quarterly Journal of Economics, Volume 118, Issue 4, November 2003, Pages 1279–1333, https://doi.org/10.1162/003355303322552801

6. Autor D., 2016, *„Why are there still so many jobs? The history and future of workplace automation and anxiety"*, MIT, IDE RESEARCH BRIEF VOL. 2016.07, https://ide.mit.edu/sites/default/files/publications/IDE_Research_Brief_v07.pdf

7. Berdiyeva O, Islam M.U. Saeedi M, 2021 *„Artificial Intelligence in Accounting and Finance: Meta-Analysis"* International Business Review, 2021, https://www.researchgate.net/publication/353641654_Artificial_Intelligence_in_Accounting_and_Finance_Meta-Analysis

8. Brynjolfsson E., Mitchell T., Rock D., 2018. *„What Can Machines Learn, and What Does It Mean for Occupations and the Economy?"* AEA Papers and Proceedings 108: 43–47, DOI: 10.1257/pandp.20181019

9. DeCanio S.J., *„Robots and humans – complements or substitutes? "*, Journal of Macroeconomics no. 49 (2016), Pages 280 – 291, https://www.sciencedirect.com/science/article/pii/S016407041630043X

10. Fedyk A., Hodson J., Khimich N.V., Fedyk T., 2022 „*Is artificial intelligence improving the audit process?"* Review of Accounting Studies (2022) https://link.springer.com/content/pdf/10.1007/s11142-022-09697-x.pdf

11. Frey C. Osborne M., „*The future of employment: How susceptible are jobs to computerisation?",* 2017, Technological Forecasting and Social Change, 114: https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

12. Grifin O., „*How Artificial Intelligence Will Impact Accounting"* Economia, 2019: https://www.icaew.com/technical/technology/artificial-intelligence/artificial-intelligence-articles/how-artificial-intelligence-will-impact-accounting

13. Grosanu A., Fulop M.-T., Cordos G. S., Raita G., „*Challenges and Trends for the Incorporation of Big Data in the Accounting Profession: From the Traditional Approach to the Future Professional Accountant"* CECCAR Business Review, No 12/2020, pp. 64-72, DOI: http://dx.doi.org/10.37945/cbr.2020.12.08

14. Hasan A. R., „*Artificial Intelligence in Accounting & Auditing: a Literature Review",* Open Journal of Business and Management, 10, 440-465. https://doi.org/10.4236/ojbm.2022.101026

15. Hatzius J., Briggs J., Kodnani D., Pierdomenico J. (2023) „*The Potentially Large Effects of Artificial Intelligence on Economic Growth (Briggs/Kodnani)"*, Goldman Sachs Economics Research, published at 23.03.2023, https://www.key4biz.it/wp-content/uploads/2023/03/Global-Economics-Analyst_-The-Potentially-Large-Effects-of-Artificial-Intelligence-on-Economic-Growth-Briggs_Kodnani.pdf

16. Jung J.H., Lim D.G., „*Industrial robots, employment growth, and labour cost: A simultaneous equation analysis"* Elsevier, Technological Forecasting & Social Change 159, 120202, 2020, https://www.sciencedirect.com/science/article/pii/S0040162520310283

17. Kokina J., Davenport T. H., „*The Emergence of Artificial Intelligence: How Automation is Changing Auditing"*, Journal of Emerging Technologies in Accounting (2017) 14 (1): 115–122.
https://www.researchgate.net/publication/315955305_The_Emergence_of_Artificial_Intelligence_How_Automation_is_Changing_Auditing

18. Korinek A., Schindler M., Stiglitz J. E., 2021, „*Technological Progress, Artificial Intelligence, and Inclusive Growth"*, International Monetary Fund Working Paper: https://www.elibrary.imf.org/view/journals/001/2021/166/article-A001-en.xml

19. Korinek A., Stiglitz J. E., 2018 „*Artificial Intelligence and Its Implications for Income Distribution and Unemployment"* NBER Chapters, in: The Economics of Artificial Intelligence: An Agenda, pages 349-390, National Bureau of Economic Research, Inc.: https://www.nber.org/system/files/chapters/c14018/c14018.pdf

20. Kroon, N.; Alves, M.d.C.; Martins, I. The Impacts of Emerging Technologies on Accountants' Role and Skills: Connecting to Open Innovation—A Systematic Literature Review. J. Open Innov. Technol. Mark. Complex. 2021, 7, 163. https://doi.org/10.3390/joitmc7030163

21. Law K., Shen M., 2020 „*How Does Artificial Intelligence Shape the Audit Industry?"* Nanyang Business School Research Paper, 2020, https://dx.doi.org/10.2139/ssrn.3718343

22. Daniel Zhang, Nestor Maslej, Erik Brynjolfsson, John Etchemendy, Terah Lyons, James Manyika, Helen Ngo, Juan Carlos Niebles, Michael Sellitto, Ellie Sakhaee, Yoav Shoham, Jack Clark, and Raymond Perrault, (Zhang D., et al., 2022) "*The AI Index 2022 Annual Report*" AI Index Steering Committee, Stanford Institute for Human-Centered AI, March 2022, https://aiindex.stanford.edu/wp-content/uploads/2022/03/2022-AI-Index-Report_Master.pdf

23. Siegel J. G., Shim J.K. „*Accounting Handbook*", 5th edition, Barrons Educational Series, 2010, ISBN 0764162705, 2010

24. Tiron-Tudor, A.; Dontu, A.N.; Bresfelean, V.P. „Emerging Technologies' Contribution to the Digital Transformation in Accountancy Firms". Electronics 2022, 11, 3818. https://doi.org/10.3390/electronics11223818

25. Zakaria, H. (2021). The Use of Artificial Intelligence in E-Accounting Audit. In: Hamdan, A., Hassanien, A.E., Razzaque, A., Alareeni, B. (eds) The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success. Studies in Computational Intelligence, vol 935. Springer, Cham. https://doi.org/10.1007/978-3-030-62796-6_20

THE ROLE OF FEMALE ENTREPRENEURSHIP IN DEVELOPING COUNTRIES (SYRIAN WOMEN ENTREPRENEURSHIP AS A LIFESTYLE)

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Abstract: *This study examines the effect of female business projects and their impact on women's economic and social empowerment through increasing women's contribution to income, their role in family decision-making, improving their standard of living, self-esteem, and self-confidence, eliminating poverty and unemployment that rural women suffer from.*
The gender gap in entrepreneurship persists despite the increasing number of public policies and institutional resources intended to promote women-led enterprises. A qualitative method was used to review the literature related to Women Entrepreneurship in Syria.
The economic contribution of women in Syria is characterized by its diversity between agriculture, trade, and government jobs. However, the Syrian crisis has heavily affected the level of entrepreneurship. Data shows that the business performance index decreased to 41.6% in 2018, making Syria rank 174 out of 190 countries surveyed. Even though Syria has witnessed a great improvement in the level of women's development in parallel with the development of the level of women's education and their entry into the labour market within the public and private sectors alike, still the most recent Gender Empowerment Measure (GEM) shows the relative gender gap in entrepreneurship index rate is currently at 0.2. The percentage of entrepreneurship was limited to 1% of working women, compared to 4.9% of men, meaning there are approximately five male entrepreneurs for every female entrepreneur which clearly highlight the need for support.

Keywords: Social *Entrepreneurship; Female Entrepreneurship; Sustainable Development Goals.*

JEL Classification: Q01; L31; L26

1. Introduction

The United Nations Sustainable Development Goals (SDGs) advocated the application of a gender perspective equal treatment as part of sustainable development strategies, while decreasing inequalities, prioritizing equality, and averting bias (SDGs 5 and 10, respectively). Thus, many key players, including governments, non-profit organizations, and researchers, possess an interest regarding promoting the development of entrepreneurial ecosystems (Herrington and Kew, 2017).

However, the growth of women's entrepreneurship has lagged that of men in many developed countries and in most developing countries. Therefore, understanding the current and potential barriers women entrepreneurs face is important to increasing their participation in entrepreneurial activities.

Syria, like other Arab countries, sought to carry out broad reforms to promote and develop women's projects, remove the obstacles they might face and work to help, finance and support them, even though those reforms represent a small percentage. This was demonstrated by the establishment of many national agencies that support it (Unemployment Control Commission, 2003).

Entrepreneurship is one of the strategies and mechanisms for the economic and social empowerment of women in Syria (Ayoub, 2010). This was adopted within the sustainable development strategy in Syria launched in 2019, which emphasized the need to achieve gender equality and empowerment for all women and girls in the fifth goal by 2030 (General Commission for Family Affairs and Housing, 2020).

The rate of women's contribution to economic activity in Syria is about 12-13%, and they contribute 20% of the Syrian labor force, as the participation of Syrian women in the labor force is evidence of their development. This percentage varied between economic sectors, as it rose significantly in the commercial and service sectors by 31 and 30 percent, respectively, while agriculture occupied the third place with only 27 percent (Central Bureau of Statistics, 2019).

Women's fields of work are limited in relation to men's fields of work, especially in the Arab world, and specifically in rural areas, based on the nature of rural women, their characteristic's, and their connection to work as a housewife (Firdous, Syrian Fund for Rural Development, 2003). Therefore, small projects are considered one of the most important options for women economic empowerment, and it is an appropriate opportunity for women to enter the field of entrepreneurship, which was the preserve of men only (General Federation of Trade Unions, 2003).

Where small projects provide an appropriate and proportionate environment for women, enabling them to join the economic participation and to be an effective member in the country's development, in addition to being a housewife and responsible for the affairs of her family, because any woman can set up a project from her home, without the need for a high budget for its establishment or a site to run. Those small projects have proven their effectiveness in the field of female's entrepreneurship (De Bruin et al. 2007; Pardo-del-Val, M. 2010).

2. Literature Review

Women's position as economic actors is frequently improved through the use of entrepreneurship and employment. Examples include microfinance, for which there is evidence of success, and the enhancement of women's living standards (Buvinic et al., 2013).

Many have voiced concerns about such programs, noting that they are typically small, with limited and infrequent returns (Casier, 2010; Chant, 2014; Sweetman). Others have noted that such work from home is frequently extremely difficult to attain because women lack the resources necessary for successful entrepreneurship, such as land, real estate, and other assets (Chant, 2007; Tamale, 2004).

In reality, there is no direct correlation between employment, economic empowerment, and gender equality. Real empowerment and equality continue to require gender-sensitive policies that address the multifaceted obstacles to gender equality in terms of personal and professional development and economic participation. For instance, economic empowerment should entail that women have complete control over their income (Duflo, 2012; Reshi & Sudha, 2023).

Thus, while it is generally acknowledged that women's paid employment is positively associated with poverty reduction and human growth and development, fragile contexts demonstrate that it is also positively associated with reduced gender inequality in societal beliefs (Lechman & Popowska, 2021).

However, the absence of adequate legal protection measures remains a major factor in inequality and the constant pressure on women to seek employment in the informal sector, where the majority of their economic activities range from "domestic or socially necessary work" to volunteer work (cash is rarely exchanged and there are no regulatory institutions) to "shadow and irregular" secondary activities, where some form of enterprise and pressure is expected, but regulation is either non-existent or ineffective (Al-Ali and Pratt, 2009: 47).

Entrepreneurship among women has both an economic and a social impact. In addition to the general benefits of entrepreneurship, such as economic development, growth, and employment creation, women entrepreneurs also experience empowerment, emancipation, and self-realization as a result of their activism. In addition, it is the first step toward economic independence for many women (Raman et al.2022).

Although women and men enter the field of entrepreneurship for similar reasons, their motivations for doing so vary greatly. Women entrepreneurs appear to be more motivated to enter the field of entrepreneurship by desires and expectations, such as advancing their professional development, establishing their own business, or administering and controlling their work environment. As an alternative to, say, unemployment, males appear to be more likely to enter business for power-related motives (Sarri & Trihopoulou. 2005).

The obstacles women identify to becoming entrepreneurs and the bariers they encounter on their entrepreneurial journey differ from those men identify. Consequently, women encounter more personal obstacles to entrepreneurship, such as a lack of specific training, a low level of self-confidence, a lack of access to social and business networks, or a lack of motivation due to difficulties reconciling work and family life. (Brindley, 2005). Male entrepreneurs place a greater emphasis on external obstacles, such as access to capital, absence of support, and bureaucracy.

Women's views on enabling factors that are beneficial to entrepreneurship differ from that of men (Xheneti et al. 2019). Women are seen to be more intrigued in strategies designed to boost their individual assets and enhance their abilities and skills (training programs, entrepreneurship education, and self-confidence-boosting measures), whereas men show up to be more interested in personalized assistance, such as access to financial resources or advisory services.

Women's entrepreneurship is propelled from within, whereas men's is driven from without. This unique approach must be taken into account during the planning and development of entrepreneurial-supportive policies.

On the basis of these distinctions, institutional conditions must be enhanced. Given that women and men are affected by various factors, it is crucial to strengthen gender-sensitive frameworks in order to encourage entrepreneurship. The male-centric structure is externally focused, whereas the female-centric support system is inwardly focused. In this second framework, actions such as promoting successful women entrepreneurs as role models, mentoring, and reaching out to networks are particularly useful. In addition, the short- and medium-term effects of these actions can be anticipated to be enhanced. Finally, particular procedures can be

implemented to guarantee that one's own desires do not impede entrepreneurial endeavours.

3. Research Problem and Data Gathering

Female entrepreneurship in Syria is still considered a small portion of the total business sector, as women's economic contribution is often concentrated in the governmental or private sector. This indicates the weak financial independence of women and their low competitiveness in the business market, which is dominated by masculine nature.

The research problem is based on a general hypothesis build on the women's weak role in contributing to income improvement, obtaining productive resources, and financing services because of the lack of interest in female entrepreneurship, as well as their low level of education, and the lack of practical experience, due to the presence of traditions restricting women's work, and thus not benefiting from their capability as an active force in achieving economic growth.

Women struggles' have increased recently, which are added to their basic role as a housewife, considering the decrease in the local labor force due to the increase in emigration and the involvement of a large proportion of male in military service, in addition to the economic instability pressures in general, which all prompted an increase in the contribution of women alongside with men to jointly bear the financial responsibilities of the family. Therefore, they had to work, earn, or create additional sources of income for the family.

Generally, collected data on entrepreneurial and other projects in Syria is very limited, especially in the absence of registered data for projects within the private sector in the Ministry of Social Affairs and Labor (MOSAL) (ILO, 2014).

Therefore, the data collection process in this field includes various secondary sources, the most important of which are the Central Bureau of Statistics and the International Labor Organization.

4. Results and Discussion

4.1. Syrian's Women Entrepreneurship Reality

The concept of Syrian female entrepreneurship is relatively new in the Syrian literature, as this concept has not received sufficient attention at the level of academic studies.

Although there are some legislations that focus on empowering women, the term entrepreneurship was absent in these legislations that focused on economic empowerment in general (Al-Mikdad et al, 2019).

On the practical level, the government's interest in female entrepreneurship has focused mainly on the small and micro-enterprise sector as a tool to combat poverty and achieve economic empowerment of women, especially rural women. Despite this, female entrepreneurship has developed more in urban areas than in rural areas, due to the lack of adequate infrastructure for entrepreneurship initiatives in rural areas in general.

4.2. Economic Empowerment and Women Entrepreneurship Indicators in Syria

As already mentioned, there are no local or domestic studies on the indicators and factors related to women's entrepreneurship in Syria. Rather, most studies are conducted by international centers and organizations in the context of international reports, such as the data of the International Labor Organization and the Central Bureau of Statistics in Syria.

4.2.1. Doing Business Index

It is the World Bank's ease of doing business index, which is an aggregate number that includes various criteria that determine the ease of doing business in a country. This index ranges from zero for the lowest ranking to 100 for the maximum ranking. According to the latest data recorded by the World Bank, it was found that Syria ranks late regarding the overall index of ease of doing business, as it ranked 174 out of 190 countries included in the questionnaire, as shown in Table (1), meaning that the evaluation of business performance in Syria is negative according to the World Bank indicator.

As is demonstrated in table (1), the negative performance is concentrated in the international trade and credit indices, while the Protecting Minority Investors index was relatively the best, as Syria ranked 89. Despite this, it is considered a low ranking and insufficient to attract investors.

	Global DBI Score	Starting a Business	Getting Credit	Protecting Minority Investors	Trading across Borders	Resolving Insolvency
DTF	41.6	80.4	15	53.3	29.8	21.4

Rank	174	133	173	89	176	163

Table 1: Doing Business Index: Global Score and Selected Pillars, Syria, 2018.

Source: ESCWA, complied from World Bank (2018) doingbusiness.org (190) countries were surveyed.

4.2.2. *Employment Status Indicators According to Gender*

The following indicators in Table (2) include the classification of the labor force in the economy and its distribution between males and females, where clearly we can see a large gender gap, with a large concentration of the labor force in the male category.

	Female	Male
labor force as % of working-age population	**7**	**36**
Labor force participation rate, (%)	14.3	74
Employment-to-population ratio (%)	11.3	69.5
Unemployment rate (%)	20.5	6
Own-account workers as % of total employment	7.8	34.9
Contributing family workers as % of total employment	7.2	2.3
Employers as % of total employment	1	4.9
Employees as % of total employment	84	58
Agriculture as % of total employment	10	
Industry as % of total employment estimates, Nov. 2019	26	
Services as % of total employment	63	

Table 2: Indicators of employment status between males and females in Syria for the year 2020.

Source: ILO Stat Data.

https://www.ilo.org/gateway/faces/home/ctryHome?locale=EN&countryCode=SYR&_adf.ctrl-state=ucxdxga52_9

According to the GEM index, the relative gender disparity in entrepreneurship is calculated by dividing the female entrepreneurship rate by the male entrepreneurship rate (Singh et al, 2002). Accordingly, the value of this gap reached 0.2 in Syria (meaning that there are approximately five male entrepreneurs for every businesswoman).

A high unemployment rate among women 20.5%, compared to only 6% among males was also notable. Whereas, most female workers (84%) are employed, which

reflects the low percentage of women entrepreneurs, as the percentage of entrepreneurship, was limited to 1% of working women, compared to 4.9% of men. On the other hand, the research notes a significant percentage (7.8%) of self-employed women (who work on their own without paid employees) compared to 34.9% for men, and this could be related to a decrease in entrepreneurship among women.

This is confirmed when compared to neighboring countries such as the Arab countries, where it was found that the percentage of self-employed women in the Arab world increased to 12.6% compared to 19.1% for men (ILO, 2018), which therefore reflects the low indicators of entrepreneurship among women in Syria in general.

This applies to the percentage of family-contributing workers, as this percentage reached 7.2% among working females, compared to 2.3% for males.

Generally, this percentage is considered relatively low compared to the average at the level of Arab countries, which is estimated at 3.8% and 12.6%, respectively (ILO, 2018).

The higher the ratio, the more likely it is to have weak development, weak job growth, widespread poverty, and often a largely rural economy. Whereas the ratio of self-employed and family workers is an indicator of the percentage of vulnerable employment. With the emphasis that the informal feature is the dominant feature that represents these two types of employment.

4.2.3. **Gender Entrepreneurship Indicators in Syria:**

As mentioned earlier, there is no recent official data available on Syrian entrepreneurship in general, and this is directly related to the Syrian crisis. According to the Global Entrepreneurship Research Association (GERA), the Adult Population Survey (APS) is carried out often and annually in most countries of the world to track global entrepreneurship (Global Entrepreneurship Monitor).

However, the Syrian data was limited to 2009, i.e. in the period prior to the crisis. Theoretically, they still represent the official trends in the field of entrepreneurship today, given that the political trends remain unchanged. However, in practice, most of these indicators have changed on the ground due to the economic crisis and the difficulty of securing the necessary success components of these projects.

For the sake of ease of interpretation, the average of each indicator of entrepreneurship in the Arab world was adopted for comparison with its corresponding value for Syria, as shown in Table (3).

The Annals of the University of Oradea. Economic Sciences

TOM XXXII, 1st Issue, July 2023

indicator	Description	Syria	Arab countries (Average)
Perceived opportunities	Percentage of 18-64 population who see good opportunities to start a firm in the area where they live	46.9	54.2
Perceived capabilities	Percentage of 18-64 population who believe they have the required skills and knowledge to start a business	62.1	61.9
Fear of failure rate *	Percentage of the 18-64 population who agree that they see good opportunities but would not start a business for fear it might fail. NOTE: this is a percentage of those seeing good opportunities, and not the total adult population	33.0	18.1
Entrepreneurial intentions	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years	30.7	54.0
Total early-stage Entrepreneurial Activity (TEA)	Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business	11.7	8.5
Established Business Ownership	Percentage of 18-64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months	8.5	6.7
Female/Male TEA	Percentage of female 18-64 population who are either a nascent entrepreneur or owner-manager of a new business, divided by the equivalent percentage for their male counterparts	0.4	0.2
High Job Creation Expectation	Percentage of those involved in TEA who expect to create 6 or more jobs in 5 years	30.5	35.1
High Status to Successful Entrepreneurs	Percentage of 18-64 population who agree with the statement that in their country, successful entrepreneurs receive high status	80.2	89.5
Entrepreneurship as a Good Career Choice	Percentage of 18-64 population who agree with the statement that in their country,	78.5	88.8

	most people consider starting a business as a desirable career choice		

Table 3: Syrian entrepreneurship indicators compared to the Arab region in 2009.
Source: Global Entrepreneurship Monitor https://www.gemconsortium.org/data/key-aps

It is shown from the table that Syria has a low ranking in most entrepreneurship indicators, especially regarding the indicator of fear of failure, as the percentage of this indicator rose to 33% in Syria compared to 18.1% as an average for the rest of the Arab world, which indicates a decline in the sense of confidence and security required to engage in entrepreneurial business in Syria.

This was also reflected in the decrease in the percentage of entrepreneurs who intend to start their own entrepreneurial experience by 30.7%, compared to 54%, on average for the rest of the Arab countries.

The research also notes a decrease in the percentage of Syrians who expect to create six or more jobs in five years, see a high status for successful businessmen or consider entrepreneurship as a good career option.

In contrast, the percentage of emerging entrepreneurs or older entrepreneurs (more than 3 years in entrepreneurship) in Syria increased to 11.7% and 8.6%, compared to about 8.5% and 6.7%, respectively, as an average for Arab countries, which indicates a rise in The desire to take risks among Syrian entrepreneurs compared to others, despite the circumstances of doubt and fear, they accept more in this field, and this is what can be classified within the concept of audacity and challenge.

As for gender entrepreneurship, the research notes that the number of female entrepreneurs (either emerging entrepreneurs or owners and managers of a new project) is equal to 0.4 of the number of male entrepreneurs. This percentage is about double the Arab average, which is considered a good indicator for female entrepreneurship in Syria,

Syria was ranked eighth in the Arab world in the Forbes list of the most powerful Arab businesswomen. As for the indicators related to the business environment adopted by the World Bank, there is a slight difference in the measurement of these indicators between men and women in Syria, as shown in Table (4).

	Start-up procedures to register a business (Number)	Cost of business start-up procedures, (% of GNI per capita)	Time required to start a business, female (days)
Male	7	8.10	15
Female	**8**	**8.10**	**16**

Table 4: Business environment indicators in Syria (male/female).
Source: Global Entrepreneurship Monitor https://data.albankaldawli.org/indicator

Despite these slight differences, women's participation in companies' ownership is considered very low, according to World Bank statistics for the year 2018, as Syria occupied a late rank among the countries of the Middle East and North Africa region, as shown in Figure (5).

It is evident from the figure that the companies in which women-owned shares in Syria were limited to 15% of the total companies surveyed.
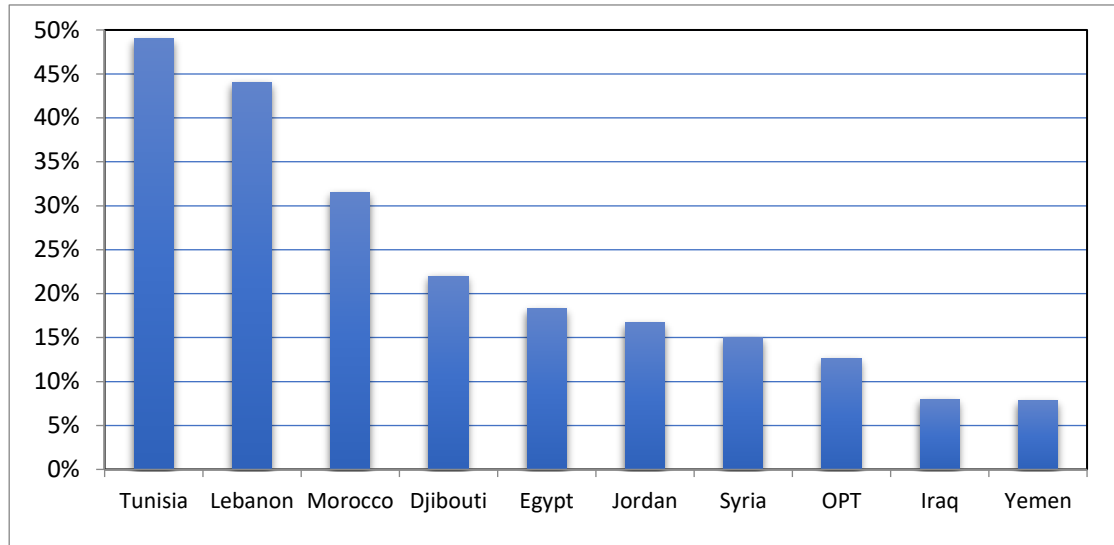
Table 5: Percentage of companies owned by women in the Middle East and North Africa (MENA) region.
Source: Word Bank, Enterprise Surveys (2018).

5. Conclusion

In conclusion, it was founded that the role of female entrepreneurs in Syria began to grow and develop because of the Syrian crisis. It seems that this growth was often driven by pressures rather than opportunities, especially with the increasing economic pressures on Syrian families and the decrease in paid employment opportunities.

However, the female entrepreneurship sector in Syria is currently facing many obstacles, especially those related to the business environment with the deterioration of business performance indicators. Whether for males or females and the deterioration of suitable conditions for investments pushes women's entrepreneurial projects towards the small or micro-enterprise sector, within traditional fields. It is related to the basic needs of the Syrian society.

The official or governmental interest in the field of female entrepreneurship does not exceed the general interest in the entrepreneurial environment. It often considers

female entrepreneurship as a form of self-employment for the purpose of creating self-employment opportunities and combating poverty, while this interest lacks a mechanism that supports and attracts female entrepreneurs whether through financing or regulating.

References

1. Al-Ali, N., & Pratt, N. (2009). What kind of liberation?: women and the occupation of Iraq. Univ of California Press.

2. Al-Mikdad Fayez Jadallah, Habib Wael Zaki and Al-Hassoun Hani Soleman (2019). Analytical Study of the Most Important Factors Affecting Empowerment of Rural Women in Daraa, Syria. Syrian Journal of Agricultural Researches (SIJIAR).Vol(6), No(3), sept 2019, P: 154-172. http://agri-research-journal.net/SjarEn/?tag=daraa

3. Brindley, C. (2005). Barriers to women achieving their entrepreneurial potential: Women and risk. *International Journal of Entrepreneurial Behavior & Research*.

4. Buecher, B., & Aniyamuzaala, J.R. (2016). Women, Work & War: Syrian Women and the Struggle to Survive Five Years of Conflict. CARE. Retrieved 03 18, 2017, from Care.

5. Buvinic, M., Furst-Nichols, R., & Pryor, E. C. (2013). A roadmap for promoting women's economic empowerment. *UN Foundation and ExxonMobil*.

6. Chant, S. H. (2007). Gender, generation and poverty: exploring the feminisation of poverty in Africa, Asia and Latin America. Edward Elgar Publishing.

7. De Bruin, A., Brush, C. G., & Welter, F. (2007). Advancing a framework for coherent research on women's entrepreneurship. Entrepreneurship theory and practice, 31(3), 323-339.

8. Duflo, E. (2012). Women empowerment and economic development. Journal of Economic literature, 50(4), 1051-1079.

9. Economic and Social Commission for Western Asia (ESCWA), 2019. Innovation and Entrepreneurship: Opportunities and Challenges for Arab Youth and Women. E/ESCWA/TDD/2019/TP.2.

10. Hambrick, Donald C. "The field of management's devotion to theory: Too much of a good thing?." Academy of management journal 50.6 (2007): 1346-1352.

11. Herrington, M., and P. Kew. 2017. Global Entrepreneurship Monitor (GEM) Global Report 2016/2017. Global Entrepreneurship Research Association (GERA), London, U.K.

12. ILO (2014). Labour Inspection in Arab States: Progress and Challenges / ILO Regional Office for Arab States = Beirut. ISBN 9789221292081 (web pdf). www.ilo.org/arabstates

13. ILO (2018), Constraints and Good Practices in Women's Entrepreneurship in MENA. Case study: New evidence on gender attitudes towards women in business. Taqueem Initiative: Impact Reports Series, Issue 10.

14. Lechman, E., & Popowska, M. (2022). Harnessing digital technologies for poverty reduction. Evidence for low-income and lower-middle income countries. Telecommunications Policy, 46(6), 102313.

15. Pardo-del-Val, M. (2010). Services supporting female entrepreneurs. The Service Industries Journal, 30(9), 1479-1498.

16. Raman, R., Subramaniam, N., Nair, V. K., Shivdas, A., Achuthan, K., & Nedungadi, P. (2022). Women entrepreneurship and sustainable development: bibliometric analysis and emerging research trends. *Sustainability*, *14*(15), 9160.

17. Reshi, I. A., & Sudha, T. (2023). Women's Economic Involvement and Self-Help Groups in the Pulwama District of Jammu and Kashmir. MORFAI JOURNAL, 2(4), 872-882.

18. Sarri, K., & Trihopoulou, A. (2005). Female entrepreneurs' personal characteristics and motivation: a review of the Greek situation. *Women in management review*, *20*(1), 24-36.

19. Tamale, S. (2004). Gender trauma in Africa: enhancing women's links to resources. Journal of African Law, 48(1), 50-61.

20. Xheneti, M., Madden, A., & Thapa Karki, S. (2019). Value of formalization for women entrepreneurs in developing contexts: A review and research agenda. *International Journal of Management Reviews*, *21*(1), 3-23.

21. Central Bureau of Statistics, 2019).

المكتب المركزي للإحصاء (2014) و(2019). المجموعة الإحصائية العامة. رئاسة مجلس الوزراء، دمشق، سورية. السوري، الريف في النساء وتأثيراتها على الصغر المتناهية للمشاريع الاجتماعية رائدة (2010). الجدوى أيوب، كلمنس، سورية سانت جامعة

22.General Commission for Family Affairs and Housing, 2020)

1.الهيئة العامة لشؤون الأسرة والإسكان (2020). التقرير الوطني للجمهورية العربية السورية، بيجين 25.

23. المللي قمر (2015). المعوقات التمويلية للمشروعات الصغيرة والمتوسطة. **أطروحة مقدمة لنيل درجة الماجستير في العلوم المالية والمصرفية. كلية الاقتصاد، قسم المصارف والتأمين، جامعة دمشق.**

24.(Firdous, Syrian Fund for Rural Development, 2003)

الصندوق السوري لتنمية الريف (فردوس) (2003). ورقة مقدمة إلى منتدى المرأة والتربية في سورية، دمشق.

RUSSIAN INVASION IN UKRAINE: CHALLENGES AND IMPLICATIONS FOR FOOD SECURITY

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Abstract: *In a global framework disrupted by instability and conflict, both from a social and economic perspective, the primary human needs of the populations are the ones that the policy makers and researchers should keep at the top of their agenda. Therefore, the problem of food security worldwide imposes itself as a very stringent aspect to take into account when evaluating the implications of the current global turbulences. The primary objective of the present article is to review, based on the information available at the regional and global level, the impact of the Russian invasion in Ukraine on food security, and to provide some helpful insights to world leaders whose responsibility is to elaborate adequate policies that minimize the negative consequences of this military conflict, especially considering food shortages. After an in-depth analysis, we identified the fact that the war negatively impacted the agricultural sector, adding on the pressures generated by the Covid-19 pandemic, inflation, and climate change. Although at the regional level, as in the case of the EU, there have not yet been any situations of food insecurity, globally, in the case of countries with a high degree of dependence on food aid and food commodity imports, food insecurity started to manifest since May 2022 putting under risk a considerable part of the population. The results also revealed that, at the global level, the four dimensions of food security – availability, access, utilization and stability – have been affected both in the short and in the long term. Both globally and at the EU level, there have been changes regarding cereal prices, quantity produced, export, and import levels. The EU – Ukraine solidarity corridors were among the methods implemented to reduce the impact of the war on the agricultural sector, and mainly to avoid a possible world crisis and the deepening of food insecurity challenge.*

Keywords: *food security, Russian invasion, agriculture, impact, sustainable development*

JEL Classification: *Q01, Q1*

1.Introduction

Sustainable development constitutes a core element of the global policy agenda, especially in the current framework of international relationships governed by instabilities, disputes, and controversies. As argued by the prior literature, sustainable development implies a three-dimensional perspective, namely: economic, social, and environmental. To this end, there have been several attempts to determine what sustainable development entails, from 'The *Limits of Growth*' report in 1970, initiated by the Club of Rome, to one of the most cited definitions by the literature in the field, elaborated in 1987 by the Bruntland Commission, in which, according to the report titled 'Our *Common Future*', sustainable development is perceived as 'the *development that meets the needs of the present without compromising the ability of future generations to meet their own needs')* (United Nations General Assembly, 1987, p. 43). Meeting the needs of the present entails primarily meeting the basic needs of society, among which the most important one is to assure worldwide population's access to food. Satisfying the basic needs of a continuously increasing population requires an optimal allocation of resources, corroborated with a high level of agricultural productivity. Failure in meeting the basic needs of the society determines negative consequences such as starvation, malnutrition, and even famine (Manap and Ismail, 2019). The United Nations, one of the most important worldwide organizations, developed a set of 17 goals to meet the sustainable development objectives by 2030, among which one of the most urgent is the zero-hunger objective, focusing on reducing the percentage of population confronting with starvation and malnutrition, achieving food security, and promoting a sustainable agriculture. The plethora of existing debates concerning the future economic prospects, impacted by the COVID-19 pandemic, the Russian invasion in Ukraine, inflation, climate change, and accentuating inequalities among nations, highlighted the need to develop an integrated assessment of the sustainable development concept, as well as of the sectors and disciplines whose interconnectedness may generate an impact on its multidimensional framework. According to data published by the United Nations, about one in ten people suffers from hunger worldwide, one in three people do not have access to sufficient food, and the crisis in Ukraine generates a shortage in terms of the supply chain, which primarily affected the group of people facing absolute poverty (United Nations, 2020). Therefore, food security becomes an element located at the intersection of the economic, social, and environmental perspectives on sustainable development.

The primary objective of the present article is to review, based on the information available at the regional and global level, the impact of the Russian invasion in Ukraine on food security and provide some helpful insights to world leaders whose responsibility is to elaborate adequate policies that minimize the negative consequences of this military conflict, especially considering food shortages.

The reminder of this paper is structured as follows: Section 2 contains the theoretical foundation of this paper, providing a short introspection of the most relevant studies concerning the research topic; Section 3 provides an overall analysis of the impact of the Russian invasion in Ukraine on food security from a global and regional (European) perspective. The last section of the article is dedicated to conclusions, implications and recommendations of the study.

2.Literature review

In accordance with the analysed economic context and the historical moment in the discussion, and to adequately mirror the transformations in official policy making, the concept of food security has evolved over the years. Already in 1992, a study conducted by Maxwell and Frankenberger (Hani J. H. and Ashraf K., 2016) had identified over 200 distinct definitions associated with this notion that currently evolved to also incorporate aspects regarding ethical and human rights. The numerous discussions in the literature also focused on the different perspectives regarding the dimensions of food security.

According to FAO (2006), FCRN (2018) the global accepted definition of food security highlights the four most important dimensions of the concept: stability, access, use, and availability. **Stability** - FCRN (2018) states that stability is seen as a separate cross-cutting factor, which implies that every person must always have access to adequate food. This aspect encompasses two other dimensions: food availability and access to it. **Access to food** - It is necessary for the population to have physical access to food in order to purchase enough food for a nutritious diet. Affordability largely depends on prices and household food availability. For example, drought or floods can affect the volume of the harvests generating a price increase that affects both dimensions, availability and affordability (FAO, 2006). **Utilization** – Individuals must have access to clean water, sanitation, and other basic human services to meet all their physiological and nutritional needs. Assuming that food is accessible and available, each household decides what food it buys and how it prepares and consumes it. **Food availability** – This aspect implies the existence of sufficient qualitative food, either domestically produced or imported from other countries. Nationally, food is available from domestic production, imports, or domestic stocks. At the household level, food can be available either from the

individual's own production or from purchasing it from local markets. Wen Peng, Elliot M. Berry (2018) established a link between food security and sustainability considering the fact that food security is part of the Sustainable Development Goals. Challenges such as changing weather patterns, food crises, or even population growth, and agricultural practices which are a pressure on agricultural land, endanger food security and affect its very own sustainability.

In recent years, studies conducted on the topic of food security have focused mainly on the factors that have impacted the most this aspect, like climate change, Russia's invasion of Ukraine and the COVID-19 pandemic. In a study entitled 'Note on the impact of the war on food security in Ukraine', FAO (2022) identified access to food as well as food accessibility and availability as main concerns triggered by the armed conflict. The war has severely affected the economic activities in Ukraine, reducing household incomes. According to the data published by FAO (2022), 34% of respondents to a survey developed by the organization no longer have any source of income to meet their basic needs. Because stores are not operating or being restocked, it is recognized that access to food is the main food security concern. As a result of these market imbalances, food prices have risen significantly. The highest increases were recorded for products such as wheat flour, buckwheat, vegetables, pork, etc. In Ukraine, food availability is not expected to be affected, but due to lower exports and increased domestic grain stocks, availability and access to food in other countries will be affected. Finally, FAO concludes that it is important to maintain production among smallholders and it is crucial to invest in the supply chain as well as in food storage facilities.

According to the European Council (2022), the article entitled 'Food security and affordability of food prices' brought to light the EU's response to the food crisis generated by the war, emphasizing that the war deepened even more the worldwide food insecurity that has been already accentuating since 2016. The Russia – Ukraine conflict has not only generated food shortages but also increased food and fertilizers prices (which have already been steadily increasing since 2020 due to the COVID-19 pandemic), also causing reduced food availability. European efforts are concentrated toward combating the crisis, considered one of the main global challenge. Ukraine's crops are important for global food security, as it is considered one of the world's leading traders of agri-food products. The damage to Ukraine's transport infrastructure also affected its exports, which went mainly to Asia and Africa. Although the EU does not necessarily face food shortages, there are countries in Asia and Africa that are affected by famine. At the EU level, there is a concern about affordability, as prices are experiencing record highs. Considering these aspects and the food crisis, the EU has come to the conclusion that it needs to focus

on aspects like: solidarity (8 billion euros funding allocation for supporting food security for 2020-2024 and exports from the EU to developing countries), sustainable production (aiming for a sustainable food system that does not have negative effects on the environment, increased production especially for sustainable fertilizers), trade (EU sanctions on Russia do not affect the agricultural and food sector, food trade without unjustified taxes), multilateralism (actions to ensure global food supply, for the regular functioning of world markets and the achievement of sustainable food production).

3.Data analysis, results, and discussions

Ukraine is one of the largest agricultural producing and exporting countries in the world, having an important role in the supply of grains to the global market. The agricultural sector in Ukraine provides employment for 14% of its population, while this country is among the highest producing countries in the agricultural sector due to the fact that 55% of Ukraine's land area is arable (USDA, 2022). At the same time, products from the agricultural sector are the most important exports for Ukraine, in 2021 representing 41%, that is, 27.8 billion dollars, of the total exports of 68 billion dollars (USDA, 2022).

Table 1. Agricultural production and exports in Ukraine (2021-2022)

	Production				**Exports**	
Commodity	Volume (1.000 MT)	Position occupied in the ranking of global producers	% of global production	Volume (1.000 MT)	Position occupied in the ranking of global exporters	% of global exports
Maize	41.900	**6**	3,5%	23.000	**4**	12%
Wheat	33.000	**7**	4,3%	19.000	**5**	9%
Barley	9.900	**4**	6,8%	5.800	**3**	17%
Sunflower oil	5.676	**2**	30,6%	4.950	**1**	46%

Source: USDA, 2022, retrieved from: Ukraine-Factsheet-April2022.pdf (usda.gov), accessed: March 11, 2023.

According to data included in the previous table, Ukraine ranked sixth in corn production and fourth in corn export in 2021-2022. Maize production is located in the north-central regions of Ukraine. In 2021, corn exports from Ukraine amounted to 5.9 billion dollars, 30% of which went to the EU and another 30% to China.

Ukraine also exports corn to Turkey, Egypt, and Iran and it managed to deliver by March 2022, 80% of the amount of corn exports estimated for the period 2021-2022. *Expected impact on global food security* – In May 2022 the number of people facing severe food insecurity exceeded 276 million people and estimates show that this number is increasing by 7.6-13.1 million people (European Commission, 2022). Some countries outside the EU, such as Yemen, Israel, Somalia, Madagascar, etc., are the most affected by the conflict because they are dependent on imports of commodities from Russia and Ukraine. Developing countries that are less dependent on agricultural products from Russia and Ukraine may also be affected by the changes that the global market is expected to experience as a consequence of the conflict. Due to the increase in the prices of fertilizers and energy, an increase in the prices of domestic production is automatically generated. In the poorest countries, farmers choose to reduce their production because they cannot afford to purchase fertilizers. If the war continues for a longer time, countries highly dependent on food imports will experience problems and the food crisis will intensify, especially since the war came at a time when food prices were already affected by the Covid-19 pandemic.

Expected impact on regional food security, the EU case – The war did not affect the availability of products at the EU level, but rather their accessibility, because food prices have increased and low-income households can no longer afford the same food as in previous years, being exposed to situations of food insecurity. The EU has sufficient stocks of agricultural and livestock products given that the EU is itself a net exporter on the global market. However, since the outburst of the war, even if the EU is an important exporter, it is also an importer of products that in the short term are difficult to replace from domestic production (like sunflower oil, seafood, etc.). Due to the war, EU dependencies on energy and fertilisers have also been identified, which are important elements for the agricultural sector. The EU usually imports a significant volume of potassium fertilizers from Belarus and Russia, i.e. 59%, and 31% of nitrogen fertilizers from Russia (European Parliament, 2022).

An important aspect to consider and analyse, especially from the accessibility and affordability perspective, is the impact of the war on grain prices at the EU versus the one registered at the global level.

Table 2. Prices of agricultural commodities, January 2023

Commodity	UE			Global		
	Monthly Average	Annual Change	Monthly Change	Monthly Average	Annual Change	Monthly Change
Cereals	EUR/T	%	%	EUR/T	%	%
Soft wheat	297	6.3%	-4.7%	291	-3.2%	-0.6%
durum wheat	460	-4.0%	-3.2%	353	1.6%	-1.8%
Maize	286	13.4%	-1.7%	281	9.3%	0.2%
Barley	272	4.4%	-2.8%	256	-6.4%	0.9%

Source: European Commission, 2023

Based on data provided by the European Commission, we compared the prices registered for agricultural commodities in January 2023 at the EU level and at the global level (Table 2). The monthly average of soft wheat is 297 euros/tonne at the EU level, while the global monthly average is 291 euros/tonne. The monthly average of durum wheat is 460 euros/tonne at the EU level, while at the global level it is 353 euros/tonne, a difference of 107 euros/tonne. The monthly average of maize is 286 euros/tonne at the EU level, while at the global level it is 281 euros/tonne. The monthly average of soft barley is 272 euros/tonne at the EU level, while at the global level it is 256 euros/tonne. At the EU level, the price of soft wheat is higher than the global level by 6 euro/tonne, the price of durum wheat is higher by 107 euro/tonne, the price of maize is higher by 5 euro/tonne and the price of barley is higher by 16 euros/tonne. The prices of agricultural commodities differ from the EU to the global level, being higher in the EU. At the EU level, the annual changes for soft wheat, maize and barley are positive leading to price increases, and only the price of durum wheat registered a decrease. The monthly recorded change is negative, demonstrating the fact that the price of cereals has decreased. Altogether, the annual changes at the EU level for durum wheat, maize and barley are positive leading to price increases and only the price of soft wheat registered a decrease. The monthly recorded change is negative for both soft and hard wheat, showing that the price of cereals has decreased, and maize and wheat registered an increase in price.

Globally, grain prices are lower than those at EU level, one of the reasons being that the poorest countries have a high dependence on imports (such as Somalia, Yemen, etc.) and are more prone to food insecurity than EU countries, which, according to the European Council, are not exposed to the risk of product shortages (European Council, 2023). Another reason why prices have increased in the EU is that the price of fertilizers has also increased significantly.

Table 2 also illustrates the annual price changes, and we can observe that at EU level these changes are significant. All the changes that have appeared in the last period, the Covid-19 pandemic, climate change, the increase in the price of fertilizers, the war, have affected the prices at the EU level more than at the global level. The price differences are: 6 euros/tonne for soft wheat, 107 euros/tonne for durum wheat, 5 euros/tonne for maize, and 16 euros/tonne for barley. Even if in January 2023 the price of durum wheat fell by 4% at the EU level, its price is still higher than at the global level.

We also analysed the impact of the war on the amount of grain produced at EU level versus the global level.

Table 3. Comparison between the amount of grain produced at EU level vs. at global level, 2019-2023 (million tonnes)

	2019-2020	2020-2021	2021-2022	2022-2023 estimates	Change month/month (mt)	Change year/year %
Wheat – EU	155.0	125.7	137.4	133.7	-	-2.7%
Corn – EU	68.1	68.0	71.2	51.8	-	-27.3%
Barley – EU	63.4	54.0	51.6	51.7	-	+0.2%
Wheat – Globally	760.8	773.8	781.1	796.1	+0.4	+1.9
Corn – Globally	1.131,9	1.136,5	1.220,3	1.152,5	-8.5	-5.6%
Barley – Globally	157.6	160.2	145.6	153.1	+0.9	+5.2%

Source: European Commission, 2023

According to the data provided in Table 3, we can conclude the fact that at the global level the amount of wheat produced is continuously increasing in recent years from 760.8 million tonnes in 2020 to an estimated 796.1 million tonnes in 2023, while at the EU level from 2020 to 2023 it experienced a slight decrease, from 155.0 million tonnes to 133.7 million tonnes. At the global level, the change from month to month and from year to year is increasing by +0.4 million tonnes, respectively +1.9%, while at the EU level the change from year to year registers a decrease of -2.7%.

At the global level, the amount of grain produced is increasing, unlike the amount produced at the EU level, which is decreasing, and one of the main reasons influencing the amount produced may be the price level, which at the global level has a downward trend, as opposed to the regional level, where the price registered has an upward trend.

Global maize production shows an upward trend from 1,131.9 million tonnes to 1,220.3 million tonnes in the period 2019-2022. In 2022-2023, the forecast shows that the amount of corn produced globally will decrease to 1,152.5 million tonnes. At the EU level, corn production has the same trend as at global level, it increased during 2019-2022 from 68.1 million tonnes to 71.2 million tonnes and decreases in 2022-2023 to 51.8 million tonnes. The changes from year to year and from month to month at the global level are -8.5 million tonnes, respectively -5.6% and at the global level the change from year to year is -27.3%, the quantity produced decreasing by a significant percentage.

Barley production at the EU level is decreasing, registering a decrease of 11.8 million tonnes in the period 2019-2022. In the period 2022-2023 it registers a slight decrease of only 0.1 million tonnes. At the global level, barley production fluctuates from year to year in 2019-2020 registering 157.6 million tonnes, in 2020-2021 the quantity produced increases to 160.2 million tonnes, in 2021-2022 the quantity produced decreased to 145.6 million tonnes and in 2022-2023 this increased again to 153.1 million tonnes. Changes in global production are +0.9 million tonnes, respectively +5.2%, which means that the quantity produced is increasing and at the EU level it also registers an increase of only +0.2%.

Following the analysis of the amount of grain produced at the global and regional levels, in the case of the EU, we identified the fact that at the EU level the amount of grain produced is in a slight decrease, while at the global level it registers increases in production.

On the other hand, we could observe the impact on prices. At the EU level prices have increased while at the global level they have decreased. This may be due to the fact that at the regional level, in the case of the EU, the quantity produced decreased, causing the prices to increase again, while globally, due to the fact that the quantity produced increased, the prices fell, being enough quantity to supply the market. Our research also focused on analysing the impact of the war on grain exports and imports at the EU level vs. global level.
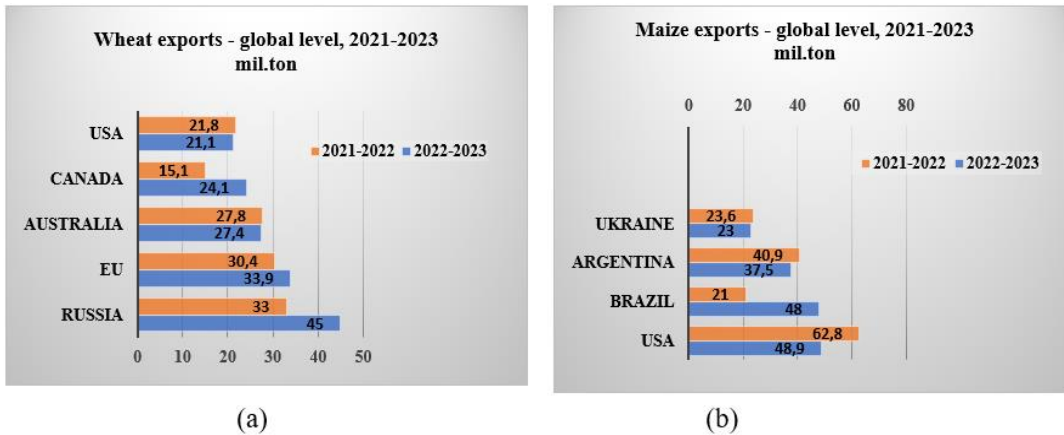
Figure 1. Global exports of (a) wheat and (b) maize, 2021-2023
Source: AMIS, taken from: https://www.amis-outlook.org/indicators/amis-crops-at-a-glance/en/ , accessed:
March 20, 2023

According to the graph, we identified the fact that wheat exports globally start to increase in 2022-2023, also at the EU level, they increase from 30.4 to 33.9 million tonnes. Russia is the main exporter, exporting 45 million tonnes of wheat in 2022-2023. As of March 2023, according to AMIS (2023), global wheat production is 794.63 million tonnes in 2022-2023, of which 779.49 million tonnes are consumed and 305.67 million tonnes in stock. Maize production is 1,157.62 million tonnes, of which 1,182.75 million tonnes are used and 280.24 million tonnes are in stock (AMIS, 2023). At the EU level, exports have continued to grow since April 2022 when solidarity corridors were created, permitting exports from Ukraine to resume. Exports from Ukraine are important at the EU level, this country being an important producer of cereals. Unlike in the EU, globally, corn exports are declining.

Therefore, global exports were more affected than those at the EU level. With the help of these data, we can confirm that there were no difficulties related to food security at the EU level. Through the solidarity corridor, farmers were able to continue their activity and contribute to increasing exports and food security.
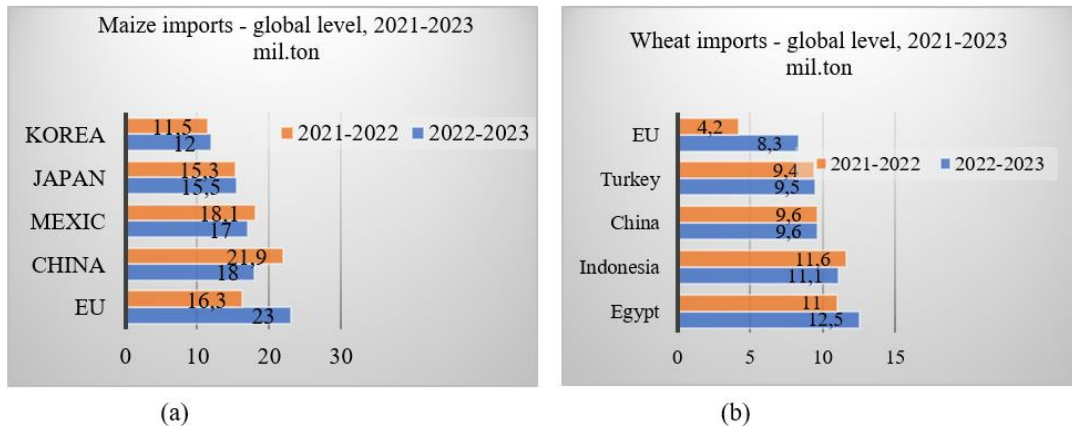
Figure 2. Global imports of (a) maize and (b) wheat, 2021-2023, million tonnes
Source: AMIS, taken from: https://www.amis-outlook.org/indicators/amis-crops-at-a-glance/en/ , accessed:
March 20, 2023

At the EU level, since February 2022, grain imports have continuously increased, one explanatory cause being that people panicked about running out of products and bought significant amounts in excess. Globally, maize imports decreased in 2022-2023 and wheat imports remained almost the same, with only the EU and Egypt importing more than in 2021-2022. So, even if in 2021-2023 grain imports at the global level tend to decrease, at the regional level of the EU grain imports are increasing. Despite prices rising in 2022-2023, production volume falling, EU exports/imports increased compared to 2021-2022. Globally, even though the amount of production increased, and prices decreased, exports/imports increased.

4.Conclusions, implications, and recommendations

The present research revealed the fact that the implications of the war on the agricultural sector are negative; however, at the regional level, in the case of the EU, there have not yet been any situations of food insecurity. Globally, in the case of lower-income countries that are dependent on commodity imports, food insecurity became evident in May 2022 and the number of people facing it may increase especially since the conflict continues and additional challenges rise. On the other hand, the four dimensions of food security, at the global level, have been affected both in the short term and in the long-term perspective. Both globally and at EU level there have been changes regarding basic commodity prices, produced quantities, exports, and imports. Among the methods of reducing the impact of the war on the agricultural sector, the involvement of the EU and member states was necessary to avoid a possible world crisis by creating corridors of EU-Ukraine solidarity. More

and deeper measures are necessary to ensure a harmonized approach of the problem by the international community. Our recommendations on the subject addressed are built around short-, medium- and long-term actions designed to reduce the pressure this armed conflict or similar ones may entail in the future. An important aspect refers to the necessity of a free movement of exports. Ukraine is an important player in the agricultural sector, being one of the largest cereal producers. If its exports were blocked again, food prices would be affected and the number of people facing poverty would further increase. Furthermore, it is imperative to ensure control in emergency situations such as this Russian invasion of Ukraine or the Covid-19 pandemic for that matter. In such situations, it is important that citizens do not panic and buy food even if they do not need it, because this leads to reduced food accessibility or reduced food availability. Out of fear, they tend to buy food impulsively to ensure that they will not run out of it, but through these actions, themselves they lead the agri-food sector towards these problems encountered exacerbating the pressure on the market fundamentals – supply and demand – and its capacity to self-regulate. From another perspective, it is important to focus on stimulating the interest for the agricultural sector. Attracting young people to this line of work is necessary considering that at the EU level grain production has decreased and in Ukraine the number of farmers has decreased due to military conscription.

An imperative aspect to consider, even though more challenging to implement especially in a globalized world market, is represented by the necessity of decreasing the dependence on imports from other countries. The war revealed several problems, including the dependence of some countries on imports from the main global producers. It is important that countries dependent on imports identify other alternatives so that in case of similar shocks, they avoid the manifestation of severe food insecurity problems. From a similar point of view, targeting the need to reduce dependences on external supplies and increasing the domestic production of fertilizers is also recommended. Russia is the largest producer of fertilizers and due to their current price rises, the production of cereals in the EU has been largely affected.

Consequently, through the energy and food supply challenges it sparked, the Russian-Ukrainian war created new food insecurity problems and intensified the vulnerabilities of the global food system already affected by the Covid-19 pandemic and the recent powerful climate-change induced natural events. The progress towards reaching sustainable development and food security goals of the previous decade has been shattered by the current threats and their impact on all dimensions of food security. The problems are exacerbated by the fact that, momentarily, no

signs of war ceasing may be seen. The dependencies brought to fore by this conflict opened the eyes of the global community over the necessity to make some profound changes in the way the food security aspect is handled. A stronger focus on thinking and developing key actions and measures implementable in belligerent situations is imperative for any nation worldwide, but for the moment, protecting the most vulnerable and making sure human basic needs are met and respected is the top priority for a solidary international community.

References

1. Agriculture Market Information System (2022) [Online], Available: https://www.amis-outlook.org/indicators/amis-crops-at-a-glance/en/ [23 March 2023].

2. European Commission (2023) *Trade and international policy analysis*, [Online], Available: https://agriculture.ec.europa.eu/international/agricultural-trade/trade-and-international-policy-analysis_en/ [23 March 2023].

3. European Commission (2023) *Cereal market situation*, [Online], Available: https://circabc.europa.eu/sd/a/98826879-f6a2-4931-b2fc-4780ee466338/cereals-market-situation.pdf/ [23 March 2023].

4. European Commission (2023) *Cereal market situation*, [Online], Available: https://circabc.europa.eu/sd/a/98826879-f6a2-4931-b2fc-4780ee466338/cereals-market-situation.pdf/ [23 March 2023].

5. European Council (2022) *Infographic - How the Russian invasion of Ukraine has further aggravated the global food crisis* [Online], Available: https://www.consilium.europa.eu/en/infographics/how-the-russian-invasion-of-ukraine-has-further-aggravated-the-global-food-crisis/ [23 March 2023].

6. Fraanje, W. and Lee-Gammage, S. (2018) *What is food security? (Foodsource: building blocks)*, Food Climate Research Network, University of Oxford.

7. FAO (2006) *The importance of Ukraine and the Russian federation for global agricultural markets and the risks associated with the war in Ukraine* [Online], Available: https://www.fao.org/3/cb9013en/cb9013en.pdf [26 March 2023].

8. FAO (2022) *Policy Brief: Food Security* [Online], Available: https://reliefweb.int/report/world/policy-brief-food-security-issue-2-june-2006 [26 March 2023].

Hamad, Hani and Khashroum, Ashraf. (2016) "Household Food Insecurity (HFIS): Definitions, Measurements, Socio-Demographic and Economic Aspects", *Journal of Natural Sciences Research.* Vol.6, No.2.

9. Manap, N. M. A. and Ismail, N. W. (2019) "Food Security and Economic Growth", *International Journal of Modern Trends in Social Sciences*, Vol. 2, No. 8, pp 108-118.

Peng, Wen and Berry, Elliot. (2018) "The Concept of Food Security*", Encyclopedia of Food Security and Sustainability,* Vol. 2, pp 1–7, Elsevier.

10. United Nations World Commission on Environment and Development, ed. *Report of the World Commission on Environment and Development: Our Common Future* (1987) Oxford: Oxford University Press.

11. United Nations (2020) *Sustainable Development* [Online], Available: https://sdgs.un.org/goals/goal2 [23 March 2023].

12. USDA (2022) *Ukraine Agricultural Production and Trade* [Online], Available: https://www.fas.usda.gov/sites/default/files/2022-04/Ukraine-Factsheet-April2022.pdf [26 March 2023].

COUNTRY RISK AND POLITICAL INSTABILITY: A VUCA WORLD APPROACH

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Abstract: *The last three years were characterized by a climate of drastic change due to a cumulus of disturbances and crises, namely the COVID-19 pandemic, inflation, energy crisis, military conflicts, banking fragilities, populism, disinformation, and the idea of deglobalization. These types of events may be interpreted either as antecedents of new and complex categories of risks or as stimulus for certain risks that have long been ignored. One central focus for worldwide policymakers is presently the country risk with all its components (sovereign risk, political risk, market risk, or systemic risk). Furthermore, due to the increase in public and private debt, the risks to which economies are exposed have multiplied. Is this the end of an era or just a temporary disequilibrium? This is one of the key questions among economists, academics, and policy makers around the world. The main purpose of this research is to analyse whether the Russian invasion of Ukraine negatively impacted the country risk of countries situated in the geographical proximity of the conflict area (Romania, Bulgaria, Estonia, Hungary, Czechia, Latvia, Lithuania, Poland, and Slovakia), as well as to determine whether relevant macroeconomic indicators such as debt/GDP, GDP/capita, inflation, or trade openness were deteriorated due to the war. The findings of this research reveal that all the analysed macroeconomic indicators deteriorated as a consequence of the high degree of uncertainty concerning the future economic prospects of these countries, especially inflation and debt/GDP. The results also indicate that the country ratings of the investigated group of countries were severely impacted by the Russian invasion of Ukraine. Although data corresponding for year 2023 show a slight improvement, the existing uncertainty continues to generate a disruptive effect on the markets.*

Keywords: *country risk, political risk, sovereign risk, transfer risk, uncertainty, sovereign debt, ratings.*

JEL Classification: *F34, H63*

1. Introduction

Recent global transformations triggered a redesign in terms of the architecture of the country risk, primarily through an aggressive emergence of the political risk because of the Russian invasion of Ukraine. The country risk, which refers to a particular set of risks corresponding to a specific nation, exposes all those categories of economic agents who have special economic interests in a certain country. Assessing this type of risk proves to be crucial due to an undeniable argument: its ignorance can lead to significant financial losses. Whether it is the case of exporters, importers, investors, or creditors, these different categories of agents must consider this aspect as their primary focus.

For a relatively long period of time, the country risk was perceived as a debated and ambiguous concept, particularly since the available information were discontinuous, even though, from a historical perspective, the country risk is not a new concept. A multitude of definitions and interpretations were developed in reference to the country risk, including the one elaborated by John Calverley. In a much broader sense, the country risk may be interpreted as the multitude of potential losses due to instabilities generated by macroeconomic and/or political events from a certain country. Calverley`s (1990) perspective focuses on the fact that, regardless of the common approach popularized by the literature in the field, associating the country risk only with the banking sector proves to be inadequate, as this risk should not be entirely attributed to bankers. Country risk constitutes a central focus for many categories of individuals, including economists, investors, members of academia, and more. Calverley`s division of the country risk into two main categories, namely the sovereign risk and the transfer risk, brings to the attention a much more complex concept, the generalised country risk. The main outcome of the sovereign risk is based on the impossibility or the lack of intention of a state to fulfil its obligations, whereas the transfer risk implies not gaining access to foreign currency needed for the payment of a foreign creditor. Calverley recalls that the sovereign risk refers to the loans granted by different financial institutions to a foreign government or to a foreign economic agent, but for the second case, the loan is accompanied by a state guarantee.

Currently, the country risk analysis became a sine-qua-non element of the decision-making process developed within different companies or banks. Therefore, the country risk tends to become a decisional instrument, and the formulated conclusions based on its interpretation should offer immediate support to bankers, exporters, or investors (Meunier, 2005). The last three years were marked by a cumulus of severe uncertainties and risks, among which we can mention the sanitary risk (the COVID-19 pandemic), the economic risk, macroeconomic imbalances (inflation), the energy

crisis, and more recently the political risk as a consequence of the war in Ukraine. This mixture of risks has a direct influence on the country risk and on its assessment methods. The present context allows different researchers to debate systematic risks (Qureshi et al., 2022), and a short incursion into the determinants of the country risk seems adequate.

The Russian invasion of Ukraine, which began more than a year ago, raised the awareness of economists and managers around the world. Although political risk was a consistent part of local and isolated strategies in recent years, its effects on companies were perceived as limited. It is the first time in the last 50 years that the political risk resurfaces and concepts such as expropriation or nationalization regain popularity. The main purpose of this article is to draw attention to the importance of political risk as a component of country risk in the context of the Russian invasion of Ukraine. Furthermore, the paper will concentrate on the issue of the sovereign risk (the probability of default of the states) and its contingency on some key parameters (such as trade, commodity prices). To stay in line with the primary objective of this study, three main research questions were issued: *Why did the political risk regain popularity as one of the major risks that EU countries might face? In what way does the Russian invasion of Ukraine influence the country risk of the neighbouring countries? Which is the most suitable set of indicators we can use for the correct assessment of the country risk?*

The reminder of the paper is structured as follows: Section 2 outlines the most relevant studies that were used as supporting pillars for the present research, Section 3 describes the data and their relevance according to the purpose of the current analysis, and Section 4 presents the conclusions and some policy implications.

2. Theoretical background

2.1 The political risk

In recent years, economies around the world have faced a series of disruptions that forced worldwide researchers and policy makers to reconsider their strategies and focus all their efforts on developing response and recovery capabilities. These types of disruptions generated negative effects on the micro and macro environment, ranging from slower growth to distribution and transport interruptions. Many categories of risks were brought into discussion, but little attention was paid to the political risk, especially in the case of countries located in Europe. Political risk was among the interests of academic researchers from the 1970s. What has changed in the last 50 or 60 years was the perspective from which the country risk was analysed.

If the studies developed in the 1960s emphasised the political risk, the new approaches were marked by the following directions:

- ➢ The issues of the sovereign debt and the associated crises (the countries located in South America, starting 1970);
- ➢ The financial and systemic risk (1980 – 1990);
- ➢ The cumulus of crisis at the end of 1990: The Asian financial crisis, the Russian Rubble crisis;
- ➢ The economic and financial crisis from 2008, characterized by risk intensification and overlap, country risk analysis proving to be a mandatory requirement for each country, regardless of its level of development, and, even more importantly, the sovereign debt crisis (the case of Greece or PIIGS countries);
- ➢ Recent years were marked by a mixture of crises that highlighted once again the importance of the political risk that for a long period of time was considered quasi-absent – after the development of the European Union (a structure that promotes a series of values, including political stability), the political risk was no longer perceived as a threat, neither by the member states nor by its neighbouring countries).

There is an abundance of studies that quest the significance of the political risk, with the main purpose of identifying practical tools that policymakers and economists facing this type of risk might use in the attempt to diminish its negative effects: new relevant indicators and influence factors, but also factors that may generate an impact on the sustainability of the sovereign debt, early warning signals in what concerns over indebtedness. Two main streams of literature emerged, namely the sovereign risk and the sustainability of sovereign debt.

The problem of identifying the precise components that incentivise a country to repay its debts was brought into discussion by several researchers (Rogoff, 2022), who emphasised that the legal approach proves to be more important than the reputational one. Other authors (Dvorkin et al., 2022) illustrated the restructuring mechanism of the sovereign debt, identifying suitable policies for this purpose, as well as techniques of reducing the probability of default, in the context that an increase of sovereign debt is understandable, especially for certain categories of countries (Deceanu&Bodea, 2021).

Further evidence that provide strong support in favour of the crucial role that political risk has for the macroeconomic environment, especially in terms of the investment strategy, was examined by Banerjee and Dutta in 2021. This study concluded that when countries face a high level of political risk, companies tend to

reduce the irreversible capital investments toward these states. Moreover, other studies (Gonchar and Greeve, 2022) find that there is an extremely high volatility of FDI in countries with high political risk. On the other hand, the political risk is highlighted by the Russian invasion of Ukraine (which began more than a year ago), causing severe systemic risk consequences (Qureshi et al., 2022). Another stream of studies elaborated on the subject of political risk, country risk, and probability of default, focused on testing the relationship between external debt and economic growth. For example, Wang, Xue, and Zheng in 2021, using a panel regression for 182 low- and middle-income economies between 1970 and 2018, concluded that an increase in long-term external debt negatively influences the economic growth rates of the analysed countries. Furthermore, the study confirmed that better institutional quality could help countries cope better with the negative effects of high external growth rates and their impact on economic growth. Lof and Malinen (2014) using data gathered for 20 developed countries found no evidence of a strong effect of debt on economic growth and may classify the effect as being in best terms ambiguous.

More recent analyses associate country risk with a series of modern concepts such as populism, public health issues, or green innovation. According to some empirical findings (Hartwell and Devinney, 2021), political risk may be analysed in correspondence to populism as a challenge for the current macroeconomic framework. On the other hand, Yang et al. in 2022 found that there is a strong interconnectedness between political risk and green innovation, the results of the study advocating that a decrease in terms of political risk positively supports green technology improvement. Furthermore, other studies (Peiro-Signes et al., 2022) confirm that the Environmental Performance index is a reliable predictor of the Country Risk Score.

2.1 The political and sovereign risk as main components of the country risk

The dichotomy in what concerns the country risk origins separates the political origins from the economic origins (Hurson et al., 2006). The first category is linked to the sovereignty principle, and even in the present context, characterized by a decrease of its importance, its influence remains powerful. Recently, we observed a return to nationalist and protectionist tendencies in various states. The political risk may be primed either by the internal situation of a certain country or by the interconnections between two or more states. The first situation requires measures that target directly the foreign economic agents (nationalisations, exclusions from

certain fields of economic activity), while the second one implies a series of consequences in respect to the development of international relations (boycotts, etc.). Within the literature in the field, the global definition of the political risk proves to be quite ambiguous, leading to the development of several classification methods. Since the early 1970s, some researchers have questioned the division of the political risk into the macropolitical and micropolitical risk (Robock, 1973). As the name implies, the first type of risk involves a more general approach, while the second targets only some specific economic agents.

Later, authors such as Channon (1979) developed in their studies several categories of political risk:

➢ Risks arising from an intervention within the standard regulatory framework, applicable to all economic agents;

➢ Risks that have origins in the non-discriminatory interventions that give advantages to a specific group of economic agents;

➢ Risks related to interventions that have a selective profile applicable to specific economic agents.

Other classifications of political risk (Overholt, 1982) multiplied the categories of risk:

➢ Political risk concerning the assets of an enterprise;

➢ Organizational political risk that targets the decision-making process;

➢ Operational political risk with respect to access to imports;

➢ Political risk of the market, relative to sales and development of the economic agents;

➢ Statutory risk (e.g., changes of the regulatory framework);

➢ Contractual political risks;

➢ Political risk related to property (nationalisation, expropriations).

Earlier surveys of the 1990s revealed the first in-depth analyses of the triggering factors of the country risk, declined in the political context of the foreign state and its economic and financial framework (Marois, 1990).

Four crucial elements – included in the table below – are perceived as the main determinants of the political context, closely connected to the sovereignty principle, as previously mentioned.

Table 1: The political context, as a source of the country risk

1. Geographical sources of the political risk	a) Political risk of a certain state – sovereign decisions (e.g.,: expropriation of the subsidary of a foreign company, repudiation of foreign debt); b) Political risk identified at the interference of two states (e.g., sanctions applied to economic agents who are nationals of a state in conflict with the host country – the case of the British – Argentine conflict, that generated consequences upon the British companies from Argentina and the blocking of the Argentine accounts in the British banks)
2. Main determinants of the political risk	a) Ideological determinants – nationalism, xenophobia, revolutions; b) Economic determinants (closely related to the political ones; for example, when a state is confronting with severe economic imbalances, it may be tempted to confiscate foreign assets, the main justification being of political nature); c) Sociological determinants – ethnic conflicts, religious conflicts, cultural habits; d) Psychological determinants – for example, the personality of some dictators, which only aggravates a situation considered already difficult.
3. Precursor elements	a) Development of political philosophies hostile to foreign investments: Marxism, nationalism, certain forms of socialism, etc.; b) The emergence of internal conflicts of ethnic, religious, and social nature, translated into various violent incidents; c) Political independence; d) Development of new international or regional alliances; e) The presence of pressure groups hostile to foreign companies.
4. Political risk manifestation	a) Particular events – war, destruction of goods, strikes; b) Punctual decisions – laws, regulations, norms that harm foreign interests; c) General investment climate: hostility, administrative difficulties, etc.

Source : Adaptation from Marois, B., *Le risque pays*, PUF, Paris, 1990.

In the recent case of the Russian invasion of Ukraine, we might highlight the Russian rhetoric close to the previous elements described by Marois – the fear of NATO enlargement, the development of a philosophy hostile to the West, the presence of the so-called threats to the existence of the Russian state. The economic and financial

origins of the country risk have captured the attention of researchers in recent years, mainly due to the fact that they become the main source of risk. In many cases, they are determined by the ineffectiveness of the state to elaborate sound economic policies or by the development of protections measures: inefficient monetary policy, maintaining a high level of budget deficit and public debt, excessive protection of domestic economic agents that may generate inflation, currency shortage, or monetary inconvertibility.

The political, economic, and financial sources of the country risk are multiplied and strengthened by the new international context. This is characterized by a new geopolitical order that is gradually changing: the war in Ukraine continues after one year from its debut, the West-China tensions persist; states such as North Korea are likely to become the centre of new conflict zones, while India and southern Asia are pillars of a new economic edifice. The European construction, although impacted, among other aspects, by economic fragilities and euroscepticism, continues its path, while the US aim to stabilise the economic and social context.

In what concerns the sovereign risk, the prior literature underlined until recently that it is typically low for states that have powerful currencies (Euro, US dollar, British pound), while for developing countries this type of risk may increase. Despite all this, events in Greece, especially after the fall of 2009, but also in the context of public finances during the COVID-19 pandemic, have refuted, at least in part, these assertions. The continuous increase in indebtedness is a certified fact of the recent period, with some exceptions. The austerity measures imposed, and the relocation of the national revenue are more difficult to implement, especially when the effects of the pandemic were so severe.

One element worth mentioning is the fact that developed states are favoured in the process of refinancing their public debts by the particular economic and financial setting, while in the case of developing countries, the ability to pay is a more sensitive issue, closely related to what the international literature titles *willingness to pay*. The problem of solvency is crucial for these countries, while its degradation (due to specific phenomena such as the effects of the crises on the budget balance) gives rise to significant refinancing difficulties. Without a doubt, sovereign risk is currently also influenced by the indebtedness of the private sector, a high level of which increases both the risk of financial collapse of businesses and the fragility of the banking sector.

Globally, the indebtedness rate remains high; although average global public debt has fallen from around 100% of GDP in 2020 to 96% of GDP in 2021, supported by strong real GDP growth, high inflation, and the withdrawal of COVID-19 fiscal

support measures, over indebtedness remains a challenge. Debt reduction is difficult to achieve, at a time when economic activity is affected by major imbalances.

3. Data and discussion

Our analysis relies on a data set collected between 2017 and 2022 or 2023 as for the case of countries ratings. The five-year or six-year span is a sufficient period of time needed to observe the evolution of the country's risk ratings as well as to develop a dataset of the most relevant macroeconomic indicators, including GDP/capita, inflation rate, debt / GDP ratio and trade openness. The country sample includes nine Central and Eastern European countries that are in the geographical proximity of Ukraine and therefore can be negatively affected by the political instability of this country, namely Bulgaria, Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, and Slovakia. The data used for the current analysis were retrieved from Eurostat, World Bank, and Fitch, S&P, or Moody's global ratings.
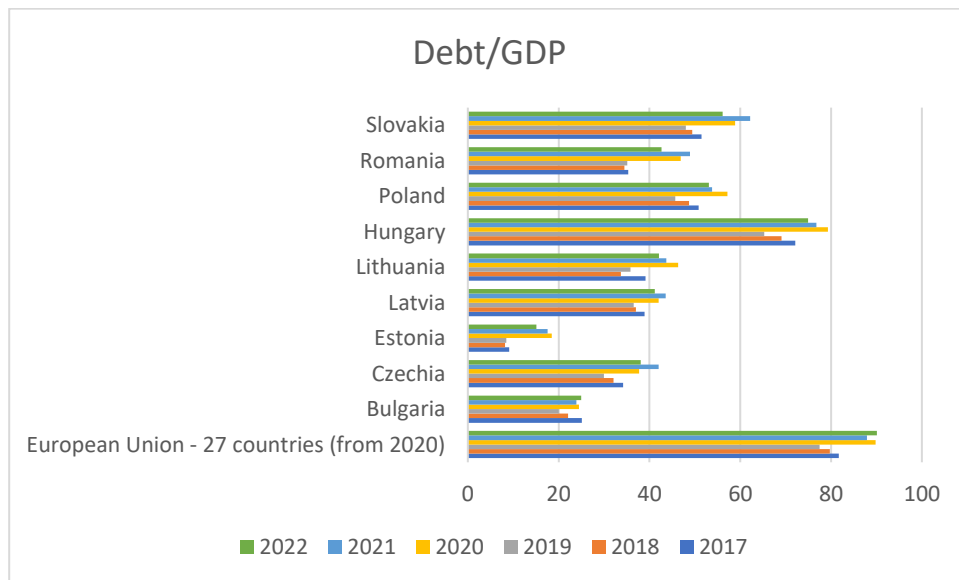
Figure 1: Debt/GDP
Source: Eurostat
(https://ec,europa,eu/eurostat/databrowser/view/GOV_10DD_EDPT1__custom_5600423/default/table?lang=en)

If prior to the pandemic situation a tendency of decline in terms of the sovereign debt was observed (at EU level but not exclusively), in the context of COVID-19 corroborated with the lockdown restrictions, the intervention of states led to an increase of sovereign debt especially between 2020 and 2022, causing a resurface of sovereign debt. This context is characteristic for all the countries included in the

analysis. Furthermore, the breaking point of the Russian invasion of Ukraine worsened even more the overall perception that foreign investors had with respect to the country risk of economies located in the geographical proximity of the war. A more detailed macroeconomic analysis emphasises that for some countries under investigation, such as Romania, the fact that the international loans are obtained at very high interest rates deepens even more the uncertainty concerning the public debt sustainability. Registering high values associated with public debt and deficit is not always a sign of an expanding economy. In this sense, a more complex analysis should be developed regarding the uses of public debt. Sustainable uses could target investments in infrastructure, technological transfer, and not budgetary expenditures such as pensions, public wages, or the payment of previously obtained debts.

Table 2: Trade (% of GDP)

Country/TIME	2017	2018	2019	2020	2021	2022
European Union - 27 countries (from 2020)	90.46	92.13	92.07	85.14	92.83	89.85
Bulgaria	129.68	128.85	124.64	110.28	120.97	121.59
Czechia	150.53	147.95	141.77	133.15	142.50	142.11
Estonia	147.56	145.92	143.75	138.47	156.96	146.04
Latvia	123.81	123.58	120.29	118.83	130.37	123.06
Lithuania	144.87	148.59	149.33	137.20	156.47	146.88
Hungary	165.23	163.26	160.78	155.53	162.79	161.39
Poland	101.28	103.45	102.69	100.32	112.45	103.98
Romania	87.16	86.47	84.50	78.06	87.36	84.69
Slovakia	188.06	189.80	183.48	168.51	187.83	183.49

Source: World Bank (https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS)

The Russian invasion in Ukraine accentuated the logistic deficiencies caused by the COVID-19 pandemic, generating a negative impact on international trade that was severely affected. An explanatory factor for this sharp decrease in terms of trade openness could also be the protectionist measures that the countries imposed with the purpose of protecting domestic producers, on the one hand, and, on the other

hand, minimizing the spillover effects. Considering that an efficient and intense international trade is one of the main factors that are positively related to the sustainability of sovereign debt, it can be concluded that these volatilities in terms of international trade may degrade the configuration of the country risk.
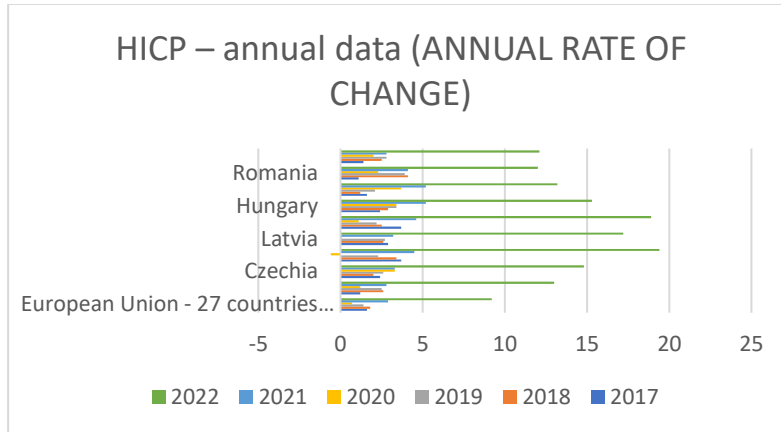
Figure 2: HICP – annual data (ANNUAL RATE OF CHANGE)
Source: Eurostat
(https://ec.europa.eu/eurostat/databrowser/view/PRC_HICP_AIND__custom_5601378/default/table?lang =en)

Inflation is a factor that manifests a negative influence on the country risk. Data included in figure 2 highlight an upward trend for inflation rate between 2017 and 2022 for all the analysed economies, with a maximum level reached in 2022. The highest increase in 2022 was registered for the case of Lithuania, followed by Estonia and Latvia. This increase was driven by a rise in prices for gas, electricity, water, and other fuels.

Table 3: Main GDP aggregates per capita by member state (in Euros)

Country/TIME	2017	2018	2019	2020	2021	2022
European Union - 27 countries (from 2020)	29,320	30,290	31,310	30,030	32,440	35,220
Bulgaria	7,420	8,000	8,820	8,890	10,330	12,400
Czechia	18,330	19,850	21,150	20,170	22,270	25,830
Estonia	18,120	19,660	20,960	20,670	23,640	27,170
Latvia	13,900	15,130	16,040	15,940	17,840	20,720
Lithuania	14,950	16,250	17,500	17,810	20,000	23,620
Hungary	12,980	13,920	15,000	14,140	15,840	17,520
Poland	12,120	12,990	13,870	13,720	15,060	17,310
Romania	9,510	10,580	11,560	11,440	12,610	15,040

| Slovakia | 15,570 | 16,500 | 17,320 | 17,110 | 18,110 | 19,590 |

Source: Eurostat (https://ec.europa.eu/eurostat/databrowser/view/nama_10_pc/default/table?lang=en)

After the sharp decrease registered in 2020, due to the effects of the Coronavirus pandemic (and the lockdown), there is an increase in terms of GDP at the level of the considered states, which attests to a revival of the economic activity; it is worth mentioning, however, that this evolution is accompanied by inflation, and therefore the price increases can "inflate" the data, the values being apparently higher. It is a clear fact that economies are currently not growing significantly, the context of uncertainty corroborated with the lack of predictability being a genuine opponent to the growth of economies and investors' appetite for risk.

Table 4: Country ratings between 2019 and 2023

Country/TIME	2019	2020	2021	2022	2023
Bulgaria	Fitch BBB (positive) Moody's Baa2 (positive)	Fitch BBB (stable) S&P, BBB (stable) Moody's Baa1 (stable)	Fitch BBB (positive)	Fitch BBB (positive)	Fitch BBB Moody's Baa1 (stable)
Czechia	Moody's Aa3 (stable)	Moody's Aa3 (stable)	Moody's Aa3 (stable)	Fitch AA- (negative) Moody's Aa3 (negative)	Fitch AA- (negative)
Estonia	Fitch AA- (stable)	S&P, AA- (positive) S&P, AA- (stable)	S&P, AA- (positive)	S&P, AA- (stable) Fitch AA- (negative) S&P, AA- (negative)	S&P, AA- (negative)
Latvia	S&P, A+ (stable)	S&P, A+ (stable) Fitch A- (negative)	Fitch A- (stable)	S&P, A+ (negative)	S&P, A+ (negative) Fitch A- (stable)
Lithuania	Moody's A3 (positive)	Fitch A (stable) S&P, A+ (stable)	Moody's A2 (stable)	Fitch A (stable) S&P, A+ (negative)	S&P, A+ (negative) Moody's A2 (stable)

Hungary	S&P, BBB (stable) Fitch BBB (stable)	S&P, BBB (positive) S&P, BBB (stable) Moody's Baa3 (positive)	Moody's Baa2 (stable)	S&P, BBB (negative)	Fitch BBB (negative) S&P, BBB- (stable)
Poland	S&P, A- (stable)	Fitch A- (stable)	Fitch A- (stable)	S&P, A- (stable)	Fitch A- (stable) S&P, A- (stable)
Romania	S&P, BBB- (negative)	Moody's Baa3 (negative) Fitch BBB- (negative)	Moody's Baa3 (stable) S&P, BBB- (stable)	Fitch BBB- (negative)	Fitch BBB- (stable)
Slovakia	Moody's A2 (stable)	Fitch A (stable) S&P, A+ (negative)	Fitch A (negative) Fitch A (stable) S&P, A+ (stable)	S&P, A+ (negative) Moody's A2 (negative) Fitch A (negative)	Fitch A (negative)

Source: https://tradingeconomics.com/

As data included in Table 4 reveal, the COVID-19 pandemic generated a degradation of the sovereign notes in the context of a high degree of uncertainty accompanied by an increased level of indebtedness. Although a slow post-pandemic recovery can be traced, the recent events such as inflation, the energy crisis, and the war in Ukraine continue to inflate the degradation of the sovereign rating. A slight improvement is observable for year 2023 (also in the case of Romania), but the climate of uncertainty persists.

4. Conclusions and policy implications

For a very long time, the globalization phenomenon, mediated through the flows of goods, services, people, capital, and ideas, was perceived as a necessary criterion for achieving smart and sustainable economic growth. Recent events, however, altered this perception and a new phenomenon received increasing attention from worldwide researchers and policy makers, namely deglobalization.

Due to the constant fragmentation of international trade, foreign direct investments, or global value chains triggered by the pandemic situation or the conflict in Ukraine, the process of deglobalization expanded at unimaginable speed. Under this unstable scenario, the political risk resurfaced, after being considered a marginal risk in the framework of country risk for decades. Political instability tends to perpetuate over time; therefore, if a country registers a high level of political risk at present, it will be more likely to follow this path in the future. Political risk affects a wide range of economic areas, including the banking sector, foreign direct investment flows, international trade, or capital markets.

The present research investigated the impact of the Russia-Ukraine conflict on a set of macroeconomic indicators, including debt/GDP, inflation, trade openness and GDP/ capita from countries located in the geographical proximity of the conflict zone and concluded that all these indicators were negatively impacted. Furthermore, the country ratings given by the most important rating agencies, such as Fitch; S&P, or Moody's, experienced severe degradation. To counteract any further negative shocks, European countries should concentrate all their efforts toward strengthening the pillars of the internal market and protect at all costs the security and freedom of their citizens. For some states, the management of indebtedness will be a challenge, especially from a political and social point of view, as decisions should be made on the proper relocation of the reallocation of national income, a subject considered extremely debatable, because of the effects of recent economic developments.

References
1. Banerjee, P. and Dutta, S. (2022) "The effect of political risk on investment decisions", *Economics Letters,* Vol. 212, 110301.
2. Calverley, J. (1990) *Country Risk Analysis*, Butterworth and Co (Publishers) Ltd, Second Edition.
3. Channon, D.F., Jalland, M. (1978) *The Management of Political Risk. In: Multinational Strategic Planning*, Palgrave Macmillan, London.
4. Deceanu, L.D. and Bodea, G. (2021) "Some aspects concerning the economics of sovereign debt and possible influences of the COVID-19 pandemic" *Review of Economic Studies and Research Virgil Madgearu*, Vol. 14, No.1, pp 17-29.
5. Dvorkin, M, (2022) "Improving sovereign debt restructurings", *Journal of Economic Dynamics and Control,* Vol. 139.
6. Gonchar, K. and Greve, M. (2022) "The impact of political risk on FDI exit decisions", *Economic Systems*, Vol. 46, No. 2.
7. Hartwell, C.A and Devinney, T. (2021) "Populism, political risk, and pandemics: The challenges of political leadership for business in a post-COVID world, *Journal of World Business*, Vol. 56, No. 4.

8. Hurson, C., Ricci-Xella, N., Doumpos, M., Zopounidis, C. (2006) *Evaluation du Risque Pays – Méthodes et cas d'application*, Ed. Economica, Paris.

9. Lof, M. and Malinen, T. (2014) "Does Sovereign Debt Weaken Economic Growth? A Panel Var analysis" *Economic Letters*, Vol.122, No. 3.

10. Marois, B. (1990) Le risque-pays Presses Universitaires de France.

11. Meunier, N., Sollogoub, T. (2005) *Economie du risque pays*, Ed. La Découverte, Paris.

12. Qureshi, Anum, et al. (2022) "Russia–Ukraine war and systemic risk: who is taking the heat?", *Finance Research Letters,* Vol 48, 103036.

13. Overholt, W.H. (1982) *Political risk*, London.

14. Robock, S. H. and Simmonds, K. (1983) *International business and multinational enterprises* (3rd ed.). Homewood, IL: Irwin.

15. Rogoff, K. (2022) "Issues in the theory of sovereign debt and post-covid workouts", *Journal of Policy Modeling*, Vol. 44, No. 4, pp 804-811.

16. Peiró-Signes, A. Cervelló-Royo,R. and Segarra-Oña, M. (2022) "Can a country's environmental sustainability exert influence on its economic and financial situation? The relationship between environmental performance indicators and country risk", *Journal of Cleaner Production*, Vol. 375,

17. Wang, R. Xue, Y. and Zheng, W. (2021) "Does high external debt predict lower economic growth? Role of sovereign spreads and institutional quality" Econ. Modell. Vo.103, 105591.

18. Yang, H.C. Cai, Y.F. and Zhang, M.Y. (2022) "Political risk and green technology improvement: New insights from global evidence", *Innovation and Green Development*, Vol.1, No.1.

STATE, NEOLIBERALISM AND FINANCIALIZATION

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Abstract: *As liberalism took roots during the 18-th and 19-th centuries, and as United States closed to such an overwhelming position which has made it a political actor with outmost importance at global level especially after the 1-st World War, there was another activity which accompanied this evolution, which is connected to financial activities and their speculative character; one important effect of these actions was the Great Depression in 1929-1939, which threw waves of shocks in America, and all over the world with unforeseen consequences. After the experiences brought upon by the Second World War, doubled by fresh memories of Great Depression, Keynesianism and its system torsed around Bretton Woods negotiations imagined a greater role for the state in relation with the market, especially the international financial market. As this gave birth to what can be seen as the Golden Age of capitalism, it is important to mark the role of state versus market during this period. But as the British Empire was closing to its end, London found a way to reinvent itself, as heir of the dying empire. In order to hold a central position in world affairs, it has looked at money, and the power they could provide: to save its system, London help inventing Eurodollar, circumventing the key-aspects of Bretton Woods and what it stood for. Slowly but surely, the market – especially the financial market – has gained more central position in face of state, and with it, the financialization of the economy. Between 1956 and 1980 there were identifiable clashes in state-market nexus, the most important being triggered by the oil shock in the 70's; but as world entered the 80's, it became clear that the market would gain the upper hand. The Reagen-Teacher understanding was the visible point of the picture regarding the shift of importance from state to market. The 90's will only bring new and fresh markets ready to embrace globalization, sustained by the revolution in communications, which was already in full development. And now we see a minimal state put in a marginal position by the forces of economic globalization and the philosophy of free-market, while the market is seen as a "know and fix everything"; its invisible hand can overcome any temporary disequilibrium. A recurrent question needs to be addressed: where is the state, with its main attributes, in order to protect the people from selfish market forces?*

Keywords: *financialization, market, neo-liberalism, state*

JEL Classification: *E12, G15, N20*

*"I fear that foreign bankers with their craftiness
and tortuous tricks will entirely control
the exuberant riches of America and
use it to systematically corrupt civilization"*
Otto von Bismark

Background

Since ancient times, philosophers and practical people wanted to understand how the state-market nexus is working. A remarkable collection of such ideas can man find in Aristotle's *Politica* (Aristotel, 2001). As he progressed with his study, the types of political regimes are presented with their characteristics; but all types of political regimes, in order to survive, must find a way so that the state-market nexus works as fine as possible. But not all regimes are good for the people, which (together) are the state. In order to exist, a state must have: territory, people, a legal order to provide expectable ways of behaviour from its citizens, and a special framework related to how and in which conditions it would use its monopoly related to force, both internally, and externally (Wendt, 1999: 198-214). One such regime Aristotle describes as oligarchy, which is characterized by few strong persons (families) which run the state's affairs in their own interest. On one hand, in a democratic regime, the state wants to create the legal framework to prevent the appearance of monopolies, while on the other hand, the market with its forces press for such a concentration of economic power. The state is a legal order, and it has legal means, while society has its own laws which are based on power relations; this is the reason why – in case democratic regimes unite people which are not very aware, and are not very educated in relation with the importance of the state – money, with their own law which says that money attracts more money, would tend to flow to those who already have more, from those who have less. Such a movement of money and wealth in society from more to few will bring changes in the political regime; it could morph from democracy into aristocracy or oligarchy. The difference between these two is huge. Even there are few in both regimes which create the rule for governing society, aristocrats rule the society haunting benefits for all, while oligarchy run it for its own narrow interests.

In a few simple words, aristocracy has a nationalist trait, while oligarchy has a large international character. Oligarchs are more open to "run" during times of crises, in order to protect their wealth; attacks on different currencies, investment funds or

hedge funds movements, for example, are focused foremost on profit, and not on large social benefits. These activities – which are connected to pure speculative activities – are important traits of an oligarchic political regime.

But always, for something which is unnatural – too big is not necessarily natural – time comes and the judgment is brought upon; market forces were pushing for profit maximization, while society at large must pay... Bailouts for example, are instruments which are used to protect exactly those powerful market actors which brought in the shock and crises, while states (people) are kept to pay those mismanagement activities pushed by the greed of the few. And the state, which market pressed to play a minimal role, is asked for intervention. With the financialization of economic activities promoted by economic globalization, these shocks are far greater, while their settlement time brings large social and even greater political consequences; in this context, the possibility of strong nationalist movements and even wars, with all negative consequences, especially for those who cannot "run" – ordinary citizen – cannot be overlooked.

That for, we must see the interest related to creation of the state by people, not only in order to protect them in face of any internal menace or external threat, but in order to protect them, in relation with market forces, too. There are a lot of historical evidences which bring to our attention the fact that a more powerful market creates disequilibrium, while a more powerful state can crush the individual. Free market and especially free financial flows can bring havoc during settlement time, while a powerful state – as it was in Eastern European countries during the communist period, or in North Korea nowadays – can crush all initiative which had it been much free, it could have brought larger benefits for society.

The equilibrium between market and state is hard to find and maintain, but not impossible. The good case practice in our case is Bretton Woods and what Keynesianism stood for; they are inseparable from the Golden Age of capitalism.

While Bretton Woods was a benchmark aiming at curtailing unchecked market forces, the re-emergence of liberal thinking is quite contemporary with it; the neoliberal revolution was born at Mont Pelerin, near Geneva in 1947 during a meeting attended, among others, by Hayek, Friedman, Robbins, Stiegler. The "meeting was *financed* by Switzerland's three largest banks, its two largest insurance companies, the Swiss central bank, the Bank of England and City of London interests" (Shaxson, 2018a: 37). Such a sponsorship cannot be unconnected to forces generating momentum for the re-emergence of global finance and the financialization of the economy. Furthermore, free market doctrine and its promotion through international institutions (such as World Trade Organization) has created the premises for free flying capital to easy relocate where it can faster and

easier extract profit, not necessarily where it could be involved in direct production of goods and services. As a consequence, the financial sector has become outsized related to productive economy; by 2006, for example, UK banking assets were five times British GDP, and if we count other financial activities/services and institutions, the ratio is ten times GDP (IMF: 2017).

The cost incurred upon society due to this doctrine promoting free market and "efficiency", which promoted capital concentration, cannot be overlooked. As Epstein (2005a) points, the *promotion* by governments of financial *liberalization* has been done despite its enormous and tangible costs. Even neo-liberalism and financialization are not synonymous trends, it can be noted that a change in ideas generates shifts in material world. As a consequence, the free market doctrine has promoted capital flying, capital concentration, and with it, the financialization of the economy.

Losing an empire doesn't mean it is impossible finding a new role

With the horrors of the Depression during 30's fresh in the memories of governments, they wanted to create the condition to have the power to create full employment. So, state was asked to come back in order to create conditions for regulations which generated New Deal (in the US), and the welfare state (in UK and various countries on the continental Europe); all were centred on greater role for national governments in controlling investment levels, in order to improve living standards (Bullough, 2022: 33). As the policies connected to such restrictions started to bear fruits, there were important restrictions regarding international flow for the capital, while the gold was central to the system: in 1956 one USD could buy 0,03 ounces of gold, by law, guaranteed by the Federal Reserve (Bullough, 2022: 50); that means, then one USD can buy 0.933 grams of gold.

Just for comparison, this year gold hovered around USD is 1850/ounce, and in March, after Moscow started its military actions in Ukraine, there was a spike of 55 times in the price related to 1956 level (At the moment of writing – late November 2022 – gold is valued at USD 1755/ounce). If in the post-war world gold and other currencies had a very restrictive framework to fluctuate, one pound sterling being valued at USD 2.8, the disappearance of Bretton Woods, and of states as key-players, and the re-emergence of market forces and private finance, would make a clear point, showing how speculative activities handle actions related to gold market, and how these actions influence the price of this commodity. Any emotion brought by a dramatic event means that speculative finance handling currencies,

gold, and other investment opportunities is focused principally on profit maximization/limiting looses, without much care about society (and state), at large. If you want to crack down on tax heavens, one must start with the banks, said Shaxson (2018a: 94-107). As much of the blame for the Great Depression had been laid on banks, and their "hot money" (e.g. speculative financial capital), that was deemed to generate inflate asset bubbles, bringing in the end crash in stock market, the governments after the WW2 decided to favour productive activities over financial ones; exporters gained the upper position over financial houses and their interests; put in another words, *productive capital took priority over speculative capital* (Bullough, 2022: 34). And as a consequence, capital flows were severely restricted; state was back, while market had to comply.

As a matter of fact, London companies were those who first conquered India, Africa, North America, not the British state, the City of London being the interface between Britain and the rest of the world; and if under Bretton Woods, the City wasn't allowed to finance trade and to attract business and money wherever it wanted, its role as world financial pivot was greatly reduced. Another player manifested its prowess: the USA, and its booming centre, New York. Business that once flowed through London – trade financing, bond deals, everything London saw as its birth right – were now conducted by "parvenus" on the Wall Street, while the City was almost absent from national conversation (Bullogh, 2018: 68-69).

Under Bretton Woods, the US aimed at pegging currencies to USD (and the gold), but not all foreign governments trusted Washington would honour the commitment related to using dollar as an impartial international currency; the example of US actions immediately following WW2 related to sequestrating communist Yugoslavia's gold reserves were fresh, coupled with its refusal in helping communist Poland to recover after the war. Furthermore, as Suez Crisis took shape, London wanted to keep its influence in the area, commencing a military adventure along with Israel and France against Egypt, who had just nationalized the Canal; as their action were unfurling in 1956, a disapproving Washington, fearing Arab countries would orbit towards Moscow, froze Paris and London access to dollars, and doomed their action. The conclusion is simple and direct: the US wasn't acting as a neutral arbiter.

During that period Britain jumped from a shock to another, and in 1957 they took a decision regarding interest rates' rising, in order to restrict Pound sterling using, with the aim to protect it; City banks, being cut off from sterling, began to use dollars instead, which they got from the USSR, who decided to keep them there, in order to avoid any blackmail from Washington (as previous examples show).

This is the context in which the idea of Eurodollars took roots; lending USD by Moscow Narodny Bank (Soviet-owned bank, based in London) to another bank from London (the first one doing this was Midland Bank), could make available those dollars, without buying them! This was a big idea pushing London again towards the central place in the world of finance. Borrowing money didn't mean they were bought, which wasn't allowed under the limits related to capital movements imposed by Bretton Woods (Burn, 2006: 20-29). As London was losing its military empire, it was reinventing itself as a centre or global finance and world influence. As in the past, when British elites promoted overseas expansionism through trade and military actions, decisions were taken by Britain's financial elites to re-establish a regulatory order, largely independent of the British state (Moran, 1991: 16) bound under Bretton Woods requirements.

So, the market has taken the lead determining outcomes for itself, and for the state, too.

This action can be regarded as opening gambit in a new era of economy's financialization, where speculative capital (with its different forms but the same character) gained the upper hand in relation with productive/investment capital; market's free forces were unleashed again in full force, to the detriment of labour force and state' projects.

Tax heavens have only come to add complexity and power to this financial activities (Epstein, 2018) helping market represented especially by large banks and multinational corporations to upgrade their profits due to capital flights (Epstein, 2005b), while dodging income taxes (Zucman, 2017). As a matter of fact, along banks and large global corporation, organized crime (Gragert, 1997) was one of the most adaptable actors using these new opportunities brought by financialization (Galeotti, 2018).

Furthermore, in the context of liberalization brought by Eurodollars' using, more deepened by the race to attract hot money, large banks made a central focus in helping wealthy individuals dodging taxes in countries where they gained their money; in this way the neo-liberalism not only unleashed speculative capital to hunt low tax places with no or lax scrutiny (Shaxson, 2018b), but it has created a very lucrative business for large banks, too (Birkenfeld, 2020).

And London's new imperial financial feature has helped transforming the world economy, but the City has wreaked havoc globally, and at home, too; vast financial sector salaries have emptied manufacturing industries of their best-educated people, while its interests have come to dominate the society. Between 1979 and 2011 employment in UK manufacturing sectors fell from 6 to 2.5 million, its output stagnated, while financial services output trebled (Shaxson, 2011: 277). Over this

fact, in the decade before 2007 financial fallout, only 3% of banks' net cumulative lending in the UK was directed to manufacturing, while ¾ went to home mortgages or commercial real estate (Shaxson, 2011: 277). Under the City's new imperial framework, "money floods into London, then is repackaged and is recycled out again, often via offshore satellites, to build glittering skyscrapers in Dubai, giant condominiums in Sao Paolo and games of financial bait and switch in New York" (Shaxson, 2011: 278).

But negative consequences are visible too: Britain and the US, the leaders of modern global finance have one of the most unequal societies in the developed world: in Britain 0.3% population owns 2/3 of the land; while just after the crisis City bonuses were Pounds sterling 14 bn in 2010-2011, 40% higher than the average for 2000-2007 period, the boom years leading up to the financial crisis (Bonus Payments flat in 2010-2011, Office for National Statistics, 2011).

Financialization of the economy

As shown in last phrases above, in the beginning of 70's there was a huge change in the world related to finance and its role in world economy; Bretton Woods' downfall doubled by oil shock put pressure on financial market and financial streams and international credit. As breaks on transferring currencies at international level were eliminated, and as banks and other large entities connected to financial speculation (insurance companies, pension funds, hedge funds, shell companies, private equity companies, and trust companies) have taken deeper roots in the world economy, their proclivity to speculation and risky business has constantly risen.

Coupled with this trend, there was another aspect, with huge implication in the long run: competition among states to attract hot money has gained political momentum. Countries started to accommodate more and more to the desires of those who manipulated money. Synthetically, there was less control by the state upon the financial market, and financial flows; so that the market has gained the dominant position in relation with the state and society. As political discourse, especially in countries with powerful banking and financial sectors, have channelled debates underscoring the importance of lower taxes, doubled by lax laws and regimes related to money transfer and the identification of the source of money crying for a more "friendly atmosphere" fearing the relocation of finance towards other more friendly places, a race to the bottom has started. Deregulation has become the main trend.

As states' governments started to accommodate the requirements of financial interests, welfare state was put to the margin, negatively influencing public expenses

related to different infrastructure and social actions. In the mean time, tax heavens registered upsurge, without citizens of these state filling the whole benefits of this trend. For example, the tiny Cayman Islands enjoys the 5-th position in world finance; Cayman Islands' shadow banking sector, open to various sources of money, held assets worth USD 5.8 trillion, the equivalent of 170000% GDP of Cayman state, or twice as big as UK's GDP (Shaxson, 2018a: 153).

It is important to note that special financial interests in the City of London – not the UK – have played a crucial role in the creation of this deregulated financial market, supporting in the same time the financialization of economy, deregulation, speculative actions, tax heavens role in channelling hot money springing from clean or more opaque sources, all which generated social inequalities and weakening the states, all over the world.

Neo-liberalism became the mainstream *philosophy* to be embraced by universities, political leadership, private actors, and especially large multinationals and banks. Of course, in theory this philosophy sounds good, but when it comes to real world, due to traits common to almost all humans – such as greed – neo-liberalism creates huge opportunities for one who can, to the detriment of one who cannot. Deregulation took the reins of economic activity from the hands of the state, handling it down into the hands of the market. In mathematical models a free market, through its mechanisms based on competition, should generate benefits for customers; but in real life money has another law: it tends to concentrate, creating premises for monopolistic actions, through mergers or acquisitions. This is the *ideological layer* of financialization.

It is important to note that as Cold War was closing to its end, technological revolution in global transports and especially in communications overlapped this ideological trend. Furthermore, it was the same period when the study of international *regimes* (in different fields) gained momentum, and World Trade Organization became the main forum where negotiations have created the framework for trade in services, including financial services. Large law and accountancy companies have played important role in this trend; all these can be regarded as *instruments* of economy's financialization.

As mentioned before, London changed its imperial coat with a more sophisticated one, embedded in its trading traits; 7 from the 14 territories, the last fragments of the British Empire, are tax heavens (Anguilla, Bermuda, the British Virgin Islands, the Cayman Islands, Gibraltar, Montserrat, the Turks and Caicos). These can be regarded as *vehicles* for the economy's financialization. As a matter of fact, cash intensive businesses as gambling activities are connected to London via Gibraltar

(Cassidy, 2020), Gibraltar being more than that, a favoured destination for dodgy money from countries belonging to former Soviet Union (Shaxson, 2018b: 99).

But tax heavens' heart beat on every continent: in Asia, Hong Kong is China's financial bridge to the world; Singapore homes elites' money from Australia and South-East Asia; in Europe the "competition" is among old Switzerland and newcomers as Ireland, Luxemburg, the Netherlands; The United States boasts tax heavens such as Delaware, Nevada, and Wyoming. Pacific area has its butlers, too: Vanuatu, or Cook Islands, while Indian Ocean boasts with Seychelles and Mauritius; they are all created to serve well the interests of those how can to the detriment of those who cannot.

The *source* of money is another clue to understand how financialization works; as rich countries have constantly lowered their corporate tax rates since 70's corporate investment had stagnated, and tax avoidance has risen very much. This available capital can be a source of economy's financialization, while most large pension and equity funds touch the offshore tax heaven system one way or the other. But there is another shadow money pile, looking for clean investment vehicles; here tax heavens are the province of Mafiosi or drug runners (Glenny, 2009), tax-cheating celebrities, European aristocrats (Birkenfeld, 2020), major private-sector financial institution, and even politicians (who can use tax heavens to hide kickbacks). Burgis' book is more than illuminating in this respect (Burgis, 2015). If we look to Switzerland, just here in 2017 there were (at least) EUR 2100 billion belonging to people who parked their money on Swiss territory (Zucman, 2017); almost all this stuff is hot money, looking for investment opportunities which, due to high rate of financialization it promotes, it is the main determinant of financial instability, asset bubbles, increased economic and political instability, and even of "Dutch disease", especially in smaller economies or where diversification is missing.

In fewer words, world economy, due to high degree of financialization, has become to act as it were a huge casino, the world of finance offering the players different choice of games: foreign exchange market, commodity market, bonds, government securities and shares market; some players are large – banks especially – other are small operators; there are tipsters, too, selling advice, and system's peddlers to the gullible... The *croupiers* in this global financial casino are the largest banks and brokers: they "play for the house", while in the long run making the best living (Strange, 1997). These are the *beneficiaries* of economy's financialization.

Of course, if we have winners, we also must have some *losers*: financialization brings havoc to lucrative industries, relocating them towards more attractive places regarding taxes or environment requirements for example. States lose, too: as financial economy warms up, state's control upon economic activity and society's

destiny weakens, hurting the most important ingredient of a sustainable democratic society: middle class. In this evolution of state's dissolution powers related to market forces, all main attributes of the state are affected: agriculture (large food industries and intermediaries are winning), transport (large infrastructure projects, which bear important military component are handled by private companies, possible with higher costs and lower quality), energy, education, medical services and social security activities...

As economic power concentrates in the hands of a few and social inequalities are rising, the transformation of democratic traits in a society is retreating, leaving space to a perverse form of democracy, where people can vote to no avail, while society and state's runners are few. We can imagine dealing in this case with a masked democracy, while the real mask bearer is an oligarchic regime.

Conclusions

As this paper shows, there have been important shifts in world economy during last century and in this time span the financial capital and lucrative capital changed their role. But as free-market gained large influence, especially after 1986, pushing globalization and benefiting from this process, some economic traits were manifesting too: different economic crises hurting more or less different parts of the world. As privatization has become the main trait and discourse especially during 90's, state has retreated, while market has come to the forefront. But when shock broke in 2007, it was state who was asked to save the market; bailouts became the main discourse. Even if the state hadn't been the actor who brought the crisis, but the market (especially the financial market with its "great inventions"), it has been asked to rescue exactly the greedy and speculative market actors.

It can be said that the world, as we see it, with capitalism flourishing cannot be separated by tax-heavens; they are inseparable. So in order to create the premises for a more equilibrated world with happier people, the state should *re*-gain its attributes in relation with market and society, to have instruments to tax market actors' profits and redistribute them in a way that will sustain the main ingredient of a healthy democratic regime: its middle class. Other way, democracy can be on retreat in face of oligarchy, and in the long run, in face of more dangerous ideologies, which could polarize society, with possible negative consequences related to internal and external security of states.

References

1. Aristotel (2001) *Politica*, București: Paideia.

2. Birkenfeld, B. C. (2020) *Lucifer's Banker. Uncensored*, Alexandria, VA.: Republic Book Publishers.

3. Bullough, O. (2018) *Moneyland. Why Thieves & Crooks Now Rule the World & How to Take It Back*, London: Profile Books.

4. Bullough, O. (2022) *Butler to the World. How Britain Helps the World's Worst People Launder Money, Commit Crimes, and Ger Away with Everything*, New York: St. Martin's Press.

5. Burgis, T. (2015) *The Looting Machine. Warlords, Oligarchs, Corporations, Smugglers, and the Theft of Africa's Wealth*, New York: Public Affairs.

6. Burn, G. (2006) *The Re-Emergence of Global Finance*, New York: Palgrave Macmillan.

7. Cassidy, R. (2020) *Vicious Games. Capitalism and Gambling*, London: Pluto Press.

8. Epstein, G. A. (ed.) (2005a), *Financialization and the World Economy*, Chelthenham, UK: Edward Elgar Publishing Limited.

9. Epstein, G. A. (ed.) (2005b) *Capital Flight and Capital Controls in Developing Countries*, Chelthenham, UK and Northampton, MA.: Edward Elgar Publishing Limited.

10. Epstein, G. A. (ed.) (2018) *The Political Economy of International Finance in an Age of Inequality. Soft Currencies, Hard Landings*, Chelthenham, UK and Northampton, MA.: Edward Elgar Publishing Limited.

11. Galeotti, M. (2018) *The Vory. Russia's Super Mafia*, New Heaven and London: Yale University Press.

12. Glenny, M. (2009) *McMafia. A Journey Through the Global Criminal Underworld*, New York: Vintage.

13. Gragert, B. A. (1997) "Yakuza: The Warlords of Japanese Organized Crime", *Annual Survey of International & Comparative Law*, vol. 4 (1), pp. 147-204.

14. Moran M. (1991) *The Politics of the Financial Services Revolution*, London: Macmillan.

15. Shaxson, N. (2011) *Treasure Islands. Tax Heavens and the Men Who Stole the World*, London: Vintage.

16. Shaxson, N. (2018a) *The Finance Curse. How Global Finance Is Making Us All Poorer*, London: Vintage.

17. Shaxson, N. (2018b) "How to Crack Down on Tax Heavens. Start With the Banks", *Foreign Affairs*, March/April (97/2), pp. 94-107.

18. Strange, S. (1997) *Casino Capitalism*, Manchester: Manchester University Press.

19. Wendt, A. (1999) *Social Theory of International Politics*, Cambridge: Cambridge University Press.

20. Zucman, G. (2017) *La richesse cacheé des nations : Enquete sur les paradis fiscaux*, Paris: Seuil.

21. *** *Bonus Payments flat in 2010-2011* (2011) Office for National Statistics, http://www.statistics.gov.uk/cci/nugget.asp?id=2062.

22. *** *Spain, Financial System Stability Assessment* (2017) IMF.

THE IMPACT THAT CRYPTOCURRENCIES HAVE ON THE PROFITABILITY OF SMALL BUSINESSES

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Abstract: *In the global financial environment, cryptocurrencies have become a disruptive force that offers possibilities as well as problems for firms in numerous industries. The incorporation of cryptocurrencies into small businesses' operations has gained more attention in recent years as a way to boost their profitability. This study paper intends to provide a thorough examination of the effects of cryptocurrencies on the profitability of small businesses, illuminating the numerous aspects and ramifications of cryptocurrency adoption, but also emphasizing its consequences for the financial performance of small firms, with the aim to fill the knowledge vacuum, as well as to provide insights into the potential and constraints connected with cryptocurrencies in the small company environment by examining revenue generation, cost management, financial transactions, and market growth. For a number of reasons, it is essential to comprehend how cryptocurrencies affect the profitability of small businesses, and in order to accomplish the goals of this study, a thorough analysis of the body of literature will be done, looking at empirical research, case studies, and theoretical frameworks pertaining to the effect of cryptocurrencies on small company profitability. This research study seeks to provide a comprehensive grasp of the topic by combining the existing information. In order to learn more about small company owners' experiences, difficulties, and possibilities related to bitcoin adoption, as the main cryptocurrency so far, primary data were gathered via surveys or interviews among them. The study adds to the body of information already available and provide useful advice, as well as shared practical experience for academics, policymakers, and small company owners who are interested in learning about the effects of bitcoin integration on small business profitability.*

Keywords: *Cryptocurrencies; Small businesses Profitability; Financial environment; Cryptocurrency adoption Customer base; Transaction costs.*

JEL Classification: *B52; E42; E44; E50; E52; F39; L25; M16; M21; N20; P43.*

1. Introduction

In the global financial environment, cryptocurrencies have become a disruptive force that offers possibilities as well as problems for firms in numerous industries. The incorporation of cryptocurrencies into small businesses' operations has gained more attention in recent years as a way to boost their profitability. The advantages of cryptocurrencies for small businesses could include a wider customer base, lower transaction costs, better financial security, and increased operational effectiveness. Regulator ambiguity, price volatility, and technological difficulties have also generated some anxiety (Nakamoto, 2009). This study paper intends to provide a thorough examination of the effects of cryptocurrencies on the profitability of small businesses, illuminating the numerous aspects and ramifications of cryptocurrency adoption. The use of cryptocurrencies by small enterprises has been gaining attention and significance recently. Despite the emphasis on including cryptocurrencies in current studies, a better knowledge of how cryptocurrencies really affect small company profitability is still required. By studying the many facets of bitcoin adoption and its consequences for the financial performance of small firms, this research aims to fill this knowledge vacuum (Wu et al., 2022, Gad et al., 2022; Sagheer et al., 2022; Lyons, 2022). This research intends to provide insights into the potential and constraints connected with cryptocurrencies in the small company environment by examining revenue generation, cost management, financial transactions, and market growth. For a number of reasons, it is essential to comprehend how cryptocurrencies affect the profitability of small businesses. (techbooky, 2020) First off, studying how cryptocurrencies might affect small businesses' bottom lines has ramifications not just for the companies themselves but also for the overall economic environment. Small businesses play a crucial role in the global economy, contributing to job creation, innovation, and economic development. Second, it is crucial to evaluate the precise processes by which cryptocurrencies affect the operations of small businesses as they continue to acquire recognition and appeal. Small company owners may build effective strategies to increase profitability by identifying the elements that contribute to success or present difficulties. (Roubini, 2018) In order to accomplish the goals of this study, a thorough analysis of the body of literature will be done, looking at empirical research, case studies, and theoretical frameworks pertaining to the effect of cryptocurrencies on small company profitability. This research study seeks to provide a comprehensive grasp of the topic by combining the existing information. In order to learn more about small company owners' experiences, difficulties, and possibilities related to bitcoin adoption, primary data will also be gathered via surveys or interviews with them.

The study will add to the body of information already available and provide useful advice for academics, policymakers, and small company owners who are interested in learning about the effects of bitcoin integration on small business profitability (Swan, 2015).

2. Literature Review

Examine the literature that is currently available to learn how customers see cryptocurrencies and how they feel about utilizing them to transact with small companies. Consider elements including familiarity, trust, perceived advantages, hazards, and obstacles that affect customer perception. (Vaidhyanathan & Jain, 2023)

Review research that look into whether or not consumers accept cryptocurrency as a form of payment for small company interactions. Discuss elements including usability, security, transaction speed, cost-effectiveness, and convenience that help or impede adoption. (techbooky, 2020)

Examine the impact of customer perception and adoption of cryptocurrency on consumers' intentions to make purchases from small companies. Investigate research that demonstrate the connection between bitcoin use and customer behaviour, including buying patterns, transaction amounts, and product preferences. (Roubini, 2018; Tambe & Jain, 2023)

Key elements that influence consumer behaviour with relation to the acceptance and use of cryptocurrencies in small company transactions should be identified. Take into account social impact, technology literacy, demographic characteristics, and prior cryptocurrency experience.

Contrast with conventional payment methods: Examine how consumers see and accept cryptocurrencies in comparison to conventional payment methods including cash, credit cards, and mobile payments. From the standpoint of the customer, discuss the benefits and drawbacks of adopting cryptocurrency in small company transactions (Roubini, 2018).

Explore the research that looks at how cultural and environmental variables affect how consumers perceive and accept cryptocurrency for use in small company transactions. Take into account research done in various nations or areas to gain understanding of how regulatory frameworks and cultural norms affect customer behaviour.

3. Overview of the Research Problem & Research Gap

Despite the increased interest in how cryptocurrencies affect small company profitability, there is still a dearth of study on the precise tactics and methods that these companies should use to get the most out of adopting cryptocurrencies. While earlier research has looked at how cryptocurrencies generally affect small companies, less focus has been placed on how to actually adopt and optimize cryptocurrency-related efforts inside small company operations (Eichengreen, 2019).

Finding and analysing efficient techniques for small firms to overcome obstacles and take advantage of possibilities given by cryptocurrencies is therefore a crucial research gap that needs to be filled. Investigating the critical elements that enable successful cryptocurrency integration entails looking at things like choosing the right cryptocurrencies, setting up secure payment systems, managing cryptocurrency holdings, reducing price volatility risks, and adhering to changing regulatory frameworks (Gad et al., 2022; Chang, 2021).

Future studies that close this knowledge gap will be able to provide small company owners insightful information and helpful advice, enabling them to design specialized strategies for incorporating cryptocurrencies into their operations. In an increasingly digitized and decentralized economy, such study would enable small enterprises to successfully use cryptocurrency as a tool to improve profitability, competitiveness, and long-term sustainability.

Exploring how small organizations might successfully incorporate cryptocurrency into their financial management processes will fill another study need. This entails looking at things like internal control mechanisms, risk management techniques, financial reporting frameworks, accounting standards for cryptocurrency, and tax ramifications. Traditional financial management techniques in small firms may face difficulties due to the distinctive features of cryptocurrencies, including as price volatility and regulatory concerns. For practitioners and policymakers, seeing how small firms modify their financial management procedures to account for cryptocurrencies may be quite instructive. By bridging this knowledge vacuum, studies may help small firms build best practices for managing cryptocurrencies inside their financial operations, eventually improving their profitability.

3.1. Research Questions

Question 1: What are the primary variables affecting consumers' perceptions and acceptability of utilizing cryptocurrency for transactions with small companies?

The goal of this question is to find out what influences consumers' views, worries, and preferences towards using cryptocurrency while transacting with small companies. It can include looking at things like customer confidence, perceived dangers, ease of transactions, security precautions, knowledge with cryptocurrency, and demographic factors.

Question 2: What are the main approaches and recommended procedures that small firms may use to meet obstacles and take full advantage of cryptocurrency opportunities?

The purpose of this question is to investigate the precise tactics and methods small companies may use to successfully deal with issues surrounding the adoption of cryptocurrencies and take advantage of the benefits they provide. Finding successful case studies and analysing the elements that, in the context of cryptocurrency, lead to small company success include risk management, regulatory compliance, customer education, marketing techniques, and financial management approaches.

These two study inquiries aim to comprehend the consumer's viewpoint on the use of cryptocurrencies in transactions with small firms. Insights about customer behaviour gained from answering these questions may help small companies create focused tactics that increase acceptability, trust, and overall profitability when using bitcoins as a payment method.

3.2. Quantitative Research - Online Survey/Questionnaire

The survey was taken part by 53 people in total, 24 of whom completed it satisfactorily.

The sampling technique used was random selection. The main venues used to advertise and carry out the poll were social media ones. Raffles and other incentives were provided to stimulate interest in the poll and the number of respondents. Demographic variety was ensured, and care was made to avoid concentrating just on the experimenter's local group.

Six demographic survey questions were included with the 17 major questions in the online form. The 11 questions on cryptocurrencies used a variety of inquiry methods, such as Likert scale, semantic differential, open-ended, dichotomous, and multiple-response questions.

Twelve male participants, eight female participants, and two people who did not identify their gender make up the sample's gender distribution.

The sample's age distribution is varied, although individuals between the ages of 26 and 35 make up the bulk of the sample with a disproportionately high representation.

In contrast to the general population, a significant percentage of individuals in the sample had academic backgrounds, according to the distribution of educational levels. It is impossible to pinpoint the causes of this enhanced representation. Additionally, data on job status was gathered for correlation reasons.

The goal of the questionnaire's design was to maximize participation while minimizing the amount of time needed. Participants were able to finish the survey in under two minutes during first test runs, which was in line with the basic objective. However, it took an average of all respondents 2 minutes, 51 seconds to finish the survey.

3.3. Answering the Research Questions

Question 1: What are the primary variables affecting consumers' perceptions and acceptability of utilizing cryptocurrency for transactions with small companies?
The particular inquiry has been answered in the following manner, notwithstanding the potential of gaining additional insights from the study that go outside the parameters of the research topic. Only 14% of organizations, including both current bitcoin owners and potential purchasers, indicated plans to acquire cryptocurrencies during the next five years, according to study respondents. It seems unlikely that a sizable majority of the populace would participate in bitcoin purchase in the medium future, given the replies and the prevalent opinion about cryptocurrencies.

Question 2: What are the main approaches and recommended procedures that small firms may use to meet obstacles and take full advantage of cryptocurrency opportunities?
The majority of poll respondents think that the best strategy for having a fair exposure to cryptocurrency is to Dollar cost averaging, while a smaller percentage thinks that cryptocurrencies may go to zero. The number of poll respondents who think that cryptocurrencies have big future potential over the long run, namely during the next 10 years, rises to around 39%, when looking at the more distant future. However, it seems that respondents' chose Dollar Cost Averaging (DCA) because they think it's a great crypto trading technique without the use of indicators. The DCA technique is well-liked by both novice and experienced traders.

They explained that investments have to be split into smaller sums rather than investing them all at once. These fund are then allocated over a specific period of time each, week, month or year.

Sentiments about this study issue and the survey findings are both positive and negative. After analysing the interviews, it is clear that many small businesses that decide to adopt cryptocurrencies would have great returns in the long term (Hebe, 2023).

4. Limitations and Future Research Direction

Only Romanian respondents were used for all surveys and interviews. It should be emphasized that this study's cultural, developmental, and demographic traits are not typical of the whole world's population. Because the survey's data was gathered online, there may have been a bias in favour of those with higher technical aptitude. This bias may include a greater percentage of individuals who have already used cryptocurrency.

It is significant to note that only a small portion of the Romanian community decided to participate in this research, which has implications for the expert interviews that were done.

It would be helpful to carry out these surveys on a regular basis in order to get additional insights and identify trends. Similar studies might be conducted in more varied and expansive populations, like those in Europe, Middle East and Africa to provide a wider viewpoint and make it easier to compare results.

5. Conclusion

Despite the dangers, the market for cryptocurrencies and blockchain technology is expanding. Financial infrastructure that is desperately required is being created, and institutional-grade custodial services are becoming more accessible to investors. The resources required to manage and protect their cryptocurrency investments are progressively being made available to both professional and ordinary investors.

Futures markets for cryptocurrencies are emerging, and several businesses are getting first-hand exposure to the industry. Financial behemoths like PayPal are facilitating cryptocurrency trading on their well-known platforms. Additionally to Block, other businesses have invested hundreds of millions of dollars in Bitcoin and other digital assets. Early in 2021, Tesla spent $1.5 billion on Bitcoin. The manufacturer of electric vehicles claimed to have around $2 billion in cryptocurrencies as of February 2022. Since 2020, business intelligence software provider MicroStrategy has been building up its Bitcoin holdings. By the end of 2021, it had $5.7 billion invested in cryptocurrencies, and it said it will continue to do so using extra operating income. (Bylund, 2022).

Although other variables still influence how risky cryptocurrencies are, the market is evolving as adoption rates go up. In order to invest huge quantities of money

directly in cryptocurrencies, both businesses and individual investors are looking to do so.

Cryptocurrencies have the power to fundamentally transform the financial landscape by giving an alternative to failed monetary policies and a haven in nations with high inflation rates. The usefulness and stability of cryptocurrencies have been further improved by the appearance of stablecoins and the continued development of blockchain technology (Chang, 2021; Bylund, 2022).

References
1. Bylund, Anders (2022) 'How Stable Are Stablecoins, Really?'. *The Motley Fool*, published May 14, 2022, [Online], Available: https://www.fool.com/investing/2022/05/14/how-stable-are-stablecoins-really/ [17 October 2022].
2. Chang, Ellen (2021) '10 Ways to Keep Your Cryptocurrency Safe'. *U.S. News Money*, published Feb. 9, 2021, [Online], Available: https://money.usnews.com/investing/cryptocurrency/slideshows/ways-to-keep-your-cryptocurrency-safe [15 June 2023].
3. Eichengreen, Barry (2019) *from commodity to fiat and now to crypto: what does history tell us?*. NBER Working Paper 25426, January 2019, [Online], Available: https://www.nber.org/system/files/working_papers/w25426/w25426.pdf [30 January 2023].
4. Gad, Ahmed G., Mosa, Diana T., Abualigah, Laith and Abohany, Amr A. (2022) *Emerging Trends in Blockchain Technology and Applications: A Review and Outlook*. Journal of King Saud University - Computer and Information Sciences, Volume 34, Issue 9, 2022, Pages 6719-6742, https://doi.org/10.1016/j.jksuci.2022.03.007, [Online], Available: https://www.sciencedirect.com/science/article/pii/S1319157822000891 [15 April 2023].
5. Hebe, Chen (2023) 'Crypto investment: what are your options?'. *IG,* IG Group, published May 22, 2023, [Online], Available: https://www.ig.com/ae/trading-strategies/crypto-investment--whats-the-best-option-for-you--220523 [25 May 2023].
6. Lyons, Adam (2022) 'Five Reasons Small Businesses Should Consider Accepting Cryptocurrency'. *Forbes*, published Aprilie 29, 2022, [Online], Available: https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2022/04/29/five-reasons-small-businesses-should-consider-accepting-cryptocurrency/?sh=66273df85742 [12 March 2023].
7. Nakamoto, Satoshi (2009) Bitcoin: *A Peer-to-Peer Electronic Cash System*. [online], Cryptography Mailing list at https://metzdowd.com. [16 November 2022].
8. Roubini, Nouriel (2018) "The Big Blockchain Lie". [online], *Project Syndicate* article, Oct 15, 2018, https://www.project-syndicate.org/commentary/blockchain-big-lie-by-nouriel-roubini-2018-10 [02 February 2023].

9. Sagheer N, Khan KI, Fahd S, Mahmood S, Rashid T, Jamil H. (2022) *Factors Affecting Adaptability of Cryptocurrency: An Application of Technology Acceptance Model.* Front Psychol. 2022 Jun 3;13:903473. doi: 10.3389/fpsyg.2022.903473. PMID: 35719491; PMCID: PMC9204170.

10. Swan, Melanie (2015) *Blockchai*n. O'Reilly Media, Inc., January 2015.

11. Tambe, Nikita & Jain, Aashika (2023) 'Advantages and Disadvantages of Cryptocurrency in 2023'. *Forbes Advisor*, published June 14, 2023, [Online], Available: https://www.forbes.com/advisor/in/investing/cryptocurrency/advantages-of-cryptocurrency/ [15 June 2023]

12. techbooky Contributor (2020) 'Cryptocurrency Business: Here's How To Start for Beginners'. *techbooky*, published October 19, 2020, [Online], Available: https://www.techbooky.com/learn-cryptocurrency-business [04 December 2022].

13. Vaidhyanathan, Jaya & Jain, Aashika (2023) 'What Is Cryptocurrency And How Does It Work?'. *Forbes Advisor*, published June 14, 2023, [Online], Available: https://www.forbes.com/advisor/in/investing/cryptocurrency/what-is-cryptocurrency-and-how-does-it-work/ [15 June 2023].

14. Wu, Runhan, Kamran Ishfaq, Siraj Hussain, Fahad Asmi, Ahmad Nabeel Siddiquei, and Muhammad Azfar Anwar (2022) "Investigating e-Retailers' Intentions to Adopt Cryptocurrency Considering the Mediation of Technostress and Technology Involvement. *Sustainability* 14, no. 2: 641, [Online], Available: https://doi.org/10.3390/su14020641 [28 April 2023].

THE EVOLUTION OF CENTRAL BANK DIGITAL CURRENCIES AND THEIR AFFECT ON THE GLOBAL ECONOMY

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Abstract: *This study paper looks at the possibility of central bank digital currencies (CBDCs) as the next step in the evolution of money, and as they have gotten lately a lot of attention from lawmakers, researchers, and financial institutions. This is because technology is changing quickly and financial systems are becoming more and more digital. The goal of this study is to look into the advantages and disadvantages of CBDCs, as well as their ability to change and impact financial systems. The first part of the study gives a broad review of CBDCs, explaining what their main features are and why they were created. Using current case studies, and the views of experts, the paper gives a critical evaluation of the benefits of CBDCs. It looks at how giving unbanked and under banked people access to digital payments and banking services could improve financial inclusion. Also, it looks at whether the use of CBDCs could make banking deals faster, cheaper, and more open. But the paper also talks about the problems and risks that come with putting CBDCs into place, about things like privacy, data protection, the effects on monetary policy, and how the current financial environment could be changed. In order to make a fair analysis, the study takes into account the views of central banks, financial companies, regulatory bodies, and customers, among others. In the end, the goal of this paper is to add to the current discussion about CBDCs by giving a thorough look at how they could be the next step in the evolution of money. It talks about the ways in which CBDCs can change things, as well as the issues and factors that need to be dealt with for them to work. This study paper aims to help lawmakers and other interested parties figure out how to deal with the changing environment of digital currencies and monetary systems by putting light on the possible benefits, challenges, and effects of CBDCs.*

Keywords: *Cryptocurrency; Central Bank Digital Currencies; Global economy; monetary policy; financial systems.*

JEL Classification: *E52; E58; F38; F65; G11; G15; G28.*

1. Introduction

This study paper looks at the possibility of central bank digital currencies (CBDCs) as the next step in the evolution of money. CBDCs have gotten a lot of attention from lawmakers, researchers, and financial institutions. This is because technology is changing quickly and financial systems are becoming more and more digital. The goal of this study is to look into the advantages and disadvantages of CBDCs, as well as their ability to change financial systems (McDonald, 2021). The first part of the study gives a broad review of CBDCs, explaining what their main features are and why they were made. It looks at the main reasons why central banks around the world are looking at CBDCs as a way to improve financial equality, economy, and security. It also looks at how CBDCs might affect standard banking systems, payment infrastructure, and the ways that monetary policy is spread (Denecker et al., 2022; Tambe et al., 2023). Using current case studies, and the views of experts, the paper gives a critical evaluation of the benefits of CBDCs. It looks at how giving unbanked and under banked people access to digital payments and banking services could improve financial inclusion. Also, it looks at whether the use of CBDCs could make banking deals faster, cheaper, and more open (Shobhit, 2023). But the paper also talks about the problems and risks that come with putting CBDCs into place. It talks about things like privacy, data protection, the effects on monetary policy, and how the current financial environment could be changed. In order to make a fair analysis, the study takes into account the views of central banks, financial companies, regulatory bodies, and customers, among others. In the end, the goal of this paper is to add to the current discussion about CBDCs by giving a thorough look at how they could be the next step in the evolution of money. It talks about the ways in which CBDCs can change things, as well as the issues and factors that need to be dealt with for them to work. This study paper aims to help lawmakers and other interested parties figure out how to deal with the changing environment of digital currencies and monetary systems by putting light on the possible benefits, challenges, and effects of CBDCs. (Lukonga, 2023)

2. Literature Review

What CBDCs are and what they look like: Give a complete review of CBDCs, including what they are, what makes them unique, and how they vary from traditional kinds of cash. Examine the possible benefits and reasons for putting CBDCs in place,

such as making it easier for people to get money and working more efficiently. (Denecker et al., 2022; Shobhit, 2023))

Risks Associated with Government management: Look into the dangers that come with government management of CBDCs and other possible risks. Talk about worries about privacy, monitoring, control, and censorship of financial activities. Look at real-life situations or examples of how the government has messed with digital currencies or financial systems. (McDonald, 2021)

Central Bank Independence and Monetary Policy: Think about how important it is for the central bank to be independent when monetary policy decisions are being made. Look at what could happen if the government messes with central banks and how that could affect their independence and trustworthiness. Look into the risks of using CBDCs as tools to change interest rates, exchange rates, or the amount of money in the economy. (McDonald, 2021)

Safeguards and Mitigation Strategies: Look into the different steps that can be taken to reduce the risk of government interference in CBDC systems. Talk about the technology, policy, and oversight tools that can protect user privacy, stop power abuse, and keep CBDC operations running smoothly. Look at books or case studies to find examples of best practices and suggestions. (Shobhit, 2023; Tambe et al., 2023)

International Viewpoints and Regulatory Frameworks: Look at how other countries see CBDCs and what role global unity could play in dealing with the risks of government abuse. Examine the governing systems and standards that can be put in place to make sure that CBDCs are issued and run in a way that is transparent, accountable, and not influenced by politics or ideology. (Lukonga, 2023; Giancarlo, 2021)

By including these topics in your study of the literature, you will get a full picture of the risks that could come from government manipulation in the context of CBDCs. The rest of your research paper will be built on top of this base.

3. Overview of the Research Problem & Research Gap

Central Bank Digital Currencies (CBDCs) could be manipulated by the government, but there isn't much study on what that might mean. Even though the benefits of CBDCs, like better financial inclusion and efficiency, have gotten a lot of attention, not much is known about the risks and what they mean for monetary systems (Giancarlo, 2021).

To find out if the government might be able to control CBDCs, it is important to look closely at many different things. One thing to look into is whether or not states could

use CBDCs to keep an eye on, control, or block financial activities. Researchers should look into the technology and legal steps that can be taken to protect the privacy of users, stop power abuse, and make sure that CBDCs don't limit people's rights (Parizo, 2021).

Also, it is very important to know how government corruption could affect how well monetary policy works. Researchers should look into whether or not states could use CBDCs to affect interest rates, exchange rates, or the amount of money in circulation in an unfair way. This could hurt the independence and trustworthiness of central banks. (McDonald, 2021) Evaluating the protections and procedures that can keep central banks independent and make sure that monetary policy is carried out well is an important area that needs more research. (Denecker et al., 2022; Tambe et al., 2023)

It is also important to look into the possibility of political or ideological effects on the issuing and running of CBDCs. Researchers should look into the possibility that governments will use CBDCs to push certain political or economic goals, which could lead to unequal sharing of resources, unfair credit allocation, or economic instability. It is important to look into what can be done to make sure that CBDCs are transparent, accountable, and not used for political reasons. (McDonald, 2021)

Filling in this study gap would help us learn more about the risks and difficulties that come with the government manipulating CBDCs. It would help people understand the design principles, safety measures, and governing frameworks that are needed to reduce these risks and make sure that CBDCs keep fairness, openness, and democracy ideals in monetary systems. (Parizo, 2021)

3.1. Research Questions

Question 1: How can the risks of government influence be taken into account in the creation and use of CBDCs to protect privacy, support financial freedom, and stop power abuse?

Question 2: What kinds of control systems, legal frameworks, and openness measures are needed to keep central banks from being manipulated by the government and to keep their independence when issuing and running CBDCs?

These study questions the methods and systems that can be used to reduce the risks that could come from the government trying to control CBDCs. The first question is about the technology and social aspects that can protect user privacy, stop power abuse, and make sure that CBDCs aren't used to spy on people or control them. The second question looks at the control structures, legal frameworks, and openness measures that are needed to keep central banks' independence and keep political or ideological factors from changing how CBDCs are issued and how they are used.

The goals of both study questions are to learn more about how CBDCs can be made and used to reduce the risks of government abuse and make sure that monetary systems in the digital age are fair and honest.

3.2. Quantitative Research - Online Survey/Questionnaire

Demographic Information:
The survey collected responses from participants across various age groups, with the majority falling between the ages of 24-57. The gender distribution was predominantly male, and participants had a range of educational backgrounds, with a higher percentage holding bachelor's and master's degrees.

Consumer Adoption of CBDC:
A small portion of the participants were aware of Central Bank Digital Currency (CBDC) and had modest experience with digital currencies. When asked about their likelihood of using CBDC for everyday transactions, a majority expressed a negative inclination, with a combined percentage of very likely and somewhat likely responses totalling 70%. It's clear that there isn't enough confidence in government's intentions in issuing CBDC type of currencies.

Perception and Trust in CBDC:
Participants had a varied level of trust in CBDC as a secure form of digital payment, with the highest proportion indicating a high level of trust. Opinions on the potential of CBDC to replace traditional fiat currency were divided, with 40% expressing belief in its future dominance. Familiarity with the potential benefits of CBDC for the global economy was relatively low among participants. Additionally, a majority of participants stated that widespread acceptance of CBDC by mega businesses would positively influence their adoption.

Overall, the survey results suggest a moderate level of awareness and willingness among participants to embrace CBDC for everyday transactions. Factors such as security, convenience, and cost-effectiveness played a significant role in shaping consumer perceptions. However, further analysis and interpretation of the survey results would be required to draw more precise conclusions and understand the nuances of consumer attitudes towards CBDC adoption.

3.3. Answering the Research Questions

Question 1: How can the risks of government influence be taken into account in the creation and use of CBDCs to protect privacy, support financial freedom, and stop power abuse?

Robust Privacy Measures: To protect user privacy and data, use strong technology protections like encryption protocols, secure login methods, and anonymization techniques. CBDC systems should make privacy a top priority and make sure that governments can't track or watch individual activities without a good reason.

Transparent and Accountable Governance: Set up clear rules and standards for how CBDCs are governed to make sure that their operations are transparent and accountable. This means that policies, rules, and decision-making processes linked to the issuance, running, and control of CBDC must be made public. Independent reports and other forms of external control should be in place to keep the public's trust and stop people from abusing their power.

By taking these steps, CBDCs can be made and used to protect privacy, keep financial freedom, and stop people from abusing their power. It is important to set up a system that respects political values, openness, and the rule of law. This will make sure that CBDCs are used in a fair and reasonable way for the good of society.

Question 2: What kinds of control systems, legal frameworks, and openness measures are needed to keep central banks from being manipulated by the government and to keep their independence when issuing and running CBDCs?

International Standards and Collaborative Efforts: Push for international standards to be used and help central banks work together. Active involvement in international platforms and following best practices that are known around the world can help protect the freedom of central banks and keep the government from having too much power.

External Supervision and Auditing: Set up ways for the central bank's actions with CBDCs to be watched from the outside and independently audited. This can include putting in place independent audit panels or external accountants whose job it is to check if the central bank is following the rules, following good governance principles, and not being manipulated by the government.

4. Limitations and Future Research Direction

If the sample used in the poll was not accurate, the results may not be true for a larger group of people. Convenience sampling or focusing on a certain group of people could add bias and limit how widely the results can be used.

The poll is based on the information and views that people give about themselves. This information and opinions may be biased. Participants might give answers they think are socially acceptable or understand questions in their own way, which could change how accurate and reliable the results are.

The poll form might only have a few questions that focus on certain parts of how consumers see and feel about something. This narrow focus may not take into account all of the factors that affect buyer behaviour and views.

5. Conclusion

From the outline of the poll data, we can draw a number of important conclusions about how consumers see and accept Central Bank Digital Currency (CBDC).

First of all, the poll shows that a large number of people are familiar with CBDC and have used digital currencies before. This shows that most of the people who answered the survey knew what CBDC was and knew how it worked.

Second, people are more likely to use CBDC for everyday purchases if they like it. Less than half of the people who answered said they were likely to use CBDC. They pointed to benefits like lower transaction fees, faster processing times, ease of use, and better security. These things show that users think of CBDC as an easy and efficient way to pay.

Also, the subjects had different amounts of belief in CBDC as a safe way to pay online. Even though most people said they had a high level of trust, more research is needed to figure out what makes people trust or not trust something and to address any worries that might stop broad adoption.

The poll results also show that people have different ideas about whether or not CBDC will take over standard paper cash. Even though a large number of people think that CBDC will be the most important in the future, more research is needed to find out why they think this and what it means.

Also, the poll shows that how small businesses feel about CBDC could have a good effect on how customers feel about it. This shows that relationships and cooperation between central banks and small companies could be a key factor in getting more businesses to use CBDC.

Overall, the poll gives useful information about how and what people think about CBDC usage. But more analysis and interpretation of the results, as well as a larger and more diverse sample, would be helpful to get a full picture of what consumers want and to help build and use CBDC in a way that meets consumers' needs and expectations.

References
1. Denecker, Olivier, Arnaud d'Estienne, Pierre-Matthieu Gompertz, and Elia Sasia (2022) 'Central bank digital currencies: An active role for commercial banks'. *McKinsey & Company*, published October 13, 2022, [Online], Available:

https://www.mckinsey.com/industries/financial-services/our-insights/central-bank-digital-currencies-an-active-role-for-commercial-banks [30 January 2023].

2. Giancarlo, J. Christopher (2021) *CryptoDad: The Fight for the Future of Money* 1st Edition. Wiley, October 26, 2021.

3. Lukonga, Inutu (2023) 'Monetary Policy Implications of Central Bank Digital Currencies: Perspectives on Jurisdictions with Conventional and Islamic Banking Systems'. *IMF eLibrary*, published March 17, 2023, [Online], Available: https://www.elibrary.imf.org/view/journals/001/2023/060/article-A001-en.xml [04 April 2023].

4. McDonald, Oonagh (2021) *Cryptocurrencies: Money, Trust and Regulation* (Hardcover). Agenda Publishing, October 7, 2021.

5. Parizo, Madge (2021) *Digital Currency: How A Digital Representation Of Money Can Be Used To Purchase: Bitcoin Mining*. https://bookauthority.org/author/Madge-Parizo, Sep 17, 2021.

6. Shobhit, Seth (2023), 'What Is a Central Bank Digital Currency (CBDC)'. *Investopedia*, published April 18, 2023, [Online], Available: https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp [22 April 2023].

7. Tambe, Nikita & Jain, Aashika (2023) 'Advantages and Disadvantages of Cryptocurrency in 2023'. *Forbes Advisor*, published June 14, 2023, [Online], Available: https://www.forbes.com/advisor/in/investing/cryptocurrency/advantages-of-cryptocurrency/ [15 June 2023].

ARTIFICIAL INTELLIGENCE AND ITS ROLE IN INTERNATIONAL MANAGEMENT

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Abstract: *Artificial Intelligence (AI) represents the ability that technologies or machines have to copy human intelligence as close as possible in order to solve problems and achieve goals. Artificial intelligence systems adapt, analyze data, observe future actions based on existing information and operate autonomously. An interesting change has occurred over time. In the past, the focus was on the hardware, while the software was considered a weak element. Over time, the software element developed, and over time hardware engineers adapted to the evolution becoming software engineers. Algorithms are used to make predictions in almost any field, and if used correctly, the predictions and results are beneficial and commendable. The take-up of these artificial intelligence applications in public institutions is useful to all. Therefore, developing and perfecting basic human skills is important in the long run. Above all, technology enables work to become more human. For managers, leaders or directors it has a tremendous result. It should be pointed out that starting from the first light bulb up to the emergence of the smartphone, technology has evolved. The element that never changes is the people behind the technology, while the most important aspect is that artificial intelligence is changing the working world.*

Keywords: *AI; Deep Learning; Algorithm; Machine Learning*

JEL Classification: *M-10; M-12*

1. The emergence and development of AI

Artificial intelligence was born with the code-breaking genius of Alan Turing and his team. He was known as the father of modern computing and a visionary mathematician.

During World War II, he was breaking codes and ciphers to dismantle troop movements in order to gain access to classified information through a technology called Enigma, a system used by the Germans.

Using this system, Turing was able to save millions of lives, shortening the war. You may wonder what this has to do with artificial intelligence. Turing imagined a thinking machine and obviously he imagined how it could think, therefore he

proposed a study called Turing Test (Sharkey and Turing, 2012).

An interesting change has occurred over time. In the past, the focus was on the hardware while the software was considered a weak element. Over time, the software element developed, and hardware engineers adapted to the evolution becoming software engineers. AI is actually a general category that encompasses instinctive learning, natural language learning, conscious learning and neural networks. These technologies combined lead to improved productivity, achieving the desired results. Of course, since the 1950s, scientists expected to design artificial intelligent systems by the year 2000, but failed to materialize. In this case I would also rather embrace a viewpoint of the Stanford researchers on artificial intelligence (AI 100), in which they expressed the idea that artificial systems should not analyze activities, be they in the HR field, in order to predict a conclusion, but should be based on predictions over time. The right conclusion and prediction are relatively concurrent.

So, the challenge of AI comes from the fact that it is based on even observation of information, studying that information and adapting resolutions. When a person in the past was killed by a ferocious wild animal, his fellow watcher wisely decided that he should avoid wild animals in the future. This is a prime component of artificial intelligence, calling it simple learning or everyday learning. Simple learning comes naturally, but it is more difficult for digital mechanisms to understand the nuances of each situation.

On the other hand, definite learning is in fact intentional learning that brings intelligence improvement and performance.

2. Components of AI

2.1. Machine learning

This is an element of AI that enables computers to study without being programmed, but explicitly taught.

The process is monitored, and the programmer has to be quite persuasive when telling requesting (by imposing an algorithm with new data inputs) what things to look for, how to calculate them and what action to take.

Through machine learning, unsupervised algorithms develop reasoning, but this is not learned from the programmer. This is where the beauty of AI comes in because intelligent machines can see work or other important spots that the programmer cannot grasp. Definitely, natural language processing or machine learning has a plethora of applications that are yet to be transcribed (Mahesh, 2018; Banaccorso,

2017; Susmita, 2019).

Some forms of machine learning are found among consumers; for example, your streaming service might suggest on your digital platform items, information, videos based on previous viewing patterns and ratings. These elements are actually previously explored through a search engine and are anticipated by consumers and relying on a large amount of information to accurately ensure the outcome.

Natural Language Processing (NLP) (Khurana et al., 2022) is an important element of AI. Natural language processing means the ability of an intelligent machine to adapt and understand language as communicated by human beings. Natural language processing algorithms are based on machine learning as human talk usually is. I am going to give a practical example by analyzing some researchers who requested the algorithm to generate fake news. The system managed to generate a fairly credible story about people who managed to discover real ghosts in a hidden valley in Romania. The system used is called GPT-2 and uses 1.5 billion parameters to generate a text. The next system GPT-3 uses 175 billion parameters. The machine is therefore becoming intelligent over time and will be able to create text faster than the human mind. Researchers are concerned about this phenomenon because a machine can produce fake news that can be assimilated by humans as if it were real. The NLP system is in constant use by humans today. The functional Messenger service on Android or iPad can read a text and suggest some clear answers for the user. So, the NLP component is already starting to produce answers with satisfactory accuracy.

2.2. Deep Learning or Conscious Learning

This is the most critical element of AI because it generates clairvoyant intelligence. The data number inspired the name DEEP LEARNING (Skansi, 2018; Kumar and Garg, 2018) Deep learning can generate comparisons, analysis and skill in unstructured data. It can translate languages, network security, identify resolutions through images, videos.

For example, an AI component that uses deep learning is found in prediction programs seconds before natural disasters such as earthquakes occur. The algorithms used make a prediction and calculate before the catastrophic phenomenon occurs.

In order to establish the value determined by a measurement unit or a real number for deep learning to be complex for the artificial intelligence, they use neural network.

A neural network is a hardware or software system that leads neurons in the human brain.

Artificial neural networks are a plethora of information that filters data before reaching an answer. Computations in neural networks are fast, so commercial applications, fingerprint recognition or facial recognition demonstrate that AI, through neural networks, has reached its maximum predictive capability.

With neural networks, artificial machines learn the way humans learn. The digital project finds and classifies all images on the internet and helps replicate them in the human brain.

We have to admit that we want AI to penetrate all professional fields and look at the amazing performance that it brings to HR.

Of course, managers in public institutions and beyond would like non-human systems. This would be challenging over time and digitized systems would practically lead to instant completion.

In order not to be disrupted by these technologies, HR managers both in public institutions and private companies in Romania, need to be taught to interact with and understand these artificial technological opportunities.

My question is how can diversity and inclusion be properly influenced. AI is now like a small child who needs to be taught, but who is smart enough to understand the context and impact of decisions.

If used with care we can improve results, though the negative effects of AI are very real. When we think of the negative impact of AI, we often think of a sci-fi movie, killer robots – this is just an unrealistic cliché.

Algorithms are now being used to make predictions in almost every field and if used correctly, the predictions and results are beneficial and commendable.

Bold and Uber, the taxi apps that use AI, were able to improve their strengths, because flexible work schedules manage to be reliable both for drivers and for users. These apps use an algorithm that determines pay rates, drivers' schedules, and their gender, which helps reduce gender income gaps. So, HR managers who have adopted this type of AI through taxi apps get pay equity and time efficiency.

We can see that an unbiased approach combined with AI diversity leads to progress. This phenomenon is only happening because smart cars can be phenomenal, but also terrible if not shaped the proper way. This is where humans come in, balancing algorithms to get a clear picture of what is happening in real life.

It would be interesting if in the Territorial Public Pension Authorities, the HR service implemented a system that uses artificial intelligence. The institution could create a program with an algorithm to select resumes with a hierarchy of competences for civil servants according to the information submitted in the documents. This would help in recruiting candidates and make it easy to track their skills and competencies. Managerial success and performance are maximized using AI in public systems.

Through these systems, opportunities are created and recruits can choose the right career.

There are platforms – such as Slack or Dropbox – that determine what skills people have, and institutions or companies can choose the right employees that fit their profile, creating a strong institution or company.

The values of artificial intelligence need to be understood and quantified by the managers of public institutions and Romanian private companies. Productivity increases; we take for example, the Zoom platform. If an employee uses the platform and saves up to 30 hours per month, then the company or institution saves on average 1,000 lei for an employee with a salary of 5,000 lei.

Therefore, HR performance can eliminate burdensome work that requires stress and wasted time, and managers should use AI for urgent and important tasks, thus supporting employee engagement practices, development and quality.

This is a challenge for managers, but it is necessary for high performance to bring AI to the workplace.

2.3. Humans versus AI

A number of experiments have been carried out over the years in the medical field. It has been shown that cancer cells – predominantly breast cancer, as it is one of the most common cancers – can be detected with 92% accuracy using artificial intelligence algorithms.

But AI has lagged slightly behind. Human experts have been able to identify cancer cells with 96% accuracy. Of course, we're better together, humans and AI.

The truth is that mixing algorithms with human reasoning and AI has resulted in 99% of identifying cancer cells in biopsies.

It is clear that smart machines and humans complement each other. However, it is clear that AI cannot identify some rare cancers, but because it succeeds in identifying cancer cells, doctors can use the remaining time performing other tasks, many of them strictly patient-oriented.

The skills of the future using AI necessarily involve collaboration between the human being and machines using creativity, curiosity, compassion and thinking, be it critical (Kortlling et. al., 2021).

AlphaGo is the name of an algorithm that trains creativity, used for games. We consider that it is easier for a child to create a game or an original song, compared to an adult who is not so original. Because of the constant AI evolution, creativity will be a disadvantage for humans.

Curiosity is more than just asking questions and finding answers. Curiosity is similar

to creativity because it is embedded in us since we were babies. Babies are always trying new things and learning from their mistakes, developing their skills at the same time. Researchers have been able to show that intellectual curiosity has a major impact on academic performance and that this curiosity does not diminish with age. Leaders can use curiosity as a way to get the best performance from their employees. Harvard research has shown that people with high curiosity fall less prey to bias.

In conclusion, curiosity is a concept that lends itself to a variety of applications in all fields, but also in real life.

Compassion cannot be easily replicated by an algorithm. Compassion is the ability to understand and share feelings with another person. AI succeeds in adopting compassion when it discovers cancer cells and beyond.

Collaboration is one of the skills that can be helped by AI, but it cannot be replaced. AI can recommend people, but it cannot connect us with them. We often notice that we are connected on social media with many people, we even empathize with them, but at the same time we are isolated. AI can help at connections and collaborations, but it cannot replace them.

For example, Alan Mulally, Chairman and CEO of Ford Motor Company, who retired on July 1, 2014, reinforced the notion of collaboration in business, and the company managed to avoid bankruptcy, not only surviving the recession, but thriving. The important thing is to find opportunities to connect with each other.

True collaboration is a hallmark of an organization or institution both in terms of culture and performance within their own work teams and in their own lives.

Critical thinking means learning, studying; it's slower and more painful, but it leads to better long-term results.

From the perspective of intelligent machines and humans, we will never reach the amount of knowledge that a machine can.

Of course, though if there is abundant data, smart machines are designed to get from point A to point B. They don't ask whether or not point B is the right destination.

Today, we humans struggle not to be robots to get a job; but the time will come when all the work we do every day will be robotized and automated by various digital tools and technologies that are developed through algorithms.

Therefore, we need to differentiate ourselves through skills and face the consequences.

Whatever happens with AI advancements, we need to be in control of our own development, capabilities and augmentation.

We ask ourselves the question, after going through so much information about artificial intelligence: does technology make work more human or more robotic?

I can say that work can be quite human, even if there have been unimaginable

advances in technology. Of course, thanks to artificial systems, work is incredibly human and we see the black holes of candidates resumes who can finally connect to software robots, express themselves faster and also express their feelings. In fact, these bots are embraced by candidates. Learning technologies can help us teach people in individual ways.

Chatbots have the capabilities to broadcast conversations in real time with a human interlocutor. The most common types of chatbots are online shops, sites where appointments are made online 24/7.

These bots are business optimization solutions in both companies and budgetary institutions. A chatbot dedicated to the HR business will optimize the answers to the most common questions faced by retirees and they can receive quick and efficient answers. For example, such a bot would alleviate complicated dialogue situations between a civil servant from a pension authority in the country and a retiree.

This artificial adaptation eliminates phone calls, emails or other difficult communications. Chatbot systems make a great impression on those interacting with public institutions and can be the element that attracts qualified staff, which could be a huge advantage, especially in an area where qualified staff are in short supply and their expertise cost a lot.

This encourages remote work. The connection with the workplace is greatly influenced with digital interactions having positive effects on HR departments.

3. The role of artificial intelligence in HR (Tawalkar, 2019)

The HR system is moving towards the digital revolution and is using various methods to streamline resources using big data analytics, artificial intelligence and cloud computing (Amla and Malhotra, 2017). Most of the organization has used artificial intelligence or digital technologies in HR such as chatbot, machine learning and automation of robot processes in human resource management that supports recruitment, screening, onboarding and interviewing activities.

3.1. Recruitment

Amla and Malhotra (2017) noticed that only 40% of companies and industries use artificial intelligence. Organizations such as SAT, Facebook or GE use digital technologies in screening, interviewing and identifying new talents for the recruitment process in an organization. With the help of AI, the hiring manager can review the application and the candidate can get a quick and correct answer.

Automated chat or answering machine systems play a key role in solving recruitment issues in an organization or even a public institution.

Artificial intelligence is useful in automating the interview by examining with word tests or speech patterns. Through AMY digital software, the interview can take place while AI can improve the candidate's experience. Tools such as AMY and Clara commonly schedule interviews or job meetings. In an organization or public institution, HR has to play multitasking roles where using technology and AI companies are trying to reduce workload. AI offers solutions to many problems and helps increasing the efficiency of human resources in an organization. The HR manager can track the right candidate in a short time with the help of technology by identifying the right candidates based on the required skill sets.

Nowadays, AI is used to reduce favoritism and helps increase transparency in the workplace. This way the organization can select the resume. Through AI applications can be used to analyze job descriptions. Artificial intelligence will help reduce employee redundancy at the workplace.

Various robotic tasks have been carried out to increase efficiency at the workplace. Now computers and digital technology can work behind the scenes in industry. Through computers and modern technologies, industries can manage data analysis and provide real-time feedback during training, changing the course of action based on the progress and responses that industries have got (Riebli, 2018). To save time, companies have been using Microsoft 365, which helps employees to work and increase efficiency at work.

3.2. Benefits of artificial intelligence in HR

1. Reduces the burden on administrative staff in the company.
2. Helps in talent acquisition and identifying the right candidates for the job.
3. Helps in predicting employee retention rate in the workplace.
4. Can overcome human limitations and work accordingly.
5. Reduces the rate of errors occurrence.
6. Maintains workflow in different departments.
7. Companies can get accurate results.
8. Increases employee engagement at the workplace.
9. Minimizes biased decision-making behavior.

3.3. The challenges of artificial intelligence

Implementing AI impacts the levels of management that drive hard in the minds of

employees. Getting the ideal candidate is a challenge for us using AI tools.

Adopting these AI applications in public institutions is beneficial to all. Therefore, developing and refining core human skills is important in the long run.

Above all, technology enables work to become more human. For managers, leaders or executives this is a tremendous result.

It should be remembered that starting from the first light bulb up to the emergence of the smartphone, technology is evolving. The element that never changes is the people behind the technology, while the most important aspect is that artificial intelligence is changing the working world. To this end, we have developed a survey that includes this question. It will be sent to the Pension Authorities with which Romania has social protection agreements in 34 countries, 26 of which are EU members and a second survey will be sent to the Territorial Pension Authorities. A first step has been taken, starting with the Pension Authorities in Germany, Israel, Spain and Austria. Next year, at the next conference, I will present how these countries use AI.

Bibliography

1. Bonarccorso, G. (2017) *Machine Learning Algorithms*, Birmingham: Pack Publishing Ltd., pp. 6-42.

2. Khurana, D. et. al. (2012) „Natural Language Processing: State of the Art, Current Trends and Challenges", *Multimedia Tools and Application*, Volume 82, pp. 3713-3744, available at: https://link.springer.com/article/10.1007/s11042-022-13428-4 [March 20th 2023].

3. Eubanks, B. (2022) *Artificial Intelligence for HR. Use AI to Support and Develop a Successful Workforce*, 2nd edition, UK: Kogan Page.

4. Kumar, V. and Garg, M.L. (2018) *Deep Learning as a Frontier of Machine Learning: A Review*, International Journal of Computer Applications (0975-8887), Volume 182, No. 1, July 2018.

5. Lin, J.L. and Kołcz, A. (2012) „Large-scale Machine Learning at Twitter", *SIGMOD '12: Proceedings of the 2012 ACM SIGMOD International Conference on Management of Data*, May 2012, Scottsdale, Arizona, p. 793804, available at: https://doi.org/10.1145/2213836.2213958 [March 20th 2023].

6. Mahesh, B. (2019) https://www.researchgate.net/publication/344717762_Machine_Learning_Algorithms_-A_Review-ResearchGate, available at: http//:www.researchgate.net/publication/344717762 [February 4th 2023].

7. McCarthy, J. (2007) „From Here to Human-level AI", *Science Direct, Artificial Intelligence*, 171 (2007), pp. 1174-1182, October 10th 2007, available at: Elsevier, https://link.springer.com/article/10.1016/j.artint.2007.10.009- [February 25th 2023].

8. Ray, S. (2019) „A Quick Review of Machine Learning Algorithms", *2019 International Conference on Machine Learning, Big Data, Cloud and Parallel Computing (Com-IT-Con)*, India, 14th-16th February 2019.

9. Skansi, S. (2018) *Introduction to Deep Learning – From Logical Calculus to Artificial Intelligence*, Springer International Publishing AG.

10. Sharkey, N. and Turing, A. (2012) „The Experiment that Shaped Artificial Intelligence", *BBC*, 21 June 2012, available at: www.bbc.com/news/technology-18475646 [February 20th 2023].

11. Turing, A. (1950) *The Beginning of AI*, available at: https://www.britannica.com/technology/artificial-intelligence/Alan-Turing-and-the-beginning-of-AI [March 22nd 2023].

12. Yawalkar, V.V. (2019) „Study of Artificial Intelligence and its Role in Human Resource Management", *IJRAR*, February 2019, Volume 6, Issue 1, available at: http://www.researchgate.net/publication/331596981 [March 22nd 2023].

QUO VADIS EDUCATION? COMPARATIVE STUDY UPON THE RECEPTION OF ONLINE EDUCATION DURING COVID-19 PANDEMIC AMONG ROMANIAN AND HUNGARIAN UNIVERSITY STUDENTS

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Abstract: *March 2020 brought a considerable change into the lives of millions of people: working, learning and many other elements of every day routine moved to the online space. Although, since the launching of the multitude of MOOCs (massive open online courses) offered by entities like Khan Academy, edX, Coursera and others, the idea of home office and even of online education has not been completely new, there still is a basic difference between the alternative, facultative aspect of these facilities and the regular character forced by the Covid-19 pandemic. Home schooling, remote education have become the new normality including both advantages and drawbacks.*

While there is a general consent upon the ineffectiveness of home schooling – at least regarding Romania –, is this valid for tertiary education, too, or could online education offer some perspectives for future academic instruction? Having this in mind, we conducted a research at the Faculty of Economic Sciences of the University of Oradea, Romania, covering the period of online education from March 2020 to June 2021, trying to find an answer to questions like: could the advantages (flexibility in time and space management, broader accessibility cancelling space limits, partial reduction of requirements at least regarding attendance) be materialised in a higher level of attending activities and a lower rate of school abandonment; is online education efficient and to the liking of generation Z; could they, as digital natives, imagine to move online for their studies?

Starting from certain hypotheses covering the aforementioned aspects we applied two research methods: a quantitative one (statistical inventory based on the data offered by the education platform of the institution, distance.iduoradea.ro, used in the time span March-September 2020, and e.uoradea.ro used as from October 2020, survey among the students) and a qualitative one (interview with the students). For a larger view upon things regarding students' attitude towards and reception of online education and its future perspectives, we conducted an extended research including two more Romanian academic institutions (Babeş-Bólyai University, Cluj and the Academy for Economic Studies, Bucharest) – however with very modest results – and two Hungarian ones (University of Debrecen,

University of Nyíregyháza) respectively. This comparative approach – failing to include also a Slovenian institution (University of Maribor), as initially intended – could lead to interesting results covering a broader range.

Keywords: *education during Covid-19 pandemic; online education; rate of school abandonment; students' attitude related to remote education; effectiveness; future of education*

JEL Classification: *Y80; Z0*

1. Introduction

2020 and 2021 were the years of healthcare and IT technology induced by the Covid-19 pandemic, as March 2020 brought a considerable change into the lives of millions of people, when work, learning and many other elements of every day routine moved to the online space. Certain economic sectors (delivery and IT services, trade with IT components due to home office) have experienced a spectacular boom, others (tourism and related domains, production etc.) got frozen and struggled for survival. Social sectors like healthcare, psychological counselling have faced an overwhelming demand, while education has come to a crucial point, being forced to redefine and remodel itself. Since the launching of distance learning in the tertiary domain and the multitude of MOOCs (massive open online courses) offered by entities like Khan Academy, edX, Coursera and others – considered by Maureen W. McClure as a means for total flexibilisation and cost optimisation, thus a considerable element of higher education reform (McClure, in Zgaga et. al. (eds.), 2019) –, the idea of online education is not completely new. Nevertheless there is a basic difference between the alternative, facultative and complementary aspect of these facilities and the regular character forced by the pandemic. Home schooling, remote education have become the new normality including both advantages and a lot of drawbacks. While there is a general consent upon the ineffectiveness of home schooling – at least regarding Romania –, is this valid for tertiary education, too, or could online education offer some perspectives for future academic instruction?
At the Faculty of Economic Sciences, University of Oradea, Romania a specific variant of online education called distance learning has existed since the end of the 1990s. This embraced the form of blended learning. Fulltime online education as a result of Covid-19 disease had been introduced from the middle of March 2020 and activities were run in this form until March 2022. In the second term of the academic year 2019-2020 education was done through the Moodle platform

distance.iduoradea.ro, used only by a few entities of the university, lacking audio and video function, so only on the basis of uploading materials, lectures, activities and facilitating interaction on chat boards in written form. Starting with the academic year 2020-2021 the whole online activity of the University of Oradea was moved to a more productive version of Moodle – e.uoradea.ro – offering more facilities and accepting a very broad range of file formats for being uploaded. Functioning of the platform was acceptable throughout the academic year, however being slower, when overcrowded. For the audio and video components of lectures we were asked to come up with different video applications, like Zoom, Skype, Microsoft Teams, Google Meet etc. As from the academic year 2021-2022 Microsoft Teams application has been incorporated to the above mentioned platform resulting in some minor changes like a new look of the interface and several more profound ones.

Our classes of Business German and Commercial Correspondence in German were held via Zoom, meetings being scheduled according to the faculty timetable for these disciplines. According to our opinion in spite of the tutorials on the platform – both for teachers and students – and the two webinars for teachers to using this platform, – a not very efficient one as being held before the beginning of the academic year 2020-2021, when access to it hadn't already been granted and the other one containing three units, held in January-February 2021 – faculty members, as well as students still encountered certain technical problems. In our case these were manifested in setting an online test to the declension of the noun in German, as the platform wouldn't recognise and accept special German characters with multiple choice type questions, further on it would limit the import function for questions in question banks creating problems with embedded answers (cloze) type of questions, compelling us to ask the platform's administrator and technically more skilled colleagues for help, or to manually create a question bank on each course page needed, as well as to set and fix problematic clozes and follow up the solutions being accepted as the correct answers. The result was a semi-automated correcting process. Other challenges were content and methodology-based, consisting in remodelling or replacing exercises not suitable for the online medium or finding other sources/materials for drilling listening comprehension to the topics dealt with, if the previously used ones were not digitalised. Last but not least the frustration of mainly speaking during the classes to black squares with names/initials, or in best case photos taken in different settings.

Having all this in mind a research was conducted at the aforementioned institution, covering the period of online education from March 2020 to June 2021, trying to find an answer to questions like: could the advantages (flexibility in time and space management, broader accessibility cancelling space limits, partial reduction of

requirements at least regarding attendance) be materialised in a higher level of attending activities and a lower rate of school dropout; is online education efficient and to the liking of generation Z; could they, as digital natives, imagine to move online for their studies? The hypotheses, we have started from, included a better attendance rate of online classes due to flexibility in time and space, lower rate of school abandonment, students' liking online education and considering it as an adequate form for continuing their studies.

1.1. Overview Upon Online Education. Literature Review

Questions like raised in the introduction to this study and similar issues have been dealt with by other researchers, as well, even long before the lockdown caused by the pandemic.

In the centre of Daphne Koller's 2012 TEDGlobal talk is highlighting the benefits of online education, such as a very good global collaboration among students, building study groups along language or cultural lines, geographical position, the possibility of collecting data useful in finding out efficient/inefficient learning strategies, a more personalised curriculum, learning format and pace. "You can break up the material, for example, into these short modular units of eight to twelve minutes, (...). Students can traverse this material in different ways, depending on their background, their skills or their interests. So, for example, some students might benefit from a little bit of preparatory material that other students might already have." (Koller, 2012)

Florence Martin and Doris U. Bolliger analysed learner-to-learner, learner-to-instructor and learner-to-content engagement strategies used by instructors and students and considered by the latter ones to be most efficient in online learning. Their survey findings are crucial in designing online courses with impact. The threefold engagement or in other words interaction is a key factor against failure, school abandonment and depression on learners' side. Among the most appreciated strategies one can list video lectures, different formats used for presenting content, online discussions, chat groups, posting a set of clear instructions, expectations, grading rubrics for all tasks, real-world assignments with practical applicability, group work, peer-review of tasks realised by students themselves, timely and detailed feedback through the instructor etc., but the concluding idea of the study should be retained, too: "The most important element in online learning is the instructor" (Bolliger & Martindale, 2004, in Martin & Bolliger, 2018: 219) being responsive and supportive.

The factors ensuring success for online learning stay also in the centre of another research, this time a comparative one conducted in 2009, resulting that these elements are more of an intrinsic nature, like self motivation, good time management,

independence in working, joy of learning, self-confidence in achieving goals, ability of expressing oneself, rather than determined by the outer world. The group of researchers – Beaudoin, Kurtz and Eden – was mainly interested in the competencies needed throughout e-learning for satisfactory learning outcomes. As the survey was applied to Western, Israeli, Mexican and Japanese online learners – more than 300 respondents in total – it might imply even cultural conditioning. Surprisingly the survey results indicate peer interactions and familiarity with technology as less important elements in succeeding in online educational environment.

Alicia Cundell and Emily Sheepy are also student-oriented in conducting their study upon "Student Perceptions of the Most Effective and Engaging Online Learning Activities in a Blended Graduate Seminar". Data were obtained also through a questionnaire regarding online activities like readings, videos, discussion forums and other assignments based on the use of web technology. Students had to evaluate activities with a special focus on adequacy to the learning outcomes of the course, deep learning, engagement and value, giving thus insight into the nature of engaging online learning activities. To enhance interactivity of the course and especially learner-to-learner interaction, activities included peer-review of tasks, debate, content creation as a group work, reflection. With regard to our study, it might be of interest that more than half of the respondents (55.9%) – 59 in number – would be happy with an equal blend of face-to-face and online activities, 32.2% would prefer face-to-face activities, while entirely online or face-to-face classes were rated with 3.4% each the least.

Michelle Gonzalez and Noreen Moore (2020) analysed in their mixed-method study – survey and semi-structured interview – not only students' opinion regarding engaging online courses, but were interested in institutional perceptions, too, as there can be considerable mismatches between the perceptions of the two entities involved. Like in face-to-face educational situations students' motivation in their own learning process and outcomes is a key element of educational success. The authors consider the three basic and interdependent elements of online and blended learning to be social, cognitive and teaching presence. What Bolliger and Martin called – catching up M.G. Moore's types of interaction (1989) – student-student and student-instructor interaction, in present study is categorised as social presence. Cognitive presence is necessary for finding out, constructing and understanding the meaning of the course content, promoting critical thinking, while teaching presence is the element facilitating both of them (social and cognitive presence).

Quite surprisingly the 82 students involved in the study perceived low-tech course elements much more engaging than Web 2.0 tools being in concordance with the opinion of the 13 faculty representatives. Furthermore the interviews revealed that

for students personal contact to and the availability of the instructor also outside the classes, structured learning contexts, direct instructions, as well as interacting with colleagues through collaborative groups and discussions had an enhancing effect related to learning engagement and outcomes.

Orienting our view to recent past and present we can refer to a set of articles dealing with online education during Covid-19 pandemic.

Hamann et al. (2020) focus in their research work upon online teaching and the efficiency and success of e-learning in a specific field, namely political science courses. However data treated refer to a pre-Covid period, thus not being able to offer info and conclusions fully pertinent to nowadays' situation, the findings, according to which taking only a few online courses doesn't considerably affect students' learning success, while increasing the number of them or moving education entirely online, imperils academic results and graduation, should be taken into consideration and counterbalanced in times, when the pandemic pushes education completely to the online space.

Perceptions upon online education among faculty members in the Philippines is the topic of another 2020 study signed by Rome B. Moralista and Ryan Michael F. Oducado. While faculty representatives participating in the survey were undecided with respect to their liking/unliking online education, they had a quite strong sense of depersonalisation, favouring academic dishonesty, less work done by students, lacking interaction and being challenged by technology during online education.

Another research work – of qualitative type – referring to Romania deals also with students' perspective upon online education, at this time with a special focus on communication in the online space. However not very extensive and also lacking graphical representations, it is still useful for getting insight. Analysing the situation in the second term of the academic year 2019-2020 at the Faculty of Psychology and Education Sciences of the "Alexandru Ioan Cuza" University, Iași, Romania, Angelica Hoblijă highlights advantages, such as being "more student-centered, less intimidating, and encourage(ing) greater participation than classroom interactions" (Markova et al., 2017, apud Hoblijă, 2020: 28) and disadvantages, like "lack of effective interaction and sense of isolation" (idem), elements also perceived by students, and offers suggestions for improving future online communication on teachers' side. As among the drawbacks evoked by students figure also poor internet connection, higher workload than in face-to-face education, too many platforms for activities involved, health issues because of too much time spent in front of IT devices, practical aspects not getting enough emphasis, intensified by the impossibility of doing teaching practice at classroom, solutions for improvement and counterbalancing should deal with these aspects, as well. Fixing the technical

background on institutional side, the use of a single platform for all courses/activities, training both students and teachers for the use of technology, activities run with smaller groups of students and laying more emphasis on explanations, wider availability of teachers for interactions and transferring good practices identified with other institutions worldwide would represent some solutions for the shortcomings.

Although rather a concise report than a scientific paper, Litao Sun, Yongming Tang and Wei Zuo's study (2020) offers good insight into the situation of online education in China during the first months of Covid-19 outbreak. Covering a huge survey group – almost 40,000 students at Southeast University – validity and applicability of the findings are assured. According to data almost 100% of the students asked consider teaching objectives having been fulfilled (50% perceive them fully, while 45% basically attained). Among their suggestions for improvement one can find universally valid recommendations, like combining recorded lecture videos and live courses with more interaction, a teaching platform having playback function etc. The authors point also to issues like difficulties encountered in research and experimenting for graduate papers, the necessity of changing previously set topics, project goals and the flexibility of institutions/tutors in handling these issues.

Analysing synchronous, asynchronous and hybrid eLearning Mladenova et al. were interested in aspects like motivation and attendance, skills acquired, exam results, workload, work discipline, professional communication and relationships. In their survey conducted in 2020 (winter and summer term of the academic year 2019-2020) at University of Ruse, Bulgaria they had come to results regarding the interrelation between online education and attendance rates and digital generation's attitude to remote examination, very similar to those emerging from present work.

Last but not least we shall consider a newspaper article signed by a nine grade student, Rishabh Gupta, resonating with our research, as it presents students' opinion on and feelings towards online education based on the results of a survey conducted with participation of 85 persons. The results are quite surprising, in spite of all the advantages offered by remote education and the popularity of web-based technologies among young people, "almost 80 percent of the students preferred classroom education to online lessons" (Rishabh Gupta, 2020).

2. Methodology

To check the validity of the hypotheses formulated in the introductory part, both quantitative (statistical inventory and survey among students) and qualitative

methods (short semi-structured interview with students from different specialties and study years) were applied. Evidently applying part of these instruments had to be limited to the institution of the author's affiliation.

2.1. Platform Accessing and School Abandonment Rate Analysis

By means of descriptive statistics we made an inventory of the accessing rate of the online educational platform used by our faculty in the second term of the academic year 2019-2020 and both semesters of the academic year 2020-2021. The main entities analysed were first year students, as they generally show the highest rates of attendance with respect to academic activities. The reference point for our check was two-three weeks before ending the lecturing period in all the three terms considered, so it was May 14, 2020 for summer term 2019-2020, December 23, 2020 for fall term 2020-2021 and once again May 14, 2021 for the summer term of the latter academic year. The inventory was conducted according to the foreign language lecture series the students belong to and access rates were also referring to foreign languages (English, French, German). The three different course pages – one for each language – listed all the students included in the respective series and it was on their behalf to access the course page matching their language choice. One of the series included students from following specialties: Management, Marketing, Finance, Accounting and Tourism (157 persons in 2019-2020), another series was allotted to the specialty International Business with Romanian as the language of instruction (28 students) and the third series belonged to International Business and Business Administration both having all the disciplines taught in English (38 students).

Until May 14, 2020 out of the 157 participants of the first series the course page was accessed by 52 (about 33%), from the 28 students of the second series by 14 (50%) and from the 38 participants of the third series by 15 persons (39%) at least one time. In the following academic year there were 190 students in the first series with 87 persons (approximately 46%) accessing until December 23 at least one time the platform. The numbers for the second series were also 28 students with 18 accessing ones (about 64%), while from the 41 participants of the third series with 28 accessing ones (about 68%). It should be mentioned, that the total number of participants enrolled to the first year course pages in foreign languages might have included some second year students with retake exams in these disciplines, as well. In the summer term 2020-2021 we analysed the same cohort of first year students having 192 students in the first, 30 in the second and 43 in the third series. The differences in numbers related to the first term are given by second or third year students with retakes in foreign languages. In the first series 55 students (about 29%) accessed until

May 14, 2021 at least once the course page in languages, in the second series this number was 12 (40%), while in the third series 15 (about 35%). While there is no means to compare numbers and rates in the first term of online education with those from the second and third term of this form of activity, as we refer to different groups/series of students, the parallel can be drawn for the two terms of the academic year 2020-2021, where one can observe a considerable decrease in access rates from fall to summer term of this year. It should be also mentioned, that accessing the platform doesn't necessarily mean attending classes held on Zoom, Skype or other applications, it shows only a minimal interest for activities in that respective course. For a better overview consult the graphic representation below (chart 1).
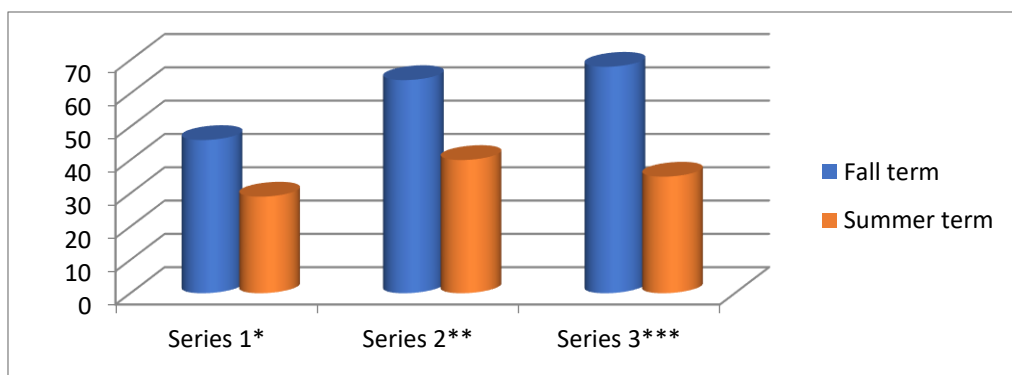
Chart 1: Access rates in percentage fall and summer term, academic year 2020-2021
* students of the specialties Management, Marketing, Finance, Accounting, Tourism
** students studying International Business in Romanian language
*** students studying International Business and Business Administration in English language
Source: own creation

To find out relevant data for our first hypothesis we have to restrict our range of analysis only to students studying German, as we dispose of data for an at least partial comparison to the period of face-to-face education only referring to this group of students.

Regarding the first series (students of the specialisations Management, Marketing, Finance, Accounting, Tourism) in the summer term 2020 out of the 31 students studying German 22, i.e. around 70% accessed the course page at least once until the date of reference, from the second series out of 14 persons 10 (71%) and from the third series out of 18 students 11, that means 61%.

In the first term of the next academic year from the 35 students of the first series studying German 31 persons (about 89%) visited at least once the course page until December 23, from the 14 students of the second series this number was 11 (around 79%), while from the 13 participants of the third series 12, so about 93%. In the second term of the same academic year a slight decrease in the accessing rates can

be observed with the first two series. From the 35 participants of the first series 28 (80%) logged in at least once until May 14, 2021 and from the 15 participants of the second series – once again the differences in numbers result from students with retakes – only 9 students, i.e. 60%, and the numbers and rates are the same for the third series (9 people out of 15), too, with a considerable fall of 33% in the accessing rate related to the first term. We synthetised these data in chart number 2.
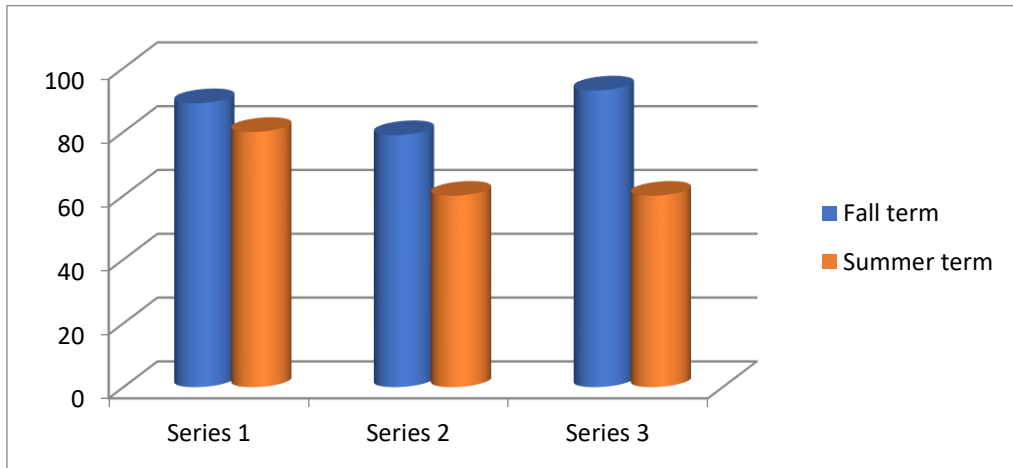
Chart 2: Access rates in percentage fall and summer term, academic year 2020-2021, students studying German
Source: own creation

The two charts show a visible decline in the access rates from one term of the academic year to the other one, the question is, how do these rates relate to the previous attendance rates in the pre-Covid period? To find it out, we decided to compare the attendance data of the academic year 2018-2019 with fully face-to-face education, of 2019-2020 with half face-to-face and half online education and of the completely online run 2020-2021. For a better evidence we put data into tables representing the aforementioned academic years (tables 1-3).

Table 1: Class attendance rates in percentage, academic year 2018-2019, Iˢᵗ year students (fully face-to-face education)

Specialisation	Fall term	Summer term
International Business/Business Administration (English)*	~ 81% (out of 21 students 17 having at least one presence)	~ 52% (21 / 11)

* no data available for the other specialties, as in this academic year they were taught by another teacher
Source: own creation

Just as a follow up, in the first term of the next academic year, also in face-to-face education, they presented an attendance rate of 78%. Unfortunately we don't dispose of data regarding the IInd term of this year, as access to the platform distance.iduoradea.ro, where education was run in the first period of the pandemic, is not granted any more.

Table 2: Class attendance rates in percentage, academic year 2019-2020 (half face-to-face and online education) and 2020-2021 (fully online education) as follow up

Specialisation	Ist year of study (2019-2020)		IInd year of study for following up (2020-2021)	
	Fall term	Summer term	Fall term	Summer term
MN, MK, F, Acc., T**	~ 81% (31 / 25)	~ 70% (31 / 22)	~ 85% (26 / 22)	- ***
International Business (Romanian)	92% (14 / 13)	71% (14 / 10)	~ 77% (13 / 10)	~ 67% (12 / 8)
International Business/Business Administration (English)	~ 94% (18 / 17)	61% (18 / 11)	~ 69% (16 / 11)	~ 59% (17 / 10)

** Management, Marketing, Finance, Accounting, Tourism
*** not studying languages any more
Source: own creation

Table 3: Class attendance rates in percentage, academic year 2020-2021, Ist year students (fully online education)

Specialisation	Fall term	Summer term
MN, MK, F, Acc., T	~ 89% (35 / 31)	80% (35 / 28)
International Business (Romanian)	~ 79% (14 / 11)	60% (15 / 9)
International Business/Business Administration (English)	93% (13 / 12)	60% (15 / 9)

Source: own creation

Following preliminary conclusions can be drawn: the attendance rates of the second terms show in most cases a considerable fall related to those in the first terms; there is an evident decrease in the second term of the academic year 2019-2020, the moment when education moved online, as related to the first term, however with a revival in the first part of the next academic year presenting generally comparable

attendance data with those of face-to face education. Looking at these data and calculating the median for them, – an average attendance rate of about 80% in face-to-face classes, while around 73% for online education – the final conclusion is: there is no evidence for online education increasing class attendance on behalf of its flexibility. It should be also mentioned, that neither in case of face-to-face nor in that of online education do these rates refer to the intensity of the activity, they just show a minimal interest for the discipline and education at all.

To check the validity of the hypothesis regarding school abandonment the same three academic years (2018-2019, 2019-2020 and 2020-2021) were compared covering an equal period of face-to-face and online education (three semesters each). According to our expectations, faculties and study programmes face generally the highest rate of dropout during and at the end of the first year of study showing a decreasing tendency in the following years. At our faculty, this was valid both for face-to-face and online education. Furthermore, although registering slight fluctuations, online education indeed contributed to diminishing the rate of school abandonment with almost 40% as an average for all years of study, probably also due to lowering the level of requirements and the facilities offered by the online space, but surprisingly led to a 50% increase of non-graduation from the academic institution. Concrete details can be consulted in the following table.

Table 4: Rate of school abandonment and expulsion at the Faculty of Economic Sciences, University of Oradea in the period analysed

Iˢᵗ year			IInd year			IIIrd year		
2018-2019	2019-2020	2020-2021	2018-2019	2019-2020	2020-2021	2018-2019	2019-2020	2020-2021
~22%	~ 12%	~ 15%	~ 9%	~ 4%	~ 7%	~ 5%	~ 4%	~ 3%
Decrease of almost 40% in average during online education as compared to the face-to-face form			Decrease of almost 40% in average during online education as compared to the face-to-face form			Decrease of almost 30% in average during online education as compared to the face-to-face form		
-			-			Rate of non-graduation		
						10%	17%	13%
						! an increase of almost 50% in average during online education		

Source: own creation based on data delivered by the faculty secretariat

2.2. Questionnaire Related to the Online Education

Response to our last two suppositions with respect to students' preference for online education and the perspectives of this educational format is to be found in the online questionnaire completed by a total of 138 persons. Initially the survey was thought to be conducted only among the students of the Faculty of Economic Sciences, University of Oradea, but later on we decided to extend it to a wider range, including other Romanian higher education institutions and both Hungarian and Slovenian students. Unfortunately in lack of responses on Slovenian side, – in spite of the repeated efforts of the teacher colleague from the Faculty of Economics and Business, University of Maribor – the international comparison was limited to Hungarian students only. The institutions participating in the survey are on Romanian side the Faculty of Economic Sciences, University of Oradea, the Faculty of Letters, Babeş-Bólyai University, Cluj and the Academy for Economic Studies, Bucharest and on Hungarian side the University of Nyíregyháza, – with a quite wide range of specialties – and the Faculty of Economics and Business, University of Debrecen. The main difficulty encountered throughout the survey was the reluctance and delay in response on Romanian side leading to its limitation, as well, namely the restricted number of questionnaires applied, 44 (33 responses from the institution of the author's affiliation, 2 from Bucharest and 9 from Cluj) as related to the 94 responses got from Hungarian participants (62 from the institution in Debrecen and 32 from Nyíregyháza). It should be mentioned, that one of the participants in Romania is a foreign citizen, studying at our faculty and running a business in Oradea with the perspective of applying for Romanian citizenship. That's why we decided to integrate this student into the Romanian group of surveyees. The double number of questionnaires completed by Hungarian students and their promptitude in answering enable some favourable conclusions related to their seriousness and sense of obligation as an average in comparison to the features of their Romanian mates.

Slightly different variants – in Romanian, Hungarian, German for Cluj and English for Oradea and Maribor – of the same questionnaire were applied throughout the academic year 2020-2021. The differences in length – five versus seven questions – and formulation result from the variety of the survey group and the period of application also through the prism of the different regulations imposed temporally and geographically by the pandemic. Students outside the institution of the author's affiliation had to complete variants with slight modifications of the following questionnaire:

1. How did you perceive online education in the previous semester?
   a) as an opportunity for greater freedom in time management dedicated to learning
   b) as a technological and infrastructure challenge
   c) as idea ok, but as it was realised, as unsatisfactory
   d) otherwise, extend upon it:

2. Did you follow the activities in the disciplines learned regularly?
   a) yes - why?
   b) no - why?
   c) in some disciplines, yes, with others, no - why?

3. Do you consider having worked harder with online classes than you did in face-to-face education?
   a) yes
   b) no
   c) only in some periods (eg. before the exam session etc.)

Comments/observations, if you have any:

4. Which form of evaluation did you feel more confortable with?
   a) face-to-face written/oral evaluation - why?
   b) online written/oral evaluation - why?

5. Would you like continuing education in online form in the next terms, too?
   a) yes - why?
   b) no - why?
   c) other answer

Students of the University of Oradea had to consider two additional questions related to the rate of following the activities in the disciplines taught by the author and to their satisfaction upon respective classes. Furthermore the question related to the form of evaluation made also reference to these disciplines, however students' responses might suggest applicability to other disciplines, too.

In the first round Hungarian samples were analysed separately, while Romanian ones together, as they were few in number. Thus, the following results were obtained. 60% (37 persons from the University of Debrecen) and almost the same rate, 59% (19 of University of Nyíregyháza students) perceived online education as giving more freedom in managing one's time. For 16% (10 students) from Debrecen and

19% (6) from Nyíregyháza it presented a technological and infrastructure challenge, while 8% (5 persons studying in Debrecen) and 9% (3 persons studying in Nyíregyháza) were not satisfied with the way, online education was realised. Another 10 students (16%) from Debrecen and 4 (13%) from Nyíregyháza indicated the lack of social relations, technical problems like power cut, health issues because of sitting too much in front of the computer, the necessity of decreasing the workload and requirements as issues to be dealt with.

For 74% (46 persons) of the students from Debrecen and about 84% (27 persons) of those from Nyíregyháza intrinsic motivation was the reason to attend activities regularly; while 23% (14 Debrecen students) and 16% (5 Nyíregyháza students) made their choices according to the discipline and a mere 3% (2 persons in Debrecen) lacked enough enhancement to follow the activities on a regular basis.

Online education meant harder work for 37% (23 people) of the students of the first institution, this was only 22% (7 people) with the second one, 42% (26 persons) of the responding students in Debrecen and 40% (13 persons) in Nyíregyháza respectively had a contrary feeling related to the quantity of tasks, while 21% (13 persons) in Debrecen and around 35% (11 students) in Nyíregyháza experienced periodically a bigger workload because of the increased number of projects and papers to be submitted.

Because of technical problems and more rigorous time limits faced in the online exam, 13% (8 students) in Debrecen and a considerable 35% (11 persons) in Nyíregyháza would prefer face-to-face examinations, 4% (3 students) in Debrecen were undecided and accordingly an overwhelming 83% (51 in number) of Debrecen students and 65% (21 in number) of the participants in Nyíregyháza voted for online exams. The arguments mentioned ranged from higher security, lower rate of stress, over more facile tasks to no necessity for travelling. Related to the perspectives of education only 26% (16 people) of the participants in Debrecen and about 31% (10 students) of those in Nyíregyháza voted for continuing studies online, 53% (33 students) of the first group and 50% (16 students) of the second one expressed preference for face-to-face education, while 21% (13 people) in Debrecen and a further 19% (6 persons) in Nyíregyháza could imagine hybrid education with practical types of activities run definitely in face-to-face form. Maybe relevant for the views of the supporters of face-to-face instruction is following excerpt from the argument of a student in Debrecen: "I would consider it outrageous (to continue online – author's note). I enrolled at university to get quality knowledge, necessary for the degree and to start my independent life. In my view, in this form none of them is realisable (…)."

Analysing the responses given by Romanian students – with some items leading to overlapping choices – one can state, that 48% felt more freedom in time management due to online education, for 27% it meant technological challenge, 23% were unsatisfied with its realisation and 2% had other feelings related to it.

The arguments for participating regularly in the activities were for 68% mainly of intrinsic character, 5%, not participating on a regular basis, blamed health issues and lack of time, while 27% decided to participate or not depending on the discipline/activity. "Some disciplines were of no interest for me and it was a great relief not being compelled to participate, (...)" argued a student of the Babeș-Bólyai University, Cluj. For 41% of the Romanian participants online education was equal to harder work because of the increased workload, or as another student from Cluj formulated: "In face-to-face education the mere presence used to be quite enough and generally one didn't need to collaborate or say something, just sit there (...). While with the online education each of us had to do the homeworks/assignments, that wasn't the case at all, or just rarely, before." 39% of the participants considered not having worked more, while about 20% dedicated more time and effort for learning in some periods of the term.

An overwhelming 80% of the responding students voted out of various reasons for online exams, although there were even respondents (18%) aware of face-to-face exams implying more correctitude in grading and compelling students to a greater involvement. The remaining 2% resulted from one person skipping to answer to this item. Here should stay a noteworthy remark made by a master student from Bucharest in favour of online examination which "(…) forced many teachers to make the transition to open-book or similar type of exams, where the grade of difficulty of the exams set on memorising (…) was drastically decreased and accent was laid on competencies acquired, on understanding issues etc. (…)."

Unlike their Hungarian mates, 45% of the Romanian students participating in the survey were/would be happy with continuing education online due to a better time management, the possibility of taking a job in parallel, or because of considering it more exciting and efficient. On the contrary about 41%, also due to social interaction and perceiving it as being more efficient, would prefer face-to-face education, while the remaining 14% were undecided. For a better comparability between the two national groups, we finally summarised the Hungarian results and put them for a graphic representation in comparison to Romanian data in following charts (charts 3-12).
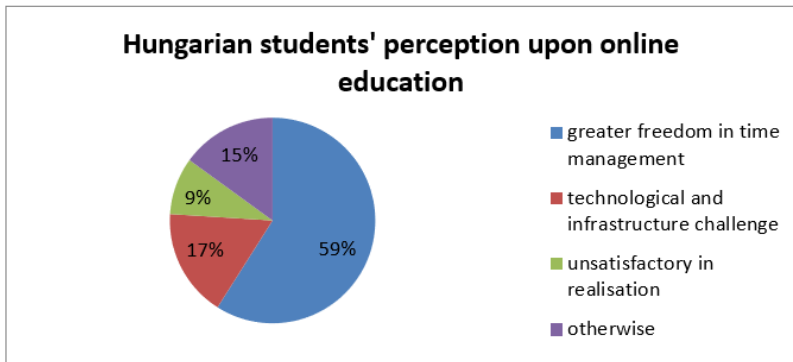
Chart 3: Hungarian students' perception upon online education in percentage
Source: own creation
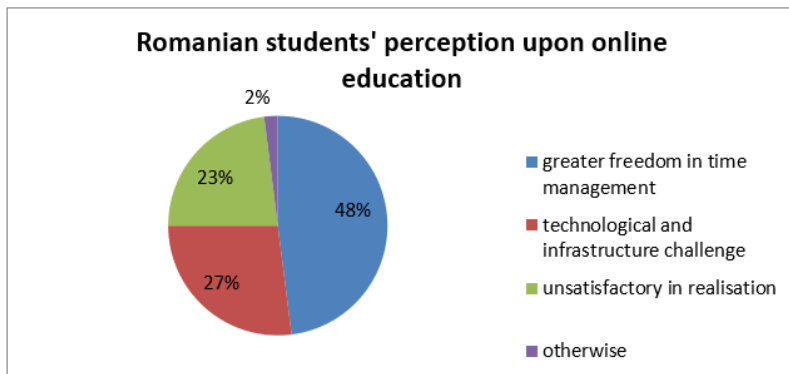
Chart 4: Romanian students' perception upon online education in percentage
Source: own creation
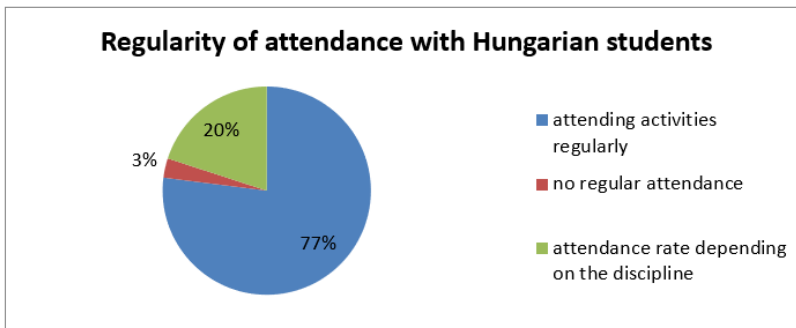
Chart 5: Regularity of attendance with Hungarian students in percentage
Source: own creation
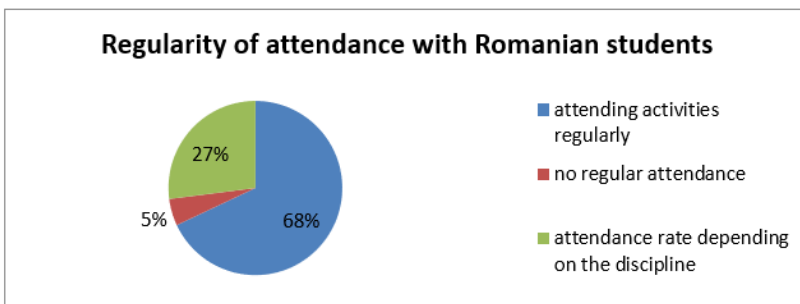
Chart 6: Regularity of attendance with Romanian students in percentage
Source: own creation

Hungarian students' perception upon workload
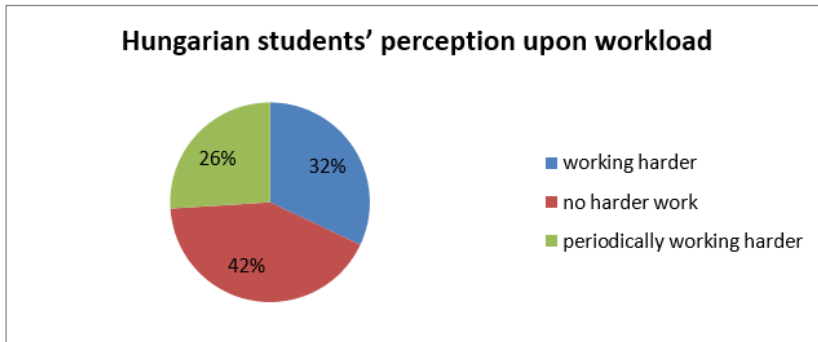
Chart 7: Hungarian students' perception upon workload in percentage
Source: own creation

Romanian students' perception upon workload
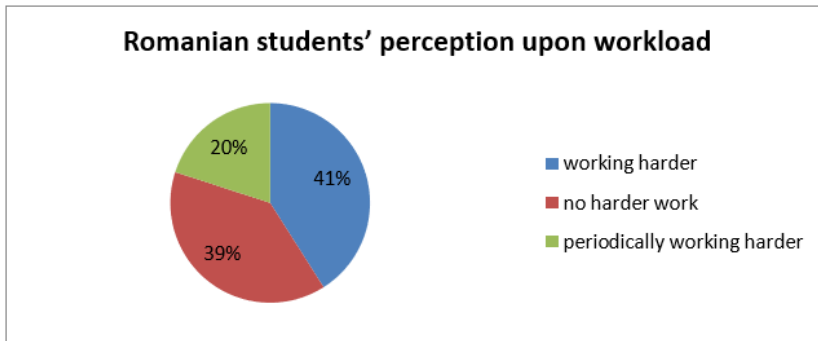
Chart 8: Romanian students' perception upon workload in percentage
Source: own creation

Hungarian students' preference for the examination format
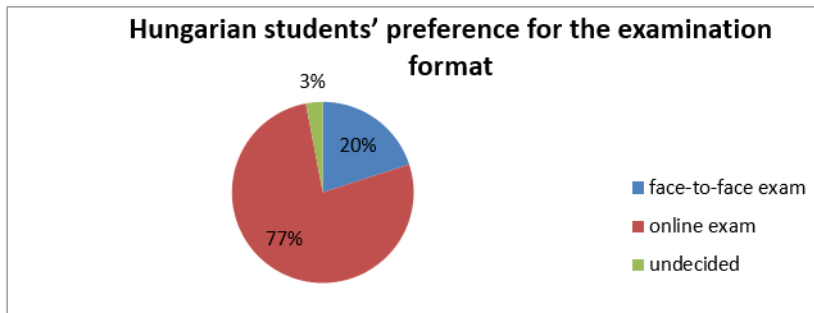
Chart 9: Hungarian students' preference related to the examination format in percentage
Source: own creation

Romanian students' preference for the examination format
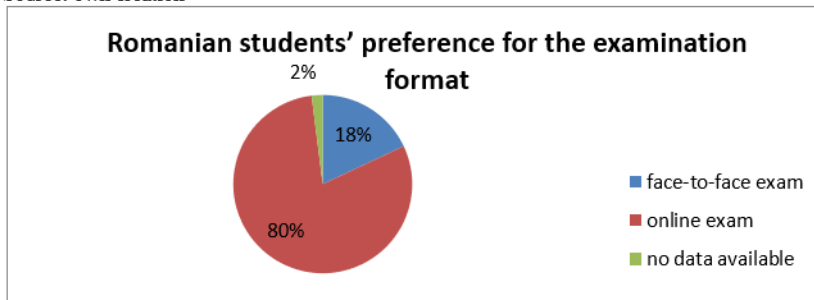
Chart 10: Romanian students' preference related to the examination format in percentage
Source: own creation
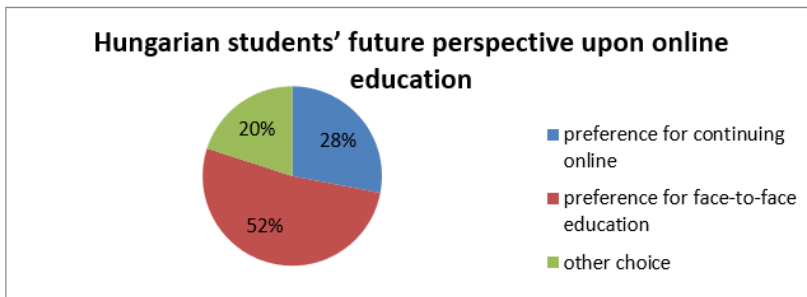
Chart 11: Hungarian students' future perspective upon online education in percentage
Source: own creation
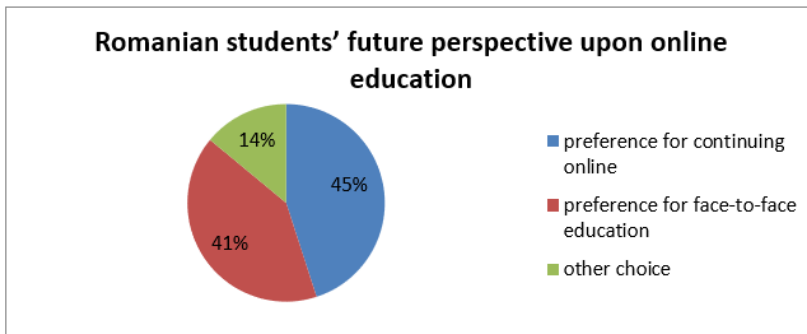
Chart 12: Romanian students' future perspective upon online education in   percentage
Source: own creation

The results are conclusive and quite similar between the two national groups. Greater differences emerge only related to their perception upon and future perspective of online education, where a higher rate of Romanian students opted for continuing courses in the online form in spite of having more objections regarding its realisation. However in case of both national groups more than half of the participants expressed preference for face-to-face, or alternative ways of education, like hybrid classes, some of them being neutral or undecided.

Concerning the efficiency of online education, lacking objective, valid instruments of measuring, it is hard to state anything. The grades got by students can reflect in this situation even less than in face-to-face education their real level of competence, as there is no certainty about the identity of the persons completing the assignments or the correctitude on students' side in not resorting to various online sources for help, like google translate or other translation applications in our case. It is only the following years, – when back to physical classes or taking a job – that will reveal the true level of competence acquired.

2.3. Interview With Students

For completing and nuancing the image resulting from the survey, a short, semi-structured interview covering three topics was conducted with 15 participants from a wide range of specialties and all the three years of study at the Faculty of Economic

Sciences, Oradea. Interviewees were asked about their feelings related to online education, missing face-to-face interaction and their psychological profile. Irrespective of this latter one – intro- or extroverted – almost all of the students interviewed missed social, face-to face interaction with mates and teachers, some of them got even somehow depressed lacking it or had the impression of communicating with robots, not having the counterpart in his/her blood-and-flesh reality beside them. Some felt it difficult to put feelings into words, but characterised their sentiments towards remote education as rather negative, or were confused, having the impression of leaving this period behind without any memories; others tried to take benefits of 'being protected by a screen' and overcame their shyness when presenting a project. For some others online education was beneficial, facilitating multitasking and running the own business in parallel, or time and money saving, not having to move to the city of education or to commute, offering safety with respect to the pandemic. Multitasking and the lack of separation between private and professional life was on the contrary ground for complaint for another interviewee, who felt somehow getting to unlike faculty because of online education. Those unhappy with this form of instruction accused also being exhausted by spending the whole day in front of electronic devices. Last but not least the level of frustration caused by lacking social interaction was probably higher with first year students being deprived of getting to know each other and faculty life.

3. Conclusions, Limitations and Future Perspectives

Concluding, we can state that only one of our initial hypotheses was validated: online education had a positive influence upon the rate of school abandonment – though not on that of graduation. But, in spite of the flexibility implied, pointed out in various other studies too (e. g.: Muthuprasad et al., 2021), remote education didn't necessarily contribute to increasing the attendance rate of academic activities, and was not even preferred by generation Z students over face-to-face education. Although they spend a considerable part of their life online, they would dedicate this space rather to socialising and private life than to instruction or work. Beside this, we witness the psychological phenomenon of revaluation of physical contact and social interaction in the offline space, when being deprived of them. To a certain extent these findings are in line with the conclusions of other authors, like Mladenova et al., regarding attendance and learning results, Hamann et al. concerning the impact of online education upon graduation of students, or Hoblijă with respect to students' feelings towards remote education. On the other hand, other researchers document a

comparable or even better student performance due to online education (Zheng et al., 2021). However, the validity of their results is ensured by the use of a remote proctoring software for monitoring during exams, a non-existent facility with our institution.

In spite of being quite complex, our research has got definitely some limitations, as well. The relatively small sample size, resuming the survey only to students, not including also teachers, the impossibility of extending the research upon more countries and of interviewing other participants outside the institution of the author's affiliation, are only a few of them, diminishing the applicability of findings on a general scale. On the other hand they leave space for future research and the conclusions drawn serve for orientation.

Taking into consideration modern educational trends and needs on one side, health and efficiency concerns and the desiderate for social presence in its best form – face-to-face interaction – on the other side, a sustainable alternative for education wouldn't be online instruction, but blended learning, combining both on-site courses/activities, where it is most suitable for the content and web-based, online components, if more engaging. Just to be in the sense of a TEDGlobal talk of Anant Agarwal, students would still need at least one physical classroom: "But I think at the end of the day, I think we will still need one lecture hall in our universities. Otherwise, how else do we tell our grandchildren that your grandparents sat in that room in neat little rows like cornstalks and watched this professor at the end talk about content and, you know, you didn't even have a rewind button?" (Agarwal, 2013).

4. Acknowledgements

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References

1. Agarwal A. (2013, June). *Why massive open online courses still matter?* TedGlobal 2013. https://www.ted.com/talks/anant_agarwal_why_massive_open_online_courses_still_matter? (accessed 17 June 2021).

2. Beaudoin F. M., Kurtz G. & Eden S. (2009). Experiences and Opinions of E-learners: What Works, What Are the Challenges, and What Competencies Ensure Successful Online Learning. *Interdisciplinary Journal of E-Learning and Learning Objects*, 5: 275-289.

3. Cundell A. & Sheepy E. (2018). Student Perceptions of the Most Effective and Engaging Online Learning Activities in a Blended Graduate Seminar. *Online Learning*, *22*(3): 87-102. DOI:10.24059/olj.v22i3.1467.

4. Gonzalez M. & Moore N. (2020). A Comparison of Faculty and Graduate Students' Perceptions of Engaging Online Courses: A Mixed-Method Study. *International Journal of Educational Methodology*, 6(1): 223 - 236. ISSN: 2469-9632. DOI: 10.12973/ijem.6.1.223.

5. Gupta R. (2020, July 13). *A student's perspective on online education: COVID-19 may have changed the 'classroom', but learning continues*. Firstpost. https://www.firstpost.com/living/a-students-perspective-on-online-education-covid-19-may-have-changed-the-classroom-but-learning-continues-8591891.html (accessed 21 June 2021).

6. Hamann K. et al. (2020). Online teaching, student success, and retention in political science courses. *European Political Science*. Published online 30 July 2020. https://doi.org/10.1057/s41304-020-00282-x (accessed 17 June 2021).

7. Hoblijă A. (2020). Implications of Online Didactic Communication. *Education in the Perspective of Values*, Volume 1 Conference Proceeding ICEPV 2020: 27-34. https://www.ceeol.com/search/chapter-detail?id=944206 (accessed 16 July 2021).

8. Koller D. (2012, June). *What we're learning from online education*. TedGlobal 2012. https://www.ted.com/talks/daphne_koller_what_we_re_learning_from_online_education#t-32940 (accessed 17 June 2021).

9. Litao S., Yongming T. & Wei Z. (2020). Coronavirus pushes education online. *Nature Materials*, 19: 687. Published online 27 April 2020. https://doi.org/10.1038/s41563-020-0678-8 (accessed 23 June 2021).

10. McClure W. M. (2019). MOOCs: Unbundling in Higher Education. In: Zgaga P. et al. (eds.) *Higher Education Reform: Looking Back – Looking Forward*. pp. 415-432, Berlin: Peter Lang.

11. Martin F. & Bolliger U. D. (2018). Engagement Matters: Student Perceptions on the Importance of Engagement Strategies in the Online Learning Environment. *Online Learning*, *22*(1): 205-222. DOI:10.24059/olj.v22i1.1092.

12. Mladenova T., Kalmukov Y. & Valova I. (2020). Covid 19 – A Major Cause of Digital Transformation in Education or Just an Evaluation Test. *TEM Journal – Technology,*

Education, Management, Informatics, 9(3):1163-1170. DOI: 10.18421/ TEM93-42. https://www.ceeol.com/search/article-detail?id=894804 (accessed 21 July 2021).

13. Moralista B. R. & Oducado F. R. M. (2020). Faculty Perception toward Online Education in a State College in the Philippines during the Coronavirus Disease 19 (COVID-19) Pandemic. *Universal Journal of Educational Research*, 8(10): 4736-4742. DOI: 10.13189/ujer.2020.081044. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3636438 (accessed 31 May 2021).

14. Muthuprasad T. et al. (2021, January 4). Students' perception and preference for online education in India during COVID -19 pandemic. *Social Sciences & Humanities Open*, 3(1). doi.org/10.1016/j.ssaho.2020.100101.https://www.sciencedirect.com/science/article/pii/S2590291120300905 (accessed 18 February 2022).

15. Zheng M., Bender D. & Lyon C. (2021, September 16). Online learning during COVID-19 produced equivalent or better student course performance as compared with pre-pandemic: empirical evidence from a school-wide comparative study. *BMC Medical Education*, 21:495. doi.org/10.1186/s12909-021-02909-z. https://bmcmededuc.biomedcentral.com/track/pdf/10.1186/s12909-021-02909-z.pdf (accessed 18 February 2022).

A CLOSE LOOK AT THE CONVERGENCE PATTERNS IN THE EUROPEAN UNION AT THE BEGINNING OF THE 21st CENTURY

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Abstract: *Since the first initiatives of integration on the European continent, promoting economic, social and territorial cohesion has remained one of the key principles of the European Union. Over the past decades, the stability and prosperity of the European continent was threatened by diverse and turbulent events, ranging from economic and financial turmoil to sanitary and social crises, which have emphasized the need to strengthen the cohesion between Members. The aim of this paper is to study the economic landscape of the European Union by looking at the evolution of the GDP per capita between 2000 and 2022. Using β- and σ-convergence, we have tried to answer the question if the European Union has come closer to the objective of cohesion in the last two decades. By applying cross-sectional regressions in order to estimate β-convergence, we have identified a convergence speed of 2% for European Union between 2000 and 2022, with higher growth rates experienced by the new member states from Central and Eastern Europe. Complementary, σ-convergence illustrates that income divergences generally decreased both at the aggregate level and in the case of the new member states. However, the progress achieved in terms of cohesion was reversed by Covid-19 pandemic, the gaps significantly increasing mainly in the case of the old members. Considering the divergences that still persist in the European Union, being emphasized by the recent crises, this paper suggests that political decision-makers should strengthen the measures oriented towards promoting cohesion, with the purpose to avoid the division on the continent.*

Keywords: *European Union, real convergence, cohesion, β-convergence, σ-convergence, Covid-19 pandemic.*

JEL Classification: *O40, O52, O57.*

1. Introduction

Strengthening the economic convergence is becoming an important objective for European Union, given the challenges that recently occurred at the regional and global level, which ranged from financial and debt crises to sanitary and social turbulences. On the background of decreasing confidence in the European group and

its key principles, the political decision-makers have the difficult task to find the balance between increasing the competitiveness of the group and preserving the solidarity between its Members. Considering all the turbulences and crises that have changed the historical path of the European Union at the beginning of the 21st century, the additional propagation of divergent processes at the Community level would have negative repercussions, threatening the fundamental principles of the group.

On the background of the increasing challenges for the stability of the European Union, this paper tries to capture the economic landscape, with the purpose to respond the question if the Member States have become more cohesive over the last twenty years. Considering the interval 2000-2022, we have estimated (absolute) β-convergence based on cross-sectional data, by taking into consideration the evolution of GDP per capita at the aggregate and subgroup level. Our study brings additional evidence in favour of the "iron law of convergence" (Barro, 2015), identifying an average converge speed of 2% in the European Union during the interval 2000-2022. Furthermore, we have illustrated that in spite of the initial concerns that accompanied the enlargement of the European Union, the new members from Central and Eastern Europe experienced higher GDP per capita growth rates compared to the Community's average. In contrast, the countries from southern flank recorded modest performance, making more difficult to achieve the objective of convergence in the European Union. The results of the empirical study also suggest that the divergence in terms of GDP per capita have narrowed during the two decades, as reflected by σ-convergence, although the process was hampered by the Covid-19 pandemic. Moreover, while the new member states had an overall positive evolution, reducing the divergence towards the European Union's average, the old members experienced an increase of disparities, this trend being also emphasized by the sanitary crisis. The paper is structures as follows: the first chapter presents an overview on the representative empirical studies aiming the topic of economic growth and convergence, being continued by the description of the methodology and data used in the empirical study. In the third section, we have presented the results of β- and σ-convergence, continuing with the main conclusions, highlighting the policy implications, but also the limitations of the paper.

2. Literature review

The literature aiming the topic of economic convergence is vast and has become more complex with the advancement of integration process, complementing the legislative initiatives and ambitious goals established at European level. In the scope of the paper, the term of convergence refers to the process of catching-up in terms of

GDP per capita through the overall objective of achieving the cohesion. Although usually considered synonymous, in the literature has been highlighted a distinction between cohesion and convergence: the former refers to the process of achieving a goal, while cohesion is a status (Eurofound, 2018).

Nowadays, the majority of studies centred on the topic of convergence have as starting point the economic growth theories, developed in the 20ᵗʰ century. In the second half of the last century, Solow (1956) and Swan (1956) put the foundations of the neoclassical growth model, the empirical studies considering the hypotheses that the poorer regions, with scarce capital stocks, experienced higher growth rates compared to advanced economies. In the neoclassical framework, all economies tend towards the same state of equilibrium, based on the influence of capital, labour and exogenously determined technology. Several years later, the endogenous theories emphasized the role of human capital and productivity in generating welfare gains. Lucas (1988) explained the positive impact of investment in human capital, while Romer (1986) demonstrated that a country could increase its prosperity by allocating more resources to innovation. Moreover, by relaxing the neoclassical growth model hypothesis, Lucas (1988) and Romer (1990) highlighted the role of technological progress, as an endogenous factor, in catalysing economic growth.

The concepts of β- and σ-convergence, developed by Barro and Sala-i-Martin (1991, 1992) based on the Solow-Swan (1956) model constitute the foundation of empirical research in the field of convergence. The first indicator aims the existence of a potentially negative relationship between the initial level of income and subsequent growth rates, while σ-convergence is estimated based on standard deviation or coefficient of variation with the purpose to determine if the divergences between economies reduce over time.

Based on these fundamental theories, both researchers and practitioners have studied the European economic landscape, also taking into consideration the costs and benefits of the integration progress. The advancement of the integration process, although creates challenges related to the harmonization of the interest of all Members, brings also multiple benefits. According to Franks et al. (2018), the catching-up process in the field of real indicators is even more important, as contributes to a fair distribution of gains generated by the use of a common currency, strengthening the unity between economies, but also the social cohesion.

The researches in the field of convergence tend to reach a common ground, confirming that countries of the European Union follow a general positive trend, the average catching-up speed being around 2%. In this respect, Beugelsdijk & Eijffinger (2005) found evidence in favour of β-convergence between 1995-2002, in the case of old members. Furthermore, income convergence was identified for the

interval 1993-2010, Stanišić (2012) concluding that economies of the new member states recorded higher growth rates compared to those of the old members. The average convergence speed identified at the aggregate level was 1.7%. According to Stanišić, the global financial crisis influenced the process of income convergence, even leading to the opposite phenomenon, divergence. Similar conclusions were reached by Rapacki and Próchniak (2019), who found evidence to support the hypothesis of β-convergence, both at the aggregate level and between the EU (11) and the EU (15), reporting a convergence speed of 2.2% between 1995 and 2015. According to Rapacki and Próchniak, the leaders of the convergence process were the Baltic countries, which recorded annual growth rates of 4.5-5%, while in the group of old members, Luxembourg and Ireland experienced the highest catching-up speeds. Similarly, Gros (2018) highlighted that the new member states recorded, on average, annual growth rates that reached 6% per year, while in the European Union group (15) the speed of convergence was approximately 2% during the interval 1999-2016. In the case of the old members, Gros identified divergence processes, considering that countries such as Italy and Greece recorded negative growth rates, increasingly moving away from the developed states of the north of the continent. In the same line, Boltho (2020) studied the evolution in the Eurozone, highlighting that the new member states from Central and Eastern Europe recorded superior economic performance compared to the countries in the south of the continent.

Studying the impact of the global financial crisis on the economic performance of member states, Nagy and Siljak (2022) highlighted that income divergences, determined by σ-convergence, decreased during the interval 2004-2018. The analysts also identified evidence in favour of β-convergence, concluding that in the 2008/2009 period, growth rates were negatively affected by the financial crisis. In the interval 2004-2008, the average growth rate identified in the case of the Central and Eastern European subgroup was 6.6%, the rate reaching only 0.2% in the interval 2009-2013. In contrast, the European Union's (15) average was around 1.8% until 2008, after which there were obvious divergent trends. According to Nagy and Siljak, the advancement of the Central and Eastern European group of states was mainly determined by the liberalization of trade and capital flows, including the large flows of FDI and increasing competitiveness.

One decade after the financial crisis, the Covid-19 pandemic has disrupted, at least temporarily, the process of convergence of living standards, following the recovery phase experienced at regional and global level in the last years. According to the European Central Banks analysis (2022), all developed members except Austria experienced a decline in living standards, placing themselves close to the European

Union's average, while southern flank countries remained at the bottom of the chart. In contrast, the new member states continued their positive trend of getting closer to the community average, despite the negative effects of the Covid-19 pandemic.

In conclusion, the literature aiming the binomial economic growth-convergence is vast, the studies flourishing on the background of the advancement of the integration process. Although aiming different timespans, analysts tends generally to find evidence in favour of the "iron law of convergence" (Barro, 2015), the members states eliminating the income per capita gaps at a rate around 2% per year. Moreover, it seems to exist a consensus regarding the positive trajectory experienced by the new members, both in terms of growth rates and reducing the gaps towards the Community's average. Overall, the European Union ecosystem remains challenging, with differences in terms of performances and perspectives of convergence.

3. Data & methodology

In order to capture the economic landscape of the European Union, we have tried to study the evolution of GDP per capita by looking at the interval 2000 and 2022. The methodology is based on cross-sectional regressions aimed to determine (absolute) β-convergence and time series data used in the study of σ-convergence. β-convergence is based on the assumptions of the neoclassical growth model, developed by Solow (1956) and Swan (1956) and aims a negative relationship between the average growth rate and the initial level of income. β-convergence was complemented by σ-convergence, with the aim of identifying if income gaps reduce over time and the Members States are approaching to the Community's average. According to Barro and Sala-i-Martin (1992), "β-convergence is a necessary, but not a sufficient condition" for σ-convergence.

In order to estimate (absolute) β-convergence, we have employed cross-sectional simple regressions, where the dependent variable was the average GDP growth rate between 2000 and 2022 and the independent one the GDP per capita in the initial year (2000). σ-convergence has been estimated based on time-series data taking into consideration the interval 2000-2022. In this respect, we have studied the convergence patterns both at the aggregate and sub-group level, by structuring the countries based on the period of accession, respectively: the founders of the European Economic Community and the countries that have joined the group until 2000 - Old Member States (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Sweden, Greece, Italy, Portugal and Spain) and the New Member States (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). We have excluded from the computation of σ-convergence Luxembourg, given the large variation compared to

the European Union's average. Data aiming the evolution of GDP per capita in the case of European Union's countries (27) was obtained from Eurostat database.
We have employed cross-sectional regressions in order to determine β-convergence, based on the equation presented below:

$$\frac{1}{T} ln[\frac{y_{i,T}}{y_{i,0}}] = a + \alpha_1 ln(y_{i,0}) + \varepsilon_i \tag{1}$$

$y_{i,t}$ = GDP per capita of country "i" in 2022
$y_{i,0}$ = GDP per capita of country "i" in 2000
T = the length of period
ε_i = error term
The speed of convergence was computed as follows:

$$\beta = -\frac{1}{T} ln(1 + \alpha_1 T) \tag{2}$$

The number of years which are necessary in order to reach the halfway of the transition period towards equilibrium have been determined based on the formula developed by Mankiw et al. (1992):

$$t^* = \frac{ln0.5}{\beta} \tag{3}$$

σ-convergence has been calculated taking into consideration the coefficient of variation of the data set. In order to compute the variance for the subgroups of countries, we have taken into consideration the distance of each country and European Union's average in each year. The indicator has been computed based on time-series data as follows:

$$\sigma_t^2 = (\frac{1}{N}) \sum_{i=1}^{N} [(y_{i,t}) - u_t]^2 \tag{4}$$

$y_{i,t}$ = GDP per capita of economy "i" in t
u_t = average income in the EU

$$\sigma_t = \sqrt{\sigma_t^2}, \quad CV = \frac{\sigma_t}{\mu_t} \tag{5}$$

Figure 1 illustrates the results of β-convergence calculated for European Union, by taking into consideration the evolution of GDP per capita between 2000 and 2022. The average convergence rate identified in the Community was 2.3%, the paper bringing evidence in favour of the "iron law of convergence" (Barro, 2015). The negative slope of the trend line confirms the neoclassical growth model assumptions, suggesting that the initially poorer members from Central and Eastern Europe experienced higher GDP per capita growth rates compared with the developed countries (Rapacki and Próchniak, 2009; Matkowski et al., 2016; Rapacki and Próchniak, 2019). The highest growth rates were experienced by Romania (7.5%)

and Lithuania (6.6%), the top positions being occupied by the Central and Eastern European group. In the subgroup of old members, Ireland experienced the highest growth rate, reaching an average value of 5%. Other developed countries that experienced catching-up speeds above the average were Denmark (3%) and Luxembourg (3%), while modest growth rates were achieved by the Southern countries – Italy (1.8%) and Greece (1.7%). Based on estimated the convergence speed, European Union needs 30 years in order to reach the halfway towards the equilibrium period.
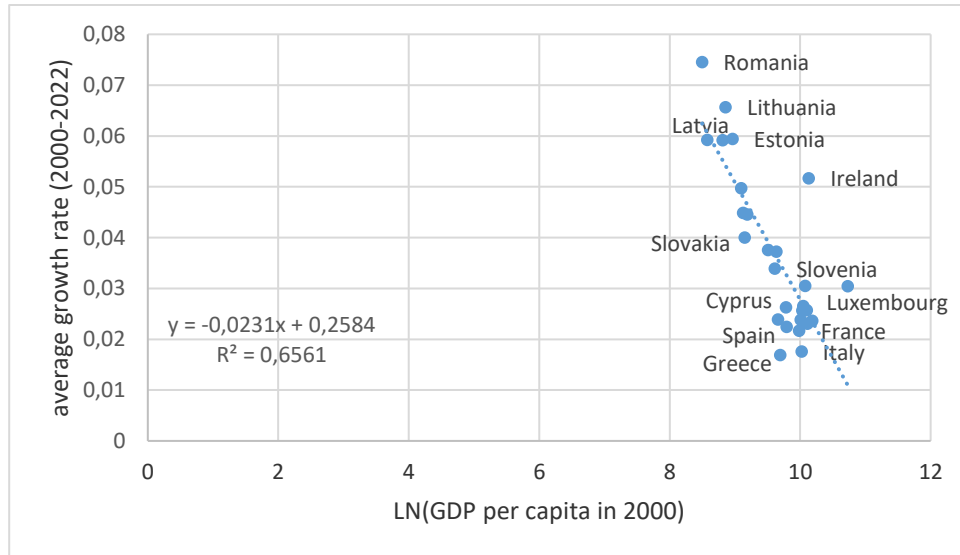
Figure 1: β-convergence in the European Union
Source: Author's computation based on data provided by Eurostat

The analysis of absolute β-convergence has been complemented by σ-convergence, in order to determine if the income divergences between countries have been narrowed. With the purpose to capture the evolution in the European Union and to conduct a comparative analysis between the new members from Central and Eastern Europe and old members, we have calculated σ-convergence based on equation 4 and 5. Our calculations suggest that at the aggregate level, the income gaps decreased with 17% between 2000 and 2022. However, the progress achieved until 2019 was reversed by the Covid-19 pandemic, the sanitary crisis conducting to an increase of income divergences among member states. As far as the evolutions in Central and Eastern Europe are concerned, figure 2 confirms that this subgroup of countries had significantly converged towards the Community's average, the income gaps gradually diminishing. Although the Covid pandemic had negative consequences also on the performance in this cluster, the member states started to recover in 2022. By contrast, the old members experienced an increase of income differentials with 9%, the gaps being significantly emphasized by the pandemic. Consequently, the

income gaps were 27% higher in 2022 compared to 2019, this increase calling into question the perspective of a fast recovery of the economies. Overall, the study confirms that β-convergence has been accompanied by a decrease of income gaps in the European Union and particularly, among the new members.
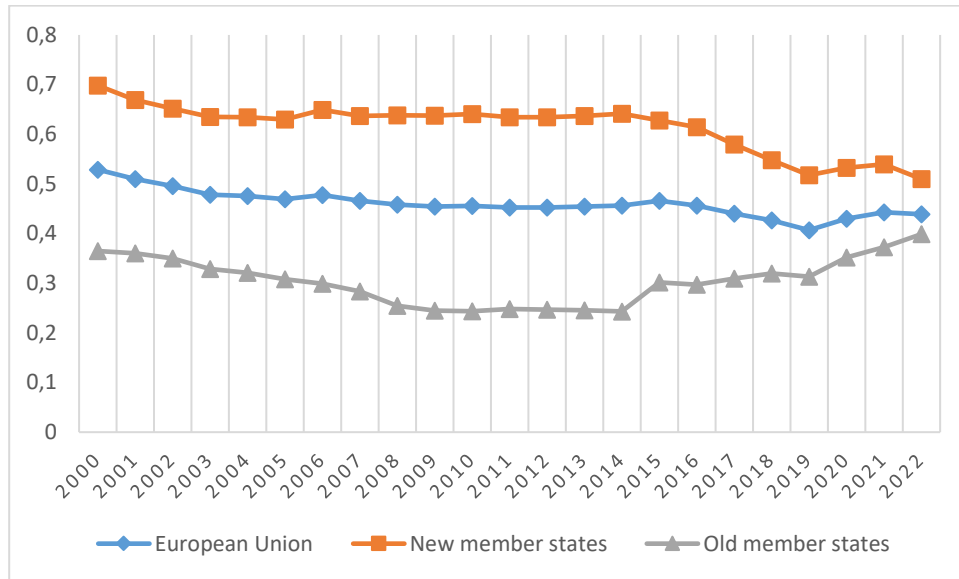
Figure 2: σ-convergence in the European Union
Source: Author's computation based on data provided by Eurostat

4. Conclusion

After seven decades since the first initiative of integration on the European continent, convergence still remains an underlying principle of the European Union. Looking at the challenges that have threaten the stability of the European continent, one may consider that maintaining cohesion between countries and regions is becoming even more important nowadays. In spite of the efforts to harmonize the interests of all the members, recent evidence suggest that European Union still has to make important efforts to achieve economic, social and territorial cohesion. The aim of this paper was to study the economic landscape of the European Union, by taking into consideration the evolution of GDP per capita among twenty-seven Member States between 2000 and 2022. In order to capture the representative trends, we have used the methodology proposed by Barro and Sala-i-Martin (1992), respectively β- and σ-convergence. Computing β-convergence on cross-sectional regressions, we have found evidence in favour of the universal speed of convergence of 2%, the countries reducing the gaps with an average catching-up speed of 2.3% per year. Another conclusion of the empirical study was that the new member states from Central and Eastern Europe experienced higher growth rates compared to the

Community's average, the paper confirming the neoclassical growth model assumptions. In contrast with the high pace of convergence experienced by the new members, the Mediterranean countries, especially Greece and Italy, recorded modest growth rates, placing below the European Union's average. As far as the degree of convergence achieved in the European Union, as shown by σ-convergence, our study illustrates that income divergences had a general downward evolution during the analysed period, this trend being reversed by the Covid-19 pandemic. However, same progress was not achieved in the case of the old members, where the divergences have significantly increased since 2019, expanding the values recorded at the beginning of the period. Overall, the conclusions of our paper are in line with previous studies which confirm the "iron law of convergence" (Barro, 2015) in the case of the European Union countries (Rapacki and Próchniak, 2009; Stanišić, 2012; Gros, 2018; Rapacki and Próchniak, 2019) considering different time horizons. At the same time, using β-convergence, we highlighted that the new Central and Eastern European member states have made remarkable progress since the 2000s, recording higher growth rates compared to the developed economies in the west of the continent and reducing the development gaps compared to the European Union's average (Rapacki and Próchniak, 2019). The limitations of the study derive from the narrow approach on convergence, given the complexity of the process and the wide variety of factor that influence the economic growth performance. Our paper has a number of policy implications. First of all, it confirms the efforts of the Central and Eastern Europe to reduce the income differentials towards Community average. Secondly, it emphasizes the need to foster the cohesion between countries and to focus the financial support and resources towards the Mediterranean group, that lags behind the other members, being also severely affected by the Covid-19 pandemic.

References

1. Barro, R. J. & Sala-i-Martin, X. (1991). Convergence across States and Regions. *Brookings Papers on Economic Activity* 22 (1), 107-182. Washington, D.C.: The Brookings Institution.
2. Barro, R. J. & Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy* 100 (2), 223-251.
3. Barro, R. J. (2015). Convergence and modernisation. *The Economic Journal* 125 (585), 911-942.
4. Beugelsdijk, M. & Eijffinger, S. C. W. (2005). The Effectiveness of Structural Policy in the European Union: An Empirical Analysis for the Eu-15 in 1995-2001. *Journal of Common Market Studies* 43 (1), pp. 37-51.

5. Boltho, A. (2020). Southern and Eastern Europe in the Eurozone: convergence or divergence? *Baltic Journal of Economics* 20 (1), 74-93.

6. Eurofound (2018). *Upward convergence in the EU: Concepts, measurements and indicators.* Luxembourg: Publications Office of the European Union.

7. European Central Bank (2021). Economic Bulletin, Issue 5/2021 – Update on economic, financial and monetary developments. Frankfurt am Main: European Central Bank

8. Franks, J., Barkbu, B., Blavy, R., Oman, W. & Schoelermann, H. (2018). Economic Convergence in the Euro Area: Coming Together or Drifting Apart?. *IMF Working Papers WP/18/10.* Washington, D.C: International Monetary Fund.

9. Gros, D. (2018). Convergence in the European Union: Inside and outside the euro. *CEPS Policy Contribution*. Brussels: Centre for European Policy Studies.

10. Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics* 22 (1), 3-42.

11. Mankiw, G., N., Romer D. & Weil, D. N. (1992). A Contribution to the Empirics of Economic Growth. *The Quarterly Journal of Economics*. Oxford University Press 107 (2), 407-437.

12. Matkowski, Z., Próchniak, M. & Rapacki, R. (2016). Real Income Convergence between Central Eastern and Western Europe: Past, Present, and Prospects. 33rd CIRET Conference on Economic Tendency Surveys and Economic Policy (September 14 - September 17, 2016). Copenhagen: Centre for International Research on Economic Tendency Surveys.

13. Rapacki, R. & Próchniak, M. (2009). The EU enlargement and economic growth in the CEE new member countries. *European Economy. Economic Paper* 367. Brussels: European Commission.

14. Rapacki, R. & Próchniak, M. (2019). EU membership and economic growth: empirical evidence for the CEE countries. *European Journal of Comparative Economics* 16 (1), 3-40.

15. Romer, P. M. (1986). Increasing Returns and Long-run Growth, *Journal of Political Economy*, University of Chicago Press 94 (5), 1002-1037.

16. Romer, P. M. (1990). Endogenous Technological Change. *The Journal of Political Economy* 98 (5) Part 2: The Problem of Development: A Conference of the Institute for the Study of Free Enterprise Systems, S71-S102.

17. Siljak, D. & Nagy, S. (2019). Economic Convergence between the Western Balkans and the New EU Member States (EU-13). *Romanian Journal of European Affairs* 19 (1), 50-64.

18. Solow, R. M., (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics* 70 (1), 65-94.

19. Stanišić, N., (2012). The effects of the economic crisis on income convergence in the European Union. *Acta Oeconomica* 62 (2), 161-182.

20. Swan, T. W. (1956). Economic growth and capital accumulation. *Economic Record* 32 (2), 334–361.

REPORTED SPEECH WITHIN MOODLE TESTS. ASSESSING GRAMMAR ASPECTS OF INDIRECT SPEECH

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Abstract: *Reported Speech or Indirect Speech is widely used in the formal register of the language, as at the level of professional communication collocutors are more likely to be interested in sending or respectively receiving the message that a certain job or task has been done instead of emphasising who the author or the performer is. Languages for Specific Purposes (LSP), as professional communication devices, witness multiple instances of Indirect speech communication, hence the need of having such structures much discussed and often practised with our students in economics and with the students in law, during their language classes. A facility thoroughly implemented and largely used with all categories of students in our higher education institution in the time of the recent pandemic, namely the Moodle platform, brings about the online testing tool. This provides the possibility of numerous, accurate, quick self-evaluation tests that can be performed not only at class during the practical courses but also, if such set, at any time the teachers consider proper and allow it, due to the availability of this e-learning platform to all our students, with private accounts, wherever they have internet and a valid device to access it properly. The language teachers can employ this facility creating short tests that would quickly assess knowledge of language, acquisition of grammar aspects and ability to make good use of the structures belonging to the reported speech. With the instant feedback provided by the application, self-evaluations and improvement of knowledge by repeated self-evaluations become available and much valuable tools for hundreds of students, with no more need of corrections from the teachers, a time-saving and very useful learning and testing facility. This paper puts forward some examples of such tests, created by the authors and used during their classes or set for their students' individual practice. The examples given can be of help to other language instructors who have the possibility to use Moodle or a similar application and are willing to provide their learners with a modern tool of learning and testing, much appreciated by the students as well.*

Keywords: *Reported Speech; LSP; language assessment; Moodle tests.*

JEL Classification: *Z19*

1. Preliminary considerations

Following the recent pandemics, at least one aspect - a quite important one - can be retrieved as a relevant development in the educational process in our institution, namely the still ongoing availability of the Moodle platform for regular students, i.e. day learning (not only for those in distance learning). This facility still valid, it allows teachers to post theoretical information that can be easily accessed by students at any time, providing more opportunity for the latter to revisit and reinforce knowledge than previously, when they solely replied on the printed materials or, even less, on what was written on whiteboards or blackboards or projected from laptops during classes. As at least in our institution, this support - characteristic to the previous, 'forced' online schooling - is luckily preserved and we can benefit from the good practice of our institution providing each student an account on the Moodle platform and registering them to the courses of the current academic year.

2. Moodle as a regular support

Introducing Moddle to regular grammar classes seems to have been a good practice since a long while already, at least in some institutions. Plomteux discusses as early as 2013 the idea of "changing the status of learning platforms primarily designed for distance learning to integrate them in classroom work. In doing so, we could take advantage of the many reasons why a learning platform and an online course are better than typical old-fashioned classroom teaching: versatility of exercises, statistical tools and possibility of catering for different needs for each student." (Plomteux, 2013)

Thus, not only information is much easier transmitted and available at any time, but also numerous practical activities can be put at the students' disposal. These might be not only of the category restricted to online exercises, tests or other activities available during seminars or practical classes, but also other types of drills, with 'unlimited' time span, i.e. within extensive deadlines or featuring re-opened access for certain intervals of interest (before exams for instance), as assignments along the semester, very useful for reinforcement of knowledge, for revision of material, for self-evaluation a.s.o.

2.1. Grammar with Moodle

From our experience and not only, Moodle is perfect for just reinforcing basic grammar knowledge, providing theoretical support in a nutshell. It is common sense that Moodle alone cannot replace the direct, live grammar teaching lessons, cannot

replace the explanations of teachers in the various contexts, considering all aspects that might appear in face to face interactions. As noticed by other instructors and researchers in the field "the background of the students sometimes doesn't make them able to do the lesson on their own, with only the Moodle lesson and their general knowledge. Grammatical terminology, which is necessary to describe grammar facts and formulate rules, is not mastered at a sufficient degree by all students, and this weakness can prevent them from completing the lesson successfully." (Plomteux, 2018)

Several language teachers and researchers have been preoccupied with the idea of how grammar aspects could be best rendered though e-learning platforms. Ahmad et al. have researched into "developing instructional material of teaching grammar through Moodle" (Ahmad et al., 2022). Very relevant and instructive discussions can be found on the dedicated platform (Moodle.org), as held by several stakeholders such as Matt Bury, Mary Cooch, James Steerpike, about online teaching and learning through YouTube or Moodle, with several references, Even particular aspects are here referred and linked, such as the flipped approaches, generally comprising methods implying that 'students watch instructional videos in their own time, before coming to class where they can work together on practical problems, applying the knowledge they have gained from the instructional video.' (Kerr, 2020)

2.2. Aspects of Reported Speech

From the numerous topics of grammar that are of extensive use in professional communication, one of much relevance especially with the students in the first year of studies in economics is the Reported Speech. Very much met in the authentic texts and drills on various fields of economics, the Indirect Speech constructions are a common place for the reader of a business text. The skills of accurately transforming or transposing a direct speech structure into an the indirect speech one or vice-versa are of utmost importance in clearly understanding what is communicated or, on the other hand, in rendering a correct enunciation, with no ambiguous aspects that might impede perception of the right message. Professional communication by its nature is prone to changes of register and to the need of retelling something. Let's just imagine discussions between colleagues as referring to a recent business meeting, the transmission of info hierarchically or horizontally within a organization, the presentation of diverse situations to others involved a.s.o. As Ellie Pedrazzi notices "The indirect approach is a more refined and subtle technique" to be employed in a business environment when addressing to peers, colleagues or employers. (Pedrazzi, 2020)

It can be sometimes useful to indicate the students various sites where things are clearly explained and comprehension checking is also provided through short tests, such as https://www.wallstreetenglish.com/exercises/direct-and-indirect-speech-exercises or https://www.businessenglish.com/grammar/indirect-speech.html?lang=eng, but these are ancillary to the classes and the materials directly provided, as any other bibliography. Such resources can also be added on Moodle as links to the webpages of interest but we hereafter will refer only to the straightforward materials that can be created on the platform by the teachers, on the page of the discipline, and will remain there available as long as the access on the account in granted, being direct Moodle facilities and applications.

3. Availability of theoretical support
Along with customised expositions, presentations and explanations provided by language teachers during face to face interactions, some basic rules can be drawn and made available on platform pages as permanent resources that can instantly remind students the most important aspects of the grammar topic at stake, for instance of the reported speech as in the case of the current presentation. Appealing Moodle resources such as Page, Label, Book can make this grammar post more attractive than a simple uploaded file resource. Even that, anyway, is better and obviously more effective than none.

3.1. Grammar material on Reported speech in Business English
The following examples of grammar info posts, Figures 1a-c, are from the page of the discipline of a course of Business English I.1 taught to first year economic students in our Faculty, namely to students in International business.
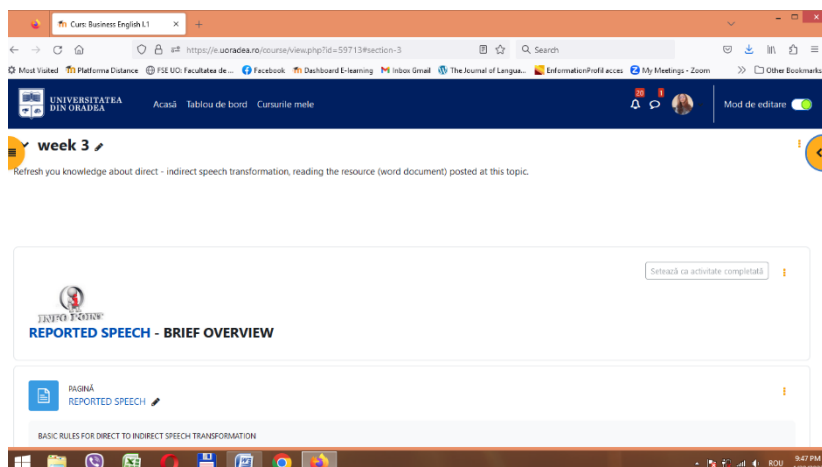
Figure 1a. Layout of the page section with the grammar point available
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

As seen in Figure 1a, a resource webpage was created within the page of the discipline, and a suggestive label was made to introduce it.
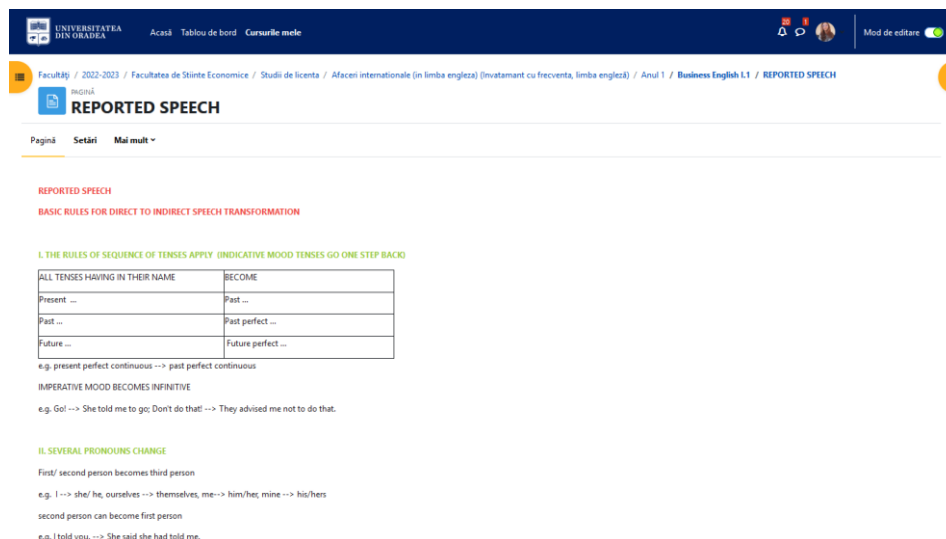
Figure 1b. Grammar info resource webpage - upper half
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713
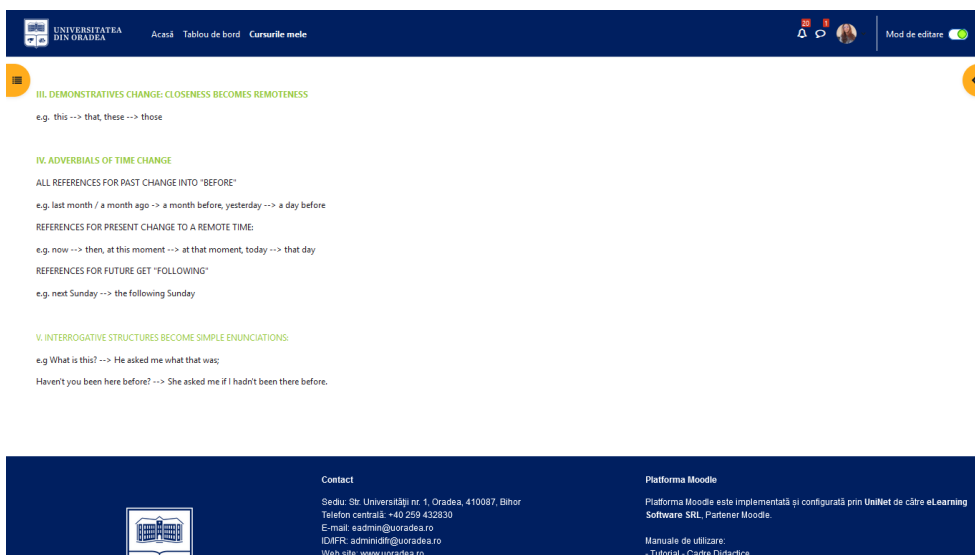
Figure 1c. Grammar info resource webpage - lower half
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

As seen in the images above, by accessing the link, the web page opens and the grammar info is displayed. It is there found on the same screen scrolling down. Here it is presented separated in Figures 1b and c, for reasons of visibility, as the complete info is too long to be clearly visible if arranged on one single screen.

3.2. Grammar material on Reported speech in French for Business

For briefly reminding the students the theoretical material on direct-indirect speech in French, the moodle application resource named "book" was used. It was given a title clearly indicating the content of the material, "Du discours direct au discours indirect", and the information was structured into four short 'chapters', namely the subtitles seen in Figures 2a-d.

Figure 2a. Creation of content in subtitle 1
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

Figure 2b. Creation of content in subtitle 2
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084
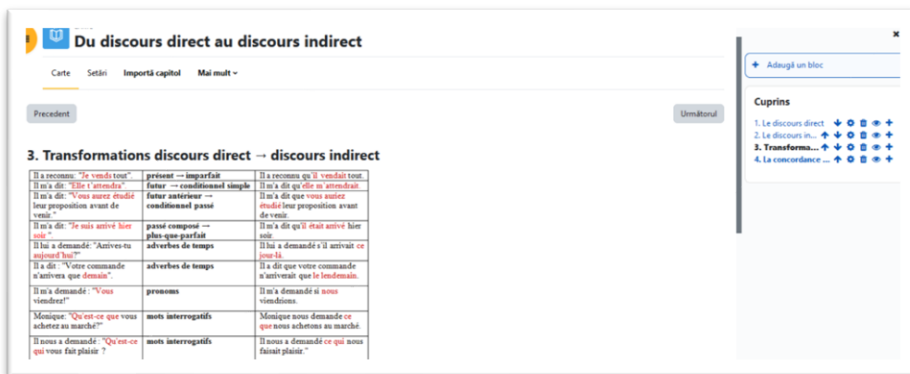
Figure 2c. Creation of content in subtitle 3
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084
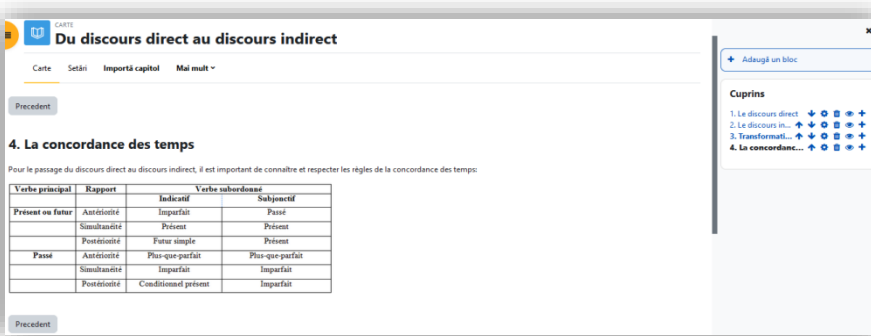
Figure 2d. Creation of content in subtitle 4
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

The result is a straightforwardly and easily accessible online presentation, with an appealing layout and facile browsing back and forth through the four subtitles, by

use of the arrows 'previous' and 'next'. The way the link to the material appears on the page of the discipline and then two of the four pages as they are displayed to the students accessing the link are exemplified in Figures 2e respectively 2f and 2g.
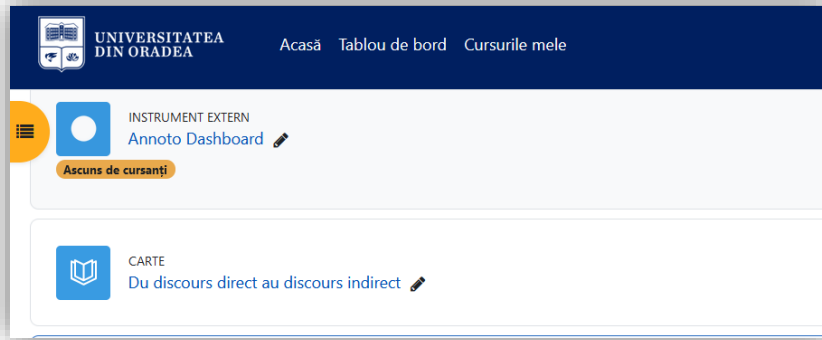
Figure 2e. Access button for the grammar info 'booklet', on discipline's page
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

Figure 2f. Example of students' view - page 4 of the 'booklet'
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084
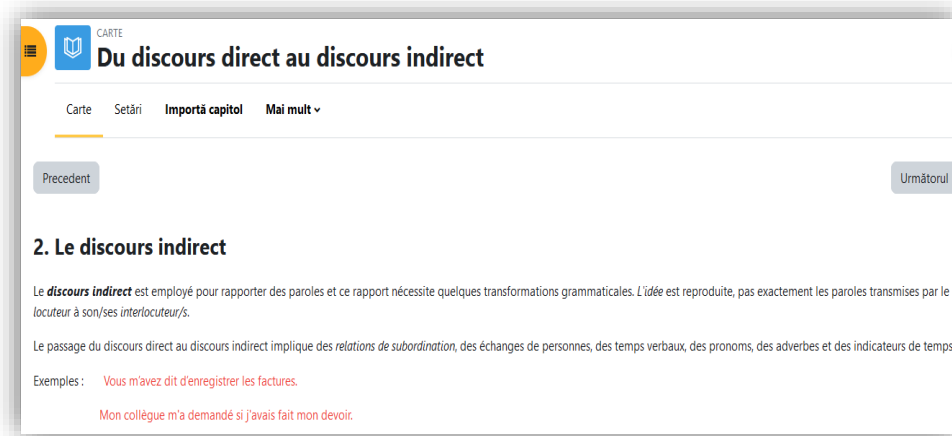
Figure 2g. Example of students' view - page 2 of the 'booklet'
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

4. Testing facilities

The most common type of exercise solving, allowing more possibilities of self assessing and of learning through the feedback the application provides, is the Moodle activity named 'Test', and this is the one that is going to be exemplified here further. Of course, other Moodle activities are also possible, for instance forums and assessments can be also made useful, but we chose to consider here the one we saw as most appropriate for our purpose.

4.1. Testing Indirect Speech for Business English

The following examples of tests are from the page of the discipline of a course of Business English I.1 taught to first year economic students in our Faculty, namely to students in International business.

The exercise exemplified below is created using the embedded answer (cloze) question type and the various elements introduced in the encoding process render the different sections of the final exercise that appears on the test when accessed.

Figure 3a below shows the exercise page section containing the primary data input, the instruction and the preliminary exercise. The elements in this section appear as a result of image insertion and ready text inclusion in the body of the question, followed by the creation of some boxes to be filled in with the right numbers. This last mentioned device is produced by means of the coding instruction "NUMERICAL", used as seen in Figure 3b, in the image that represents a screen capture of the field 'text of the question', presenting the way that particular part of the material was introduced and encoded, in the exercise production page.

Figure 3a. Exercise page - data input and instructions
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

Figure 3b. Encoding process - image and text insertion and use of the instruction 'NUMERICAL'
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

The indirect speech test proper comes next in the page section shown in Figures 3 c and d, and its layout here is a result of the use of the encoding instruction for multiple choice drills with one correct answer (as noticed in the layout with radio buttons)

and with variants vertically arranges, namely the 'MCV' instruction as it appears in Figure 3e.

Figure 3c. Exercise page - multiple choice drill testing Indirect Speech part 1
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

Figure 3d. Exercise page - multiple choice drill testing Indirect Speech part 2
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

As well as in the example above, the image seeable in Figure 3e is, again, another snapshot of the field 'text of the question' in the exercise production page.

She asked them ___ eating. {1:MCV:if they had been~what had they been~=what they had been~if they were~what have they been}

He wanted to know ___ at night. {1:MCV:if the baby girl cries~when she cried~that the baby cried~what does the girl cry~=if she cried}

He asked Tom ___ locked the car. {1:MCV: that the boy~=if he had~if he has~have you~if has he}

She asked the campsite attendant ___ some water. {1:MCV: she can gets~if can she got~= where she could get~where she gets~where can she get}

She asked him if___ to the disco ___. {1:MCV: he is going - tonight~was he going - that night~is he going - tonight~=he was going - that night~he was going - last night}

Figure 3e. Encoding process - use of 'MCV' to create the multiple choice drill with vertical aspect
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=59713

4.2. Testing Indirect Speech in French Language for Business

A first example of an exercise is one in which the students merely have to identify between direct and indirect speech. They are given a series of structures and asked to mark the direct speech structures writing "d", respectively the indirect speech structures writing "i", in the cell next to them. This exercise was produced using the embedded answer (cloze) exercise type, specifically the instruction "shortanswer" for the introduction of the blank cells that are to be filled by the students with the mentioned letters. The page of the exercise creation process is seen in Figure 4a.
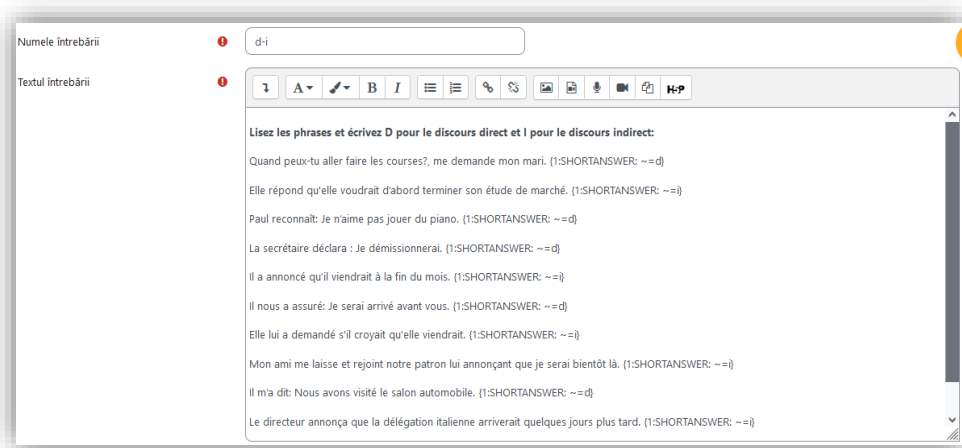
Figure 4a. Creating the 'shortanswer' type exercise
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

The resulting page, i.e. the test page that will appear to the students will contain the cell to be filled in as required, namely with "d" or "i" depending on the type of discourse they identify. The layout of the exercise as when accessed by the students is shown in Figure 4b, with the first cell filled in by us, as an exemplification.
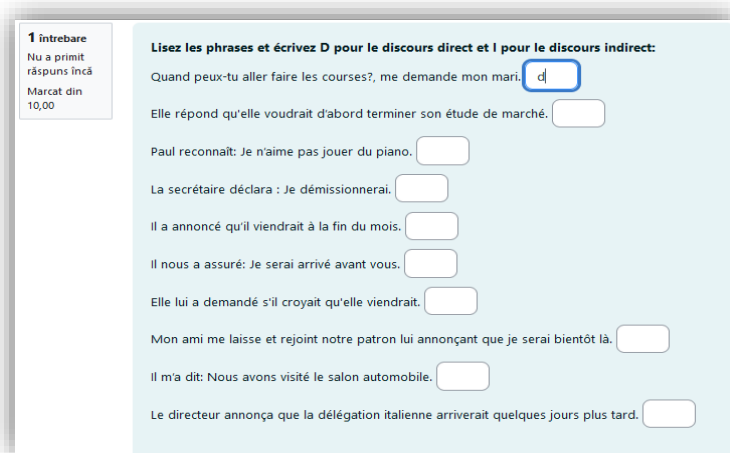
Figure 4b. Shortanswer type - resulting test page
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

Another exercise requires the students to choose the right structure from three variants. Such type of test can be created in several ways, using diverse multiple choice production drills. For the example here, what was opted for was the inline 'multichoice' instruction within the embedded answer cloze type of question, with an encoding procedure as seen in Figure 4c.
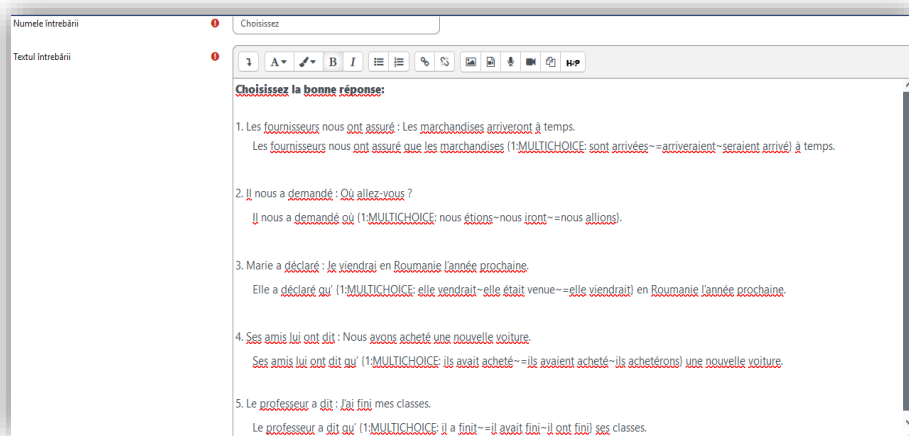
Figure 4c. Production of 'multichoice' drills with inline selection boxes
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

The resulting page is a neat exercise in which the students press the arrow at the end of the selection boxes and choose the variant they consider correct, from the three structures displayed at the drop-down arrow field. Figure 4d provides the screenshot of the final layout of the exercise, showing also the content of one of the selection

fields, with the variants visible at the dropdown arrow (by keeping the button pressed while taking the snapshot).

Figure 4d. Layout of the 'multichoice' exercise
Source: own production on the page of the discipline https://e.uoradea.ro/course/view.php?id=20084

5. Conclusion

Valid as supplementary support, the Moodle platform can be made of much good use in current teaching and learning as well. Appreciated for the diversity it brings, for the availability of material at any time, for the large audience with reduced resources (no need to use so much paper, no painstaking actions of mistakes corrections as in regular live classes with exercises written on printed support) and, most relevant, for the possibility of extensive numbers of tests to be taken at once and with feedback instantly provided, in our view, the Moodle facilities are surely devices to be kept at least as extra aid and at least in higher education.

References:

Articles:
Kerr, Philip, Bored or boring – instructional grammar videos for flipped learning, July 2020, in *Adaptive Learning in ELT. Thoughts about personalized and adaptive learning in ELT,* [Online] Available: https://adaptivelearninginelt.wordpress.com/2020/07/17/bored-or-boring-instructional-grammar-videos-for-flipped-learning/ [accessed May 04 2023].
Kerr, Philip, *Flipped learning*. Part of the Cambridge Papers in ELT series. [pdf] Cambridge: Cambridge University Press, July 2020, [Online] Available:

https://www.cambridge.org/gb/files/9115/9438/9974/CambridgePapers_in_ELT-Flipped_Learning_minipaper_ONLINE.pdf, 235 [accessed May 04 2023].

Muhajir, Ahmad; Ampa, Andi Tenri; Amin, Bahrun, Developing Instructional Material of Teaching Grammar Through Moodle to English Education Department Students of Universitas Muhammadiyah Makassar, in *Journal of Development research*, November 2022, [Online] Avaiable: https://journal.unublitar.ac.id/jdr/index.php/jdr/article/view/235 [accessed May 04 2023].

Pedrazzi, Ellie, Direct and indirect approach in business communication, September 2020, [Online] Available: https://www.linkedin.com/pulse/direct-indirect-approach-business-communication-ellie [accessed May 04 2023].

Plomteux, Brigitte, Dichotomic Grammar? Use Moodle Lessons!. March 2018, [Online] Available from: https://www.researchgate.net/publication/323890647_DICHOTOMIC_GRAMMAR_USE_MOODLE_LESSONS [accessed May 04 2023].

Plomteux, Brigitte, Moodle to the Rescue to Practice Grammar in Remediation Classes, November 2013, [Online] Available from https://www.researchgate.net/publication/350566980_Moodle_to_the_Rescue_to_Practice_Grammar_in_Remediation_Classes [accessed May 04 2023].

Sites:
Moodle.org: https://moodle.org/mod/forum/discuss.php?d=435160
https://www.wallstreetenglish.com/exercises/direct-and-indirect-speech-exercises
https://www.businessenglish.com/grammar/indirect-speech.html?lang=eng

Pages on the institutional e-learning platform:
https://e.uoradea.ro/course/view.php?id=59713 - for English
https://e.uoradea.ro/course/view.php?id=20084 - for French

THE SPREAD OF ELECTRIC VEHICLES AND THE EXAMINATION OF THE FACTORS BEHIND IT ON A GLOBAL LEVEL

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Abstract: *Sustainable economic development, the sustainable competitiveness of countries, is one of the most researched economic issues of our time. This is not surprising, given the years of successive crises. Countries must continue to emerge from these crises without continuing to put pressure on the natural environment that underpins our existence. The spread of consumerism brings with it many environmental problems. The latter is borne out by the emissions of petrol and diesel vehicles. In order to reduce air pollution, the marketing and use of electric vehicles has become increasingly popular worldwide, including in Europe. But what about developing countries or countries with economies in transition? The present work is the introductory part of a larger research project, in which a document analysis based on secondary research was carried out by studying documents, laws and regulations. We sought to find out what factors, including governmental factors, have led to an increase in the number of electric vehicles placed on the market. Several countries were examined, grouped by economic development. We found that the level of economic development of countries influences the amount and extent of incentives introduced. To confirm this, a correlation calculation was carried out, which was not confirmed. However, it can be seen that the myriad of infrastructure, food, epidemiological and overpopulation problems that plague the economies of developing countries mean that local governments have less attention and financial resources to devote to pollution problems. We believe that our study and its continuation can be useful for all those who are interested in electric cars in any form.*

Keywords*: electric cars, plug-in hybrid, advantage, incentives, developed and developing countries*

JEL Classification: *O11*

1. Introduction

Currently, purchasing electric cars is becoming increasingly popular, partly due to the environmental and social benefits they provide during their operation. In the scope of the present study, the global and European spread of electric vehicles, the incentives that influence the purchasing behaviour of consumers and, in particular, the government policies that promote the increasing proportion of electric vehicles in circulation are discussed. Since the selling price of an electric vehicle is much higher than its combustion engine counterpart, and as the level of economic development and environmental awareness of countries differ, the comparison has been classified into development categories. It is assumed that the number of electric cars and the number of government incentives introduced in more economically developed countries is also higher than in less developed or developing countries. We also assume that there is a correlation between the evolution of the uptake of electric cars, the measures taken by governments to promote the market uptake of green plate vehicles and the level of economic development of the country.

2. The rise of electric vehicles in the world, Europe and Hungary

Surprisingly, the appearance of electric vehicles occurred before the invention of gasoline-powered cars. In the second half of the 20th century, with the emergence of consumer society, the number of goods produced and put on the market increased significantly, as did the amount of waste generated. As a result, the problems caused by increasing environmental pollution came to the fore (*Paulovics-Jámbor*, 2022).

The main environmental problem, apart from global warming, disproportionate recycling, ocean acidification and overpopulation is environmental pollution. Air pollution accounts for a huge proportion of this (*Salamon*, 2022). According to a WHO report, approximately 7 million people die each year worldwide from health problems caused by air pollution. In 2010, 223,000 people died of lung cancer (*Antal-Péter*, 2007). These two figures highlight why EU policymakers have devoted so much attention to environmental measures over the last two decades and why steps towards sustainability are becoming increasingly important for society. One of the fundamental positive aspects of electric vehicles is their ability to operate without emitting pollutants, and therefore contribute significantly to reducing global CO_2 emissions.

The first electric bicycle was created by Gustave Trouvé at the end of the 19th century, followed by the first electrically powered car in England in 1884 by Thomas Parker (*Egyperces*, 2021; *Ferencz*, 2021). In the USA, electrically powered vehicles were popular in the first half of the 1900s, however, with the spread of internal

combustion engines, they became less in demand. (*Adam*, 2018). The first mass-produced car was the Toyota Prius, which was launched in 1998 (*Szabó*, 2010). The Tesla, which was launched in the early 2000s, contributed greatly to the spread of electric vehicles (*Ádám*, 2018).

Due to the environmental and social benefits mentioned in the introduction, the number of electric cars is showing a continuously increasing trend worldwide. According to calculations by the International Energy Agency (IEA), at the beginning of the 2020s, five times as many electric cars were put on the market worldwide as in 2015 (*Nagy, 2022*). The following diagram (*Figure 1*) shows the number of electric cars in stock globally and in the European Union between 2010 and 2021. The automotive sector, like most industries, is significantly dependent on the current economic situation. The 2008 global crisis also brought enormous changes to the life of the industry. Likewise, the impact of the coronavirus pandemic has contributed to changes in the electric car market in 2021, both at national and company level (*Kiss*, 2015; *Kiss*, 2017; *Kiss*, 2019).

Figure 1: Number of electric cars in stock in the world and in the European Union from 2010 to 2021
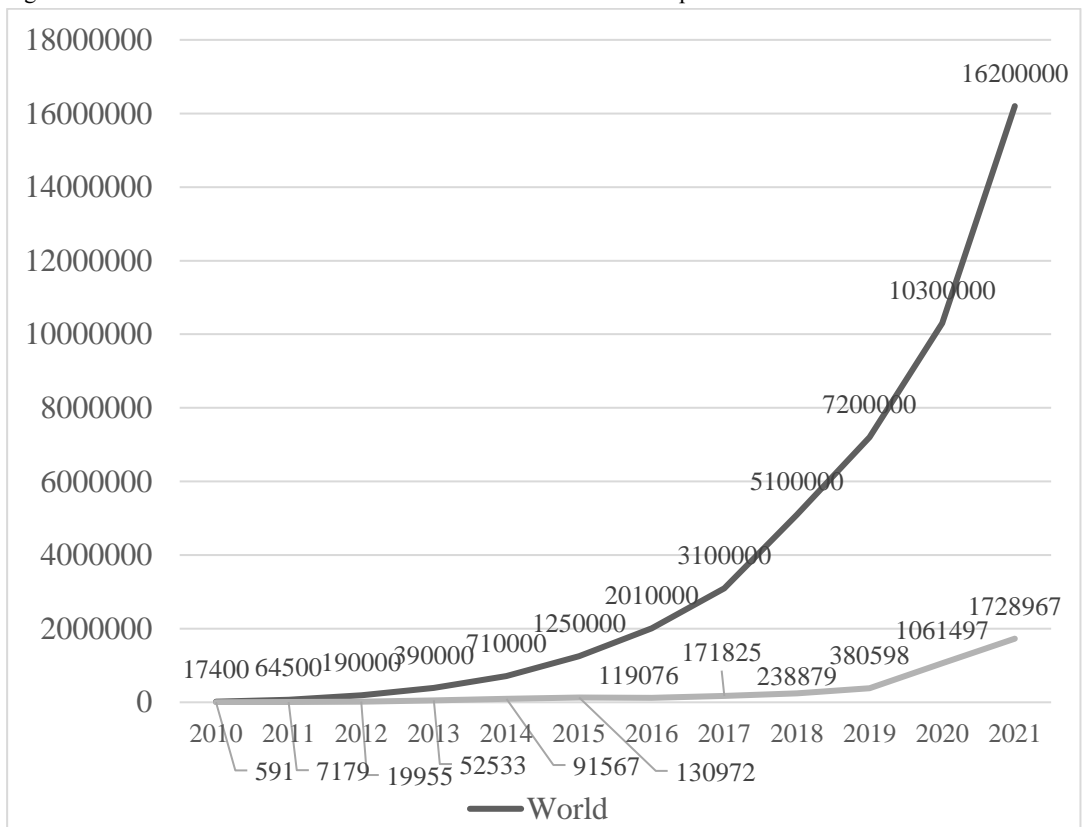
Source: own editing based on the data of (Camille, 2023) and (IEA, 2022)

It can be seen *(Figure 1)* that the number of cars with green licence plates registered in the world and in the EU is steadily increasing. At global level, the increase has been more pronounced since 2012, while in the EU it has been recorded since 2019. By 2021, the share of electric cars was 10.67% of the global total. In Europe, 10 times more electric vehicles have been registered in 2021 (1.7 million units) than in 2017. Since then, this share has shown a steadily rising tendency in a single year, with 22.9% more electrically powered cars on the market in January 2023 compared to the same period the previous year (*Camille*, 2023; IEA, 2022; E-cars, 2023). This shows that the spread of electric vehicles in Europe has increased significantly over the last 5 years, but despite the EU's commitment to sustainable environmental management over several decades, this growth is not considered sufficient.

China is the world's largest car market, ahead of the US. It's becoming a cliché, but China is slowly selling twice as many electric cars as Europe and the US combined. Since 2017, sales of conventional internal combustion vehicles have been steadily declining (23.562 million units), with roughly 9 million less sold in 2022 than five years ago (a 37% drop). In contrast, the number of new partially or fully electric vehicles sold (648 million units) has increased by more than ten times (6.887 million units) during the same period. Compared to the year 2021, in 2022 the sales of battery electric vehicles (BEVs) reached 5.365 million (an 81.6% increase), the number of plug-in hybrid and range-extended electric cars reached 1.518 million (a 151.6% increase), while 3,000 fuel cell cars were sold (an increase of 112.8%). Taking this trend into account, it seems realistic that China's projected total domestic vehicle sales in 2023 will reach 27.7 million units, of which 25% will be partly or fully electric vehicles (*Nauner,* 2023).

Figure 2 shows the ratio of newly registered electric cars to total passenger cars in Europe in 2021.

Figure 2: Share of newly registered electric cars in the total new passenger car fleet in Europe in 2021
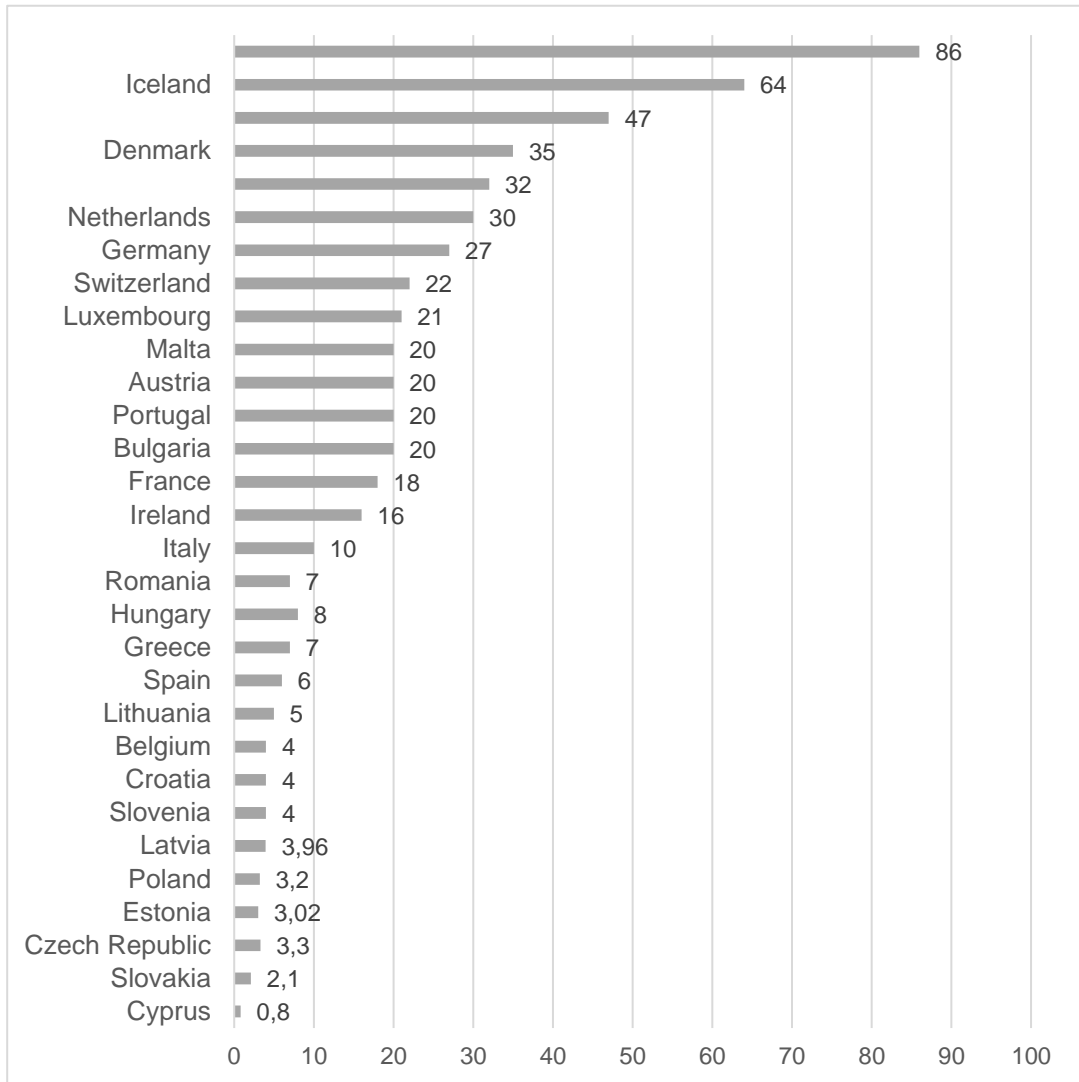
Source: own editing based on the data of (Camille, 2023)

It can be observed that most of the electric cars were launched in Norway, where 86% of newly registered cars were electric. Iceland (64%) and Sweden (47%) also have a high proportion of cars with green licence plates (*Camille,* 2023). It is noticeable that the demand for electric cars is higher in Scandinavia and wealthier European countries, while in central, eastern, and southern parts of Europe, it is significantly lower. In 2021, less than 5,000 vehicles with green licence plates were registered in Hungary, while in 2022 this number rose to over 13,000 (*Növekedés.hu,* 2023). Subsequently, in the scope of the study, it was aimed to examine how the economic development level of a country and factors that can be influenced at the

national level to encourage purchasing behaviour can affect the spread of electric cars, and whether there are any best practices that can be highlighted to increase consumer purchasing intentions.

3. Factors that motivate consumers to purchase vehicles operating with an electric drive

The factors that motivate consumers to purchase vehicles with green license plates have been classified into three groups (*Table 1*): benefits arising from their operation, direct financial benefits, and incentives provided by governments. We believe that all three factors play a significant role in encouraging purchases. In the scope of the present study, the focus was on providing a detailed description of the latter group, taking into account the developmental groups of countries.

Table 1: Benefits of using electric vehicles

Benefits from operation	Direct financial benefits	Incentives provided by governments
operation without local emissions	lower maintenance charges for spare parts	provision of tax reductions
less noise pollution	one-third of fuel costs	parking discounts
less chance of damage to components		access to restricted areas with reduced traffic
reduced number of road accidents		the possibility of using bus lanes
lower risk of component failure		

Source: own editing based on the data of Felsmann, 2014; Ferencz, 2020; Firstrow, 2019; Horváth, 2018; Mester, 2019; Nagyváradi, 2015; Németh-Kőmíves, 2021; Németh-Kovács, 2022;

One of the advantages of the construction and operation of electric vehicles is that the vehicles belonging in this group are able to operate without the emission of pollutants, while their gasoline and diesel counterparts significantly pollute our environment *(Németh-Kovács*, 2022). One of the most important positive aspects of these cars is that they have a minimal noise impact. According to a report published by the WHO, the number of people affected by noise pollution worldwide is over 100 million, 20% of which are European Union citizens (*Németh-Kőmíves*, 2021). Flesmann also found that consumers are motivated to purchase electric cars mainly by the lack of local emissions, lower noise pollution and transportation discounts provided by governments (*Felsmann*, 2014). This can be explained by the fact that electric vehicles emit less pollutants due to energy-efficient braking and easier starting due to the high torque, and the simpler internal design means that there is

less chance of damage to components. In addition, according to a large number of scientific literature, the use of electric cars can reduce the number of road accidents. This is because automation avoids accidents caused by human error (*Mester*, 2019). In the scope of the publication of András Ferencz on electric cars, it is argued that they have a simpler structure than their gasoline or diesel counterparts and therefore have a lower chance of component failure (*Ferencz*, 2020). The use of electric cars is also more convenient, as drivers owning electric vehicles do not need to spend time and energy refuelling their vehicles, they are even able to do so at home and set off with a 'full tank'. In addition, in urban driving, drivers can use the accelerator pedal to increase the driving range, because in the minutes when the driver's foot is not on the accelerator pedal, the battery of the car starts to charge (*Horváth*, 2018).

The direct financial benefits arising from the use of electric vehicles include lower maintenance and servicing costs (*Mester*, 2019). This is due to the fact that the structure of the vehicles in this category is much simpler than that of their traditional counterparts, with much less "moving" parts, resulting in lower costs for spare parts (*Nagyváradi,* 2015). In addition, owners of electrically powered cars face fuel costs that are one third lower than those of conventionally powered cars. For those who have the possibility to charge their vehicle at home with a 30-40 kWh battery, the cost of a 150-250 km trip is only 1200-1600 HUF (*Firstrow*, 2019).

Incentives provided by governments are an indirect way to promote the growing popularity of electric vehicles. These incentives include the provision of tax reductions, discounted parking, access to traffic-reduced areas and the use of bus lanes. However, are there similarities or differences among these incentives, taking into account the development level of the countries?

The World Economic Situation and Prospects (WESP) publication classifies all countries in the world into three main categories. A distinction is made between developed countries, countries with economies in transition and developing countries. According to the United Nations (UN) 2020, developed countries include the European Union Member States, the United States, Canada, Norway, Switzerland, Australia, Japan, New Zealand and the United States of America. The rest of the world is listed as transition economies and developing countries. The transition economies of South-Eastern Europe are Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia. In addition, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan and Uzbekistan are also transition economies. The rest of the world is classified as developing countries (*Statistical Annex*, 2020). Due to income differences, there are huge dissimilarities between developed and developing countries in terms of infrastructure, industrial

competitiveness and consumer awareness. The market of developing countries accounts for only 20% of global car sales. In the third quarter of 2022, battery electric vehicles accounted for more than 10% of the total vehicle fleet in Europe, China and Korea, while in Russia and Latin America the share was less than 1% (*Hold*, 2023). In our view, it is particularly important that local governments in the latter countries introduce more measures to support the purchase of electrically powered vehicles.

Table 2 summarises government measures to encourage the purchase of electric passenger cars in the countries involved in the present research, classified by level of economic development. *In Brazil,* which is one of the developing countries, individuals and companies importing electric vehicles and their components into the country are exempted from paying 35% import duty. According to literature, the government measure would result in a total loss of customs revenue of USD 3.6 billion, or HUF 13.3 billion, for the Brazilian government over the period from 2015 to 2022. However, the measure seems to have delivered the expected results, as the number of electric and hybrid vehicles on the market increased from 846 to approximately 126.5 thousand during the analysed period (*Totalcar*, 2023; *Statista,* 2023). *In Mexico,* the state does not provide incentives for the purchase of electric cars, resulting in a very low number of electric cars on the market. In 2022, only 0.5% (almost 50,000) of all vehicles sold in the country were electrically powered (*Autropro.hu*, 2023). Among the transition economies, the use of electric vehicles in Albania, Kosovo, Macedonia, Bosnia and Herzegovina and Montenegro is not yet supported by government incentives (*National Electromobility Strategy (Hazai Elektromobilitási Stratégia)*, 2023). *In Russia,* the concept of electric vehicles for 2030 is that one in 10 cars will be electric. The goal set by the Russian government in 2020 was to establish a minimum of 72,000 electric charging stations and 1,000 hydrogen fuel stations, as well as manufacture 217,000 electric vehicles. To achieve this goal, the government planned to allocate 10.5 billion dollars. Their objective is to put 1.5 million electric cars on the market (18,700 in July 2022) and to equip the country with 20,000 more electric charging stations (*Pankova,* 2021; *E-cars*, 2021a; *E-cars,* 2021b). However, the ongoing war in Russia makes it unlikely that these goals will be achieved. *In Serbia,* the government subsidises the purchase of passenger transport vehicles with a maximum of nine seats and electric trucks of less than 3.7 tonnes with dinars equivalent to 5,000 EUR, except for taxi drivers receiving vehicle purchase subsidies (*Vajma,* 2022). *Belarus* aims to have at least 100,000 electric vehicles on its roads by 2025. To achieve this, the government has already introduced welfare subsidies in 2020 (*Manly*, 2021).

Table 2: Incentives introduced by governments

Economic development level Name of country	Government measures introduced
Developing countries	
Brazil	exemption from import duties
Mexico	no incentive factor
Countries with economies in transition	
Russia	provision of financial support for the installation of public charging stations and the development and production of electric cars
Serbia	financial support for electric vehicle consumers
Belarus	introduction of welfare subsidies
Developed countries	
Hungary	free parking
Netherlands	exemption from the obligation to pay vehicle tax
Sweden	granting of tax relief
Denmark	determining the level of vehicle tax to be paid on the basis of CO_2 emissions
Norway	VAT-free purchase
France	provision of social leasing for lower-income families

Source: own editing based on the data of Totalcar, 2023; Autropro.hu, 2023; Autropro.hu, 2023; National Electromobility Strategy, 2023; E-cars, 2021b; E-cars, 2021a; Vajma, 2022; Manly, 2021; Electric Car Drivers (Villanyautósok), 2023; Honda, 2022; Lovasi, 2022; Greendex, 2020; Autopro, 2023; E-cars, 2022; ABN, 2023; based on data from Autropro.hu, 2023;

Among the *economically developed countries*, in Hungary local governments regulate local parking through ordinances. Many city authorities allow owners of vehicles with green licence plates to park for free in their municipalities. In Budapest, drivers of electric cars can park free of charge in all districts of the capital, except for the municipal pay car parks in Alíz Street and Normafa in the 11th district. The Municipality of Debrecen currently offers free parking to private residents of Debrecen who are pre-registered and have a purely electric car. In Miskolc, pre-registration and having a clean electric vehicle are also a condition for free parking. In addition, in Balassagyarmat, Cegléd, Eger, Gödöllő, Gyöngyös, Hajdúnánás, Hajdúszoboszló, Harkány, Hatvan, Hévíz, Kisvárda, Monor, Orosháza, Salgótarján, Siklós, Sopron, Székesfehérvár, Szilvásvárad, Tamás, Tapolca, Tatabánya, Vác, all drivers with green licence plates can park for free without any further conditions (*Villanyautósok*, 2023). In *the Netherlands,* ¼ of all new cars on the market in 2020 were electric vehicles or hybrid transport vehicles. This is largely due to the fact that the Dutch government is trying to increase the number of electric vehicles registered

in the country by offering tax incentives and various subsidies. The Member State will exempt car owners with green licence plates from vehicle tax until 2024. As of 2025, a 75% discount will be granted to car owners in this category. In addition, the increase in the number of electric vehicles is also attributed to the fact that the Netherlands has the largest number of charging stations in Europe, which makes the electric vehicles ready for transportation. (*Honda*, 2022). *In Sweden,* from 2018, owners of cars with green licence plates will benefit from a tax reduction and the government will also provide a total of 60,000 Swedish kronor, or around 2.2 million HUF, to encourage the purchase of electric cars. As of 1st January 2023, the condition for receiving the financial contribution is the purchase of a new car with CO_2 emissions below 60g/km or a natural gas/biogas engine. From 2018 until December 2022, new car owners with CO_2 emissions below 60g/km were also eligible for the subsidy (*Lovasi*, 2022). *In Denmark,* the local government aims to reduce greenhouse gas emissions by 70% by 2030. To achieve this, the plan is to increase the number of electric cars in the country's fleet to 775,000. In order to encourage the public to purchase cars with green licence plates, the vehicle tax rate of the country will be based on carbon dioxide emissions (*Greendex*, 2020). *In Norway,* electric cars can be purchased VAT-free and the local government also offers free parking, ferry use and toll-free parking in many cities for drivers with green licence plates. The measures introduced by the Norwegian government to promote the use of electric vehicles are proving to be successful, as Norway had the highest share of newly registered electric cars in the European Union as a percentage of total passenger cars (*Honda*, 2022). As the regulations introduced by the government have achieved the desired results, starting from January 1st, 2023, in order to ensure budget revenue, only purchases worth up to 500,000 Norwegian kroner, which is approximately 19 million Hungarian forint, will be eligible for tax exemptions. For vehicles with a purchase price exceeding this amount, the taxpayer will not be exempt from paying VAT on the portion above 500,000 Norwegian kroner (*Autopro*, 2023). *In France,* a programme is planned to elaborate a strong incentive for the use of electric cars. Under an initiative called 'social leasing', the government will allow lower-income families to lease a purely electric car for 100 EUR per month. This will allow families to use a vehicle with a green licence plate at a lower cost than the maintenance of an internal combustion engine car (*E-cars*, 2022). *In Germany, as* of 1st January 2023, those purchasing an electric vehicle with a net purchase price of up to 40,000 EUR will receive a subsidy of 4.5 thousand EUR, while those purchasing a car with a net purchase price of between 40,000 EUR and 65,000 EUR will receive a financial contribution of 3,000 EUR. It can be seen that, as in Norway, policy-

makers in Germany have reduced the level of support, as the number of electric cars coming on the market has increased substantially (*ABN,* 2023).

4.   Supporting the formulated hypothesis with statistical methods

The hypothesis formulated at the beginning of the research, which stated that there is a strong correlation between the spread of electric vehicles, the measures introduced by governments to promote the market entry of vehicles with green license plates, and the level of economic development of the country, has been proven to be true. However, this is contradicted by the results of the correlation analysis used.

In the scope of the literature review, it was found that countries classified as developed according to the UN have a higher stock of electric cars than developing and transition economies. In addition, in most developed countries, the adoption of measures by governments and local authorities to promote the market spread of electric cars is widespread, while in less developed and transition economies, the they are only implemented in a few exceptional cases.

The hypothesis was tested at the beginning of the research using Pearson correlation analysis. To measure the level of development of a country, the value of the human development index, or HDI, for the year 2021 was examined. Surprisingly, the analysis revealed a negative correlation between the HDI parameter of a country and the number of electric cars in the fleet in that country, with a Pearson correlation coefficient of -0.18. According to the literature, the value of the HDI index is calculated on the basis of life expectancy at birth, the expected number of years of education, the actual number of years of education and the Gross National Income (GNI). The calculations show that an increase in the gross national income (GNI) and the actual number of years of education has a negative effect on the number of vehicles with green licence plates, while an increase in the life expectancy at birth and the number of years expected to be in education has a positive effect.

5.   Conclusions

Very few government incentives for developing countries have been identified in the literature. It can be concluded that, in general, these countries are characterised by a lack of attention and funding from local governments to address the problems of environmental pollution, due to the numerous problems related to infrastructure, feeding, epidemiology and overpopulation that challenge their economies. In general, the number of registered electric vehicles in these countries is extremely low as a consequence. According to a report by the International Energy Agency, sales

of green licence plate vehicles in developing economies are mainly low due to high acquisition costs and lack of infrastructure needed to support the use of these vehicles. Most of the factors that characterise developing countries can also be valid for of countries with transition economies. Although it is believed that these states are more developed both economically and in terms of infrastructure, the attitude of the local government is a major determinant of the lack of action to promote electro-mobility.

In recent years, the market for electric cars has expanded rapidly in developed countries. In these countries, it is particularly important that governments encourage local residents to use electric vehicles to an appropriate extent, as according to the regulation adopted at the plenary session of the European Parliament on February 14, 2023, from 2035 onwards, new passenger cars and light commercial vehicles sold in the European Union must be electrically powered (*HVG*, 2023). To achieve this, most EU Member States are encouraging individuals and companies to buy and sell electrically powered vehicles by offering tax incentives, subsidies for purchases, as well as reduced parking and road use fees. Of the Member States covered by the study, Norway has been the most successful, with green licence plates cars accounting for the largest share of new vehicles on the market. As explained in the previous chapter of our study, the Member State has already reduced the support measures introduced, as the number of electric cars entering the market is increasing rapidly, and the government could therefore take the measure to reduce the support in order to increase the budget revenue. A similar trend can be observed in Germany. The hypothesis formulated at the beginning of the research, namely that there is a strong correlation between the spreading of electric cars and the measures introduced by governments to promote the market penetration of vehicles with green licence plates and the level of economic development of the country, proved to be true. However, the statistical analysis refutes this claim. Given the discrepancy in the results, it is believed that further research is required on the topic.

It is not possible to highlight a governmental "best practice" to encourage electric car sales for all countries, but it is believed that countries with a typically lower share of electric cars on the road should study the electro-mobility strategy of those countries where the number of vehicles with green licence plates on the market has reached the target. Excellent examples are the "tactics" used by the Norwegian and German governments, or the French plan to develop "social leasing" in countries with high rates of low-income households. It is also suggested that, although this was not the focus of the study, the real role of electric cars in environmental protection and human health should be examined by research groups at multiple levels. In addition to the advantages of electric cars, their disadvantages must also be taken into account,

in addition to the current technical and technological conditions (e.g. battery production, Faraday cages). Car production does not start in the car factories, but with the extraction of raw materials, followed by the manufacture and transport of certain components to the country of manufacture. In order to preserve and sustain the population, our planet and the future of the automotive industry, it is necessary to put cars on the market with technology that will serve us all in the long term; the design of that is in the hands of national governments.

Bibliography
1. ABN (2023): 2023-tól kevesebb a német elektromos autó támogatás (BAFA). https://abn.hu/2023-tol-kevesebb-a-nemet-elektromos-auto-tamogatas-bafa/ (downloaded: 2023. 04. 01.)
2. Ádám K. É. (2018): A magyar autóipar az elektromos autó tükrében. *Prosperitas*. 5. évf. 1. sz. pp. 7-20.
3. Antal M. - Péter Sz. (2007): Nutrition and air pollution. In: *Vitamins and dietary cofactors in lung health and disease*. PCCSU. 21. vol. https://egeszsegtudomany.higienikus.hu/cikk/2016-1/Antal.pdf (downloaded: 2023. 04. 08.)
4. Autopro (2023): Taroltak az elektromos autók Norvégiában. https://autopro.hu/elemzesek/taroltak-az-elektromos-autok-norvegiaban/828444 (downloaded: 2023. 03. 20.)
5. Autopro.hu (2023): Akik gyártják, alig használják az elektromos autókat.https://autopro.hu/elemzesek/akik-gyartjak-alig-hasznaljak-az-elektromos-autokat/872375 (downloaded: 2023. 04. 02.)
6. Camille B. (2023): Sales of electric cars in the EU broke records in 2022. Which country in Europe is leading the way?. https://www.euronews.com/next/2023/02/20/sales-of-electric-cars-in-the-eu-broke-records-in-2022-which-country-in-europe-is-leading (downloaded: 2023. 03. 25.)
7. E-cars (2021a): 10 milliárd dollárral lép be az elektromos autók piacára Oroszország. https://e-cars.hu/2021/06/05/10-milliard-dollarral-lep-be-az-elektromos-autok-piacara-oroszorszag/ (downloaded: 2023. 04. 01.)
8. E-cars (2021b): Jelentős ösztönzőkkel készül Oroszország az elektromosításra.https://e-cars.hu/2021/08/28/jelentos-osztonzokkel-keszul-oroszorszag-az-elektromositasra/ (downloaded: 2023. 03. 16.)
9. E-cars (2022): Szociális lízinget vezetnének be elektromos autókra. https://e-cars.hu/2022/08/30/szocialis-lizinget-vezetnenek-be-elektromos-autokra/ (downloaded: 2023. 04. 01.)
10. E-cars (2023): Nőtt a forgalomba helyezett új elektromos autók száma az EU-ban. https://e-cars.hu/2023/02/21/nott-a-forgalomba-helyezett-uj-elektromos-autok-szama-az-eu-ban/ (downloaded: 2022. 03. 10.)

11. Egyperces történelem (2021): Az elektromos autók megjelenése. https://egypercestortenelem.blog.hu/2021/01/08/az_elektromos_autok_megjelenese (downloaded: 2023. 03. 05.)

12. Felsmann B. (2014): Az elektromos járművek elterjedésének energiapiaci hatásai. *IX. Energetikai Konferencia 2014 – Energiastratégiák.* Budapesti Corvinus Egyetem. Budapest. pp. 1-10. ISBN 978-615-5460-31-9

13. Ferencz A. (2020): Az elektromos autók jövőjéről. *XXVIII. Nemzetközi Gépészeti Konferencia.* pp. 202-205.

14. Firstrow (2019): Az elektromos autók előnyei és hátrányai. https://firstrow.hu/az-elektromos-autok-elonyei-es-hatranyai/ (downloaded: 2023. 03. 20.)

15. Greendex (2020): Dániában 10 éven belül legalább 775 ezer elektromos autó lesz forgalomban. https://greendex.hu/daniaban-10-even-belul-legalabb-775-ezer-elektromos-auto-lesz-forgalomban/ (downloaded: 2023. 043. 25.)

16. Hazai Elektromobilitási Stratégia. Jedlik Ányos terv 2.0. Innovációs és Technológiai Minisztérium.https://www.jovomobilitasa.hu/_upload/editor/Strategiak/Hazai_elektromobi lita__si_strate__gia.pdf (downloaded: 2023. 04. 02.)

17. Hold (2023): Fejlett és fejlődő gazdaságok. https://hold.hu/lexikon/fejlett-es-fejlodo-gazdasagok/ (downloaded: 2023. 04. 01.)

18. Honda (2022): Európai országok, ahol a legnépszerűbbek a hibrid és az elektromos járművek. https://www.honda.hu/cars/blog/article/brand/which-european-country-is-most-interested-in-electric-vehicles-a.html (downloaded: 2023. 03. 10.)

19. Horváth A. Á. (2018): *Vállalkozásfejlesztés lehetséges finanszírozási formái az MMX Raffstore Kft. zöldáram beruházási tervezetén keresztül.* Budapesti Gazdasági Főiskola Kereskedelmi, Vendéglátóipari és Idegenforgalmi Kar. Zalaegerszeg. 34. p.

20. HVG (2023): Megszavazták: 2035-től csak elektromos autókat lehet eladni az EU-ban.https://hvg.hu/gazdasag/20230214_Megszavaztak_2035tol_csak_elektromos_autokat_lehet_eladni_az_EUban (downloaded: 2023. 03. 20.)

21. IAE (2022): Globális EV Data Explorer. https://www.iea.org/data-and-statistics/data-tools/global-ev-data-explorer (downloaded: 2023. 04. 07.)

22. Kiss A. (2015): Empirical analysis of the role of the firms' value drivers, network intelligence studies 3: 2 pp. 91-96.

23. Kiss A. (2017): An Empirical Analysis of the Effects of the 2007-2008 Financial Crisis on Changes in the Value Creation of Firms in Individual Industrial Sectors, Annals of the University of Oradea Economic Science 26 : 1, pp. 405-412.

24. Kiss A. (2019): Empirical Examination of the Role of Factors Affecting the Value of Firms, in Respect of 8 Years, Annals of the University of Oradea Economic Science 28: 2, pp. 162-168.

25. Lovasi A. (2022): Nem támogatják többé az elektromos autók vásárlását. https://www.autoszektor.hu/hu/content/nem-tamogatjak-tobbe-az-elektromos-autok-vasarlasat (downloaded: 2023. 03. 12.)

26. Manly (2021): Fehéroroszország erőteljesen fejleszti az elektromos járműveket, amelyek 2025-re várhatóan elérik az 100.000 darabot. https://hu.manly-

battery.com/info/belarus-is-heavily-developing-electric-vehicle-63042137.html
(downloaded: 2023. 04. 02.)

27. Mester Gy. (2019): Elektromos autók újdonságai 2019. *Bánki Közlemények.* 3.évf. 1. sz. pp. 37-41.

28. Nagy Cs. (2022): 75 százalékkal nőtt az elektromos autók eladása a világon idén. https://www.autoszektor.hu/hu/content/75-szazalekkal-nott-az-elektromos-autok-eladasa-vilagon-iden (downloaded: 2022. 03. 05.)

29. Nagyváradi R. (2015): *A környezetbarát autók magyarországi kereskedelmének sajátosságai és fogyasztói szokásai.* Budapest Gazdasági Főiskola Kereskedelmi, Vendéglátóipari és Idegenforgalmi Kar. Budapest. 79. p.

30. Nauner Cs. (2023): Hét meghatározó trend a 2022-es kínai autópiacon. https://villanyautosok.hu/2023/02/05/het-meghatarozo-trend-a-2022-es-kinai-autopiacon/ (leötlve: 2023.03.03.)

31. Németh K. – Kőmíves P. (2021): Termelési és piaci trendek az autiparban: az elektromos autók térhódítása. *Economica* 12. évf., 3-4. sz. pp. 48-58.

32. Németh T.– Kovács L. (2022): Elektromos autók fogyasztói megítélése Magyarországon – elméleti megfontolássok és egy kérdőíves felmérés eredményei. *International Journal of Engineering and Management Sciences.* 7. évf. 2. sz. pp. 1-23. DOI: https://doi.org/10.21791/IJEMS.2022.2.1.

33. Növekedés.hu (2023): Hatvanezer fölött ez elektromos autók száma Magyarországon. https://novekedes.hu/hirek/hatvanezer-folott-ez-elektromos-autok-szama-magyarorszagon (downloaded: 2023. 03. 11.)

34. Pankova O. (2021): Russia: Jump-start of a national electric vehicles industry. 2021.09.16.   Backer   McKenzie. https://www.globalcompliancenews.com/2021/09/16/russia-jump-start-of-a-national-electric-vehicles-industry-09082021/ (leöltve: 2023.03.05.)

35. Paulovics A. - Jámbor A. (2022): A környezetvédelem alkotmányjogi alapjai. *Miskolci Jogi Szemle.* Miskolc. 16. évf. 5. sz. pp. 407-421. DOI: https://doi.org/10.32980/MJSz.2021.5.1482

36. Salamon R. (2022): Az 5 legsúlyosabb globális környezeti probléma. https://biove.hu/az-5-legsulyosabb-globalis-kornyezeti-problema/ (downloaded: 2023. 04. 08.)

37. Statista (2023): Number of registered electric motor vehicles in Brazil from 2006 to 2021, by type. https://www.statista.com/statistics/763572/number-registered-electric-automobiles-type-brazil/ (letöltés: 2023.04.10.)

38. Statistical Annex (2020): Country classifications. World Economic Situation Prospects. United   Nations,   New   York. https://www.un.org/development/desa/dpad/wpcontent/uploads/sites/45/WESP2020_Annex.pdf (downloaded: 2023. 04. 01.)

39. Totalcar (2023): Villanyautó akár 2 millió forint alatt, erős brazil segítséggel. https://totalcar.hu/magazin/hirek/2023/03/20/vammentes-villanyauto-brazilia/ (downloaded: 2023. 04. 01.)

40. Vajma (2022): Szerbia támogatja az elektromos és hibrid járművek vásárlását. https://m.vajma.info/cikk/gazdasag/7877/Szerbia-tamogatja-az-elektromos-es-hibrid-jarmuvek-vasarlasat.html (downloaded: 2023. 03. 20.)

41. Villanyautósok (2023): Mely városokban lehet zöld rendszámmal ingyen parkolni? https://villanyautosok.hu/zold-rendszam/mely-varosokban-lehet-zold-rendszammal-ingyen-parkolni/ (downloaded: 2023. 03. 20.)

42. https://www.youtube.com/watch?v=QUnk4whmTs8&list=PLVvTyrVlSaPc9zN2OKk_DLcI2oyVgdQ9l&index=3

43. https://semmelweis.hu/kutlab/files/2023/02/Korrelacio_linearis-regresszio_2023_SGy.pdf

CHALLENGES IN ACHIEVING THE SDGs IN ROMANIA

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Abstract: *This paper aims at identifying the main obstacles that Romania faces in achieving the Sustainable Development Goals (SDGs). For this, literature review and data collection and analysis were carried out. When it comes to achieving the SDGs, different European countries have made progress to varying degrees, and it can be difficult to compare progress directly because each country faces unique challenges and opportunities. However, Sweden, Denmark and Finland are amongs the countries that have made the most progress towards achieving the SDGs in Europe. These countries are generally considered to have strong social welfare systems, high levels of public engagement, and progressive policies on sustainability and human rights. However, it's worth noting that even these top-performing countries still have areas where they need to make progress towards achieving the SDGs, particularly in areas such as reducing inequalities, combating climate change, and promoting responsible consumption and production. It's difficult to estimate when Romania could catch up with these countries as it depends on a variety of factors, but it will require a sustained effort over several decades. Romania faces various obstacles in achieving the Sustainable Development Goals. Some of the key challenges are: (1) economic disparities (particularly between rural and urban areas), (2) environmental degradation (deforestation, water pollution, and air pollution), (3) corruption, (4) lack of social inclusion (particularly for marginalized groups such as the Roma population, people with disabilities, and LGBTQ+ individuals), (5) limited institutional capacity. Overall, addressing these challenges will require sustained political will, investment in infrastructure and services, and effective partnerships between government, civil society, and the private sector.*

Keywords: *Sustainable Development Goals, Romania, economic disparities, environmental degradation.*

JEL Classification: *Q56*

Introduction

The Sustainable Development Goals (SDGs) are a set of 17 global objectives established by the United Nations to address some of the most pressing challenges

faced by the world. They were adopted in September 2015 as part of the 2030 Agenda for Sustainable Development, a comprehensive plan aimed at promoting prosperity, protecting the planet, and ensuring social inclusion for all.

The SDGs build upon the Millennium Development Goals (MDGs) and represent a more ambitious and universal framework. The concept of "leaving no one behind" is a central principle of the SDGs, emphasizing the need to ensure that progress is inclusive and that no individuals or groups are excluded from development efforts. A valuable analysis of this concept in the context of the Sustainable Development Goals (SDGs) is provided by Stuart and Woodroffe in an article published in 2016. The authors compare the concept of "leaving no one behind" with the limitations of the previous Millennium Development Goals (MDGs). In contrast, the Millennium Development Goals, which were in place from 2000 to 2015, were criticized for not paying sufficient attention to the disparities and inequalities within and between countries. The MDGs primarily focused on average progress indicators, which sometimes masked the situation of marginalized and vulnerable populations (Stuart&Woodroffe, 2016).

The SGDs encompass a wide range of interconnected issues, including poverty eradication, environmental sustainability, social equality, economic growth, and access to basic services like education, healthcare, and clean water.

Each goal is accompanied by specific targets and indicators that provide a clear roadmap for governments, businesses, and civil society to take coordinated action towards achieving these objectives by the year 2030. These Sustainable Development Goals are presented in the figure below.

Figure no 1. The UN matrix of Sustainable Development Goals
Source: United Nations, Sustainable Development Goals,
https://www.un.org/sustainabledevelopment/news/communications-material/ accessed on April 15, 2023

The SDGs acknowledge the interconnectedness of global challenges and emphasize the importance of collaboration among governments, businesses, civil society, and individuals. By working together to implement these goals, the world aims to create a more sustainable, equitable, and prosperous future for all, leaving no one behind.

Methodology

Identifying the main obstacles in achieving the Sustainable Development Goals (SDGs) requires a robust research methodology that allows for a comprehensive analysis of various factors contributing to the challenges faced. Research methodology for identifying the main obstacles in achieving the SDGs involved several stages, such as:

1. Literature review: A thorough literature review of existing research and publications on the SDGs and related topics was conducted. This helped in identifying key themes and areas of focus for the research. This stage also helped us develop research questions to guide the study.

2. Data collection: Data was collected from a variety of sources, including primary and secondary sources for the purpose of providing a comprehensive understanding of the obstacles to achieving the SDGs.

3. Data analysis: The collected data was analyzed using qualitative and quantitative methods, depending on the research questions and objectives. Qualitative analysis involved coding and categorizing data based on themes and patterns, while quantitative analysis involved statistical analysis of survey data.

4. Stakeholder engagement: Engaging with stakeholders, including government officials, civil society organizations, and community members, can provide valuable insights into the obstacles and challenges facing different groups and regions. This stage focused on interviews and surveys to gather input and feedback.

Stage 3 and 4 are the focus of a different scientific paper.

Literature review

Many scholars are preoccupied by the status of the implementation of SDGs. There are significant differences amongst the countries and some comparisons were made, alongside the elaboration of some reporting standards regarding this status. Some authors have tried to address certain issues regarding the entrepreneurial implication of the SDGs (Moon, 2018). In the same year, Pedersen stated that the SDGs provided a "much clearer set of long-term global priorities with political tail wind" endowing civil society and public sector with more strength in the process of aligning future and present views concerning environmental, social and economic issues (Pedersen,

2018). Also, in 2018 Buhmann et al have revisited the concept of "doing well while doing good", placing the SDGs, human rights and political CSR theory in a "do no harm and do more good" framework (Buhmann, K., Jonsson, J., & Fisker, M., 2018). The authors revisited the concept of "doing well while doing good" and proposed a framework that placed the Sustainable Development Goals (SDGs), human rights, and political Corporate Social Responsibility (CSR) theory in a "do no harm and do more good" framework. This framework aimed to address the potential tensions between pursuing business success (doing well) and simultaneously contributing to societal and environmental well-being (doing good). The "do no harm and do more good" framework is an approach that encourages businesses and organizations to not only focus on minimizing negative impacts on society and the environment (do no harm) but also actively contribute to positive social, environmental, and economic outcomes (do more good) aligned with the SDGs and human rights principles. This more social oriented approach offers new insights regarding the implementation of the SDGs. Kørnøv et al propose a conceptual framework for the liaison between the UN SDGs and environmental assessment (Kørnøv, L., Lyhne, I., & Davila, J. G., 2020). Abeysekera, on the other hand, is proposing "a principle-based sustainability reporting framework" in order to have a common base to assess and compare the implementation status of the SDGs (Abeysekera, 2022). Lesser developed countries are placed under the scope, as well. Certain links between the rural poverty and the medical and social phenomenon of disability in Ethiopia have been established (Raghav Gaiha, Shantanu Mathur, Vani S. Kulkarni,, 2022). Another article (Biraghi, C.A.; Carrion, D.; Brovelli, M.A, 2022) highlighted the importance, the impact and the complementary nature of the citizen science in monitoring the SDGs implementation process. In another article an analyze of the SMEs environment from Germany and Poland, as a comparison, in terms of the importance of implementing the SDGs has been made, revealing the crucial role of the SMEs in the process (Sonntag, R.; Lewis, G.J.; Raszkowski, A., 2022).

Obstacles in achieving the SDGs in Romania

Different European countries have made progress in achieving the SDGs to varying degrees, and it can be difficult to compare progress directly because each country faces unique challenges and opportunities. However, according to the SDG Index and Dashboards Report 2021, the countries that have made the most progress towards achieving the SDGs in Europe are:

1. Sweden
2. Denmark
3. Finland

4. France
5. Germany

These countries are generally considered to have strong social welfare systems, high levels of public engagement, and progressive policies on sustainability and human rights. However, it is worth noting that even these top-performing countries still have areas where they need to make progress towards achieving the SDGs, particularly in areas such as reducing inequalities, combating climate change, and promoting responsible consumption and production.

In their work, Kuc-Czarnecka et al have identified, based on a sensitivity analysis approach, certain synergies and trade-offs for the SDGs implementation process in EU countries. Their paper resulted in a collection of composite indicators being able to provide an image of the SDGs implementation at the level of the EU countries (Kuc-Czarnecka, Markowicz, & Sompolska-Rzechuła, 2023).
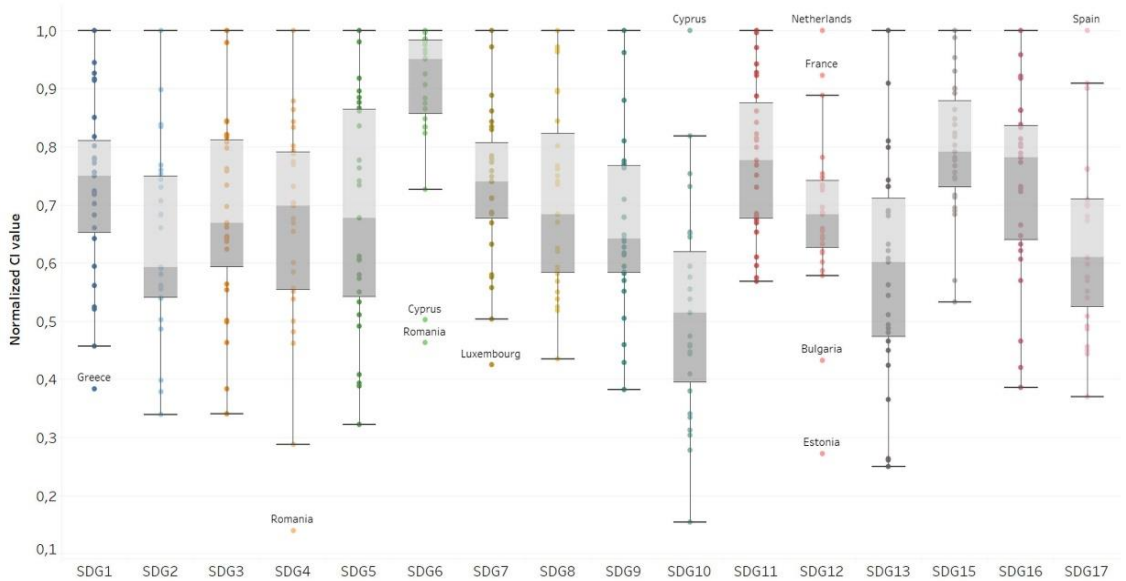
Figure no 2. The status of the implementation of SDGs in the EU countries - 2023
Source: (Kuc-Czarnecka, Markowicz, & Sompolska-Rzechuła, 2023)

As it can be seen from the image above, Romania is not so well placed among the EU countries regarding the quality of the SDGs implementation process. Romania faces various obstacles in achieving the Sustainable Development Goals (SDGs). Some of the key challenges are:

1. Economic disparities: Despite some progress in recent years, Romania still faces significant economic disparities, particularly between rural and urban areas. This can hinder progress towards achieving the SDGs related to poverty reduction, health and well-being, and education.

2. Environmental degradation: Romania faces significant environmental challenges, including deforestation, water pollution, and air pollution. These issues can undermine progress towards achieving the SDGs related to sustainable cities and communities, clean water and sanitation, and climate action.

3. Corruption: Corruption remains a significant challenge in Romania, and it can undermine progress towards achieving many of the SDGs, including those related to reducing inequalities and promoting inclusive economic growth.

4. Lack of social inclusion: Romania faces significant challenges related to social inclusion, particularly for marginalized groups such as the Roma population, people with disabilities, and LGBTQ+ individuals. These challenges can hinder progress towards achieving the SDGs related to reducing inequalities and promoting peaceful and inclusive societies.

5. Limited institutional capacity: Romania has made progress in implementing the SDGs, but there are still significant gaps in institutional capacity and coordination. This can make it difficult to effectively implement policies and programs to achieve the SDGs.

In conclusion

Overall, addressing these challenges will require sustained political will, investment in infrastructure and services, and effective partnerships between government, civil society, and the private sector.

It's difficult to provide an exact timeline for when Romania may catch up with Finland or Austria as it depends on a variety of factors, including economic and social policies, investment in infrastructure and education, and external factors such as global economic trends. However, it's worth noting that Finland and Austria have significantly higher levels of economic development and human development than Romania, so catching up may require a sustained effort over several decades. Romania has made progress in recent years, particularly in reducing poverty and increasing access to education, but there is still a long way to go to reach the levels of development seen in Finland or Austria.

References

Abeysekera, I. (2022). A framework for sustainability reporting. Sustainability Accounting, Management and Policy Journal, 13(6), 1386-1409. doi:doi-org.z.e-nformation.ro/10.1108/SAMPJ-08-2021-0316

Biraghi, C.A.; Carrion, D.; Brovelli, M.A. (2022). Citizen Science Impact on Environmental Monitoring towards SDGs Indicators: The CASE of SIMILE Project. Sustainability, 14. doi:doi.org/10.3390/su14138107

Buhmann, K., Jonsson, J., & Fisker, M. (2018). Do no harm and do more good too: connecting the SDGs with business and human rights and political CSR theory. Corporate Governance: The International Journal of Business in Society, 19(3), 389-403. doi:doi:10.1108/cg-01-2018-0030

Kørnøv, L., Lyhne, I., & Davila, J. G. (2020). Linking the UN SDGs and environmental assessment: Towards a conceptual framework. Environmental Impact Assessment Review, 85. doi:doi:10.1016/j.eiar.2020.106463

Marta Kuc-Czarnecka, Iwona Markowicz, Agnieszka Sompolska-Rzechuła,. (2023). SDGs implementation, their synergies, and trade-offs in EU countries – Sensitivity analysis-based approach,. Ecological Indicators, 146. doi:doi.org/10.1016/j.ecolind.2023.109888

Moon, C. J. (2018). Contributions to the SDGs through Social and Eco entrepreneurship; New Mindsets for Sustainable Solutions. Contemporary Issues in Entrepreneurship Research, 47–68. doi:doi:10.1108/s2040-724620180000008

Pedersen, C. S. (2018). The UN Sustainable Development Goals (SDGs) are a Great Gift to Business! Procedia CIRP,, 69, 21-24. doi:doi:10.1016/j.procir.2018.01.003

Raghav Gaiha, Shantanu Mathur, Vani S. Kulkarni,. (2022). Rural poverty and disability in Ethiopia: Formidable policy challenges. Journal of Policy Modeling, 44(5), 1000-1015. doi:doi.org/10.1016/j.jpolmod.2022.09.019

Sonntag, R.; Lewis, G.J.; Raszkowski, A. (2022). The Importance of Implementing SDGs by Small and Medium Size Enterprises: Evidence from Germany and Poland. Sustainability, 14. doi:doi.org/10.3390/su142416950

Stuart, E.; Woodroffe, J. (2016) Leaving no-one behind: can the Sustainable Development Goals succeed where the Millennium Development Goals lacked?, Gender & Development, 24:1, 69-81, DOI: 10.1080/13552074.2016.1142206

Sustainable Development Report, https://2021.dashboards.sdgindex.org/.

THE EFFECT OF INTERNAL BUSINESS COMMUNICATION ON THE CORPORATE IMAGE

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Abstract: *Since it is one of the most fundamental elements of establishing a relationship, effective communication is necessary in almost all professions. Business thrives on communication since it depends so heavily on relationships between diverse people. Any type of communication is always important to business. It increases a company's efficacy and efficiency and keeps the appropriate ratio of different strategies for projecting the ideal image. The two types of communication in business are internal and external. Communication between two organizations, as well as between a company and its clients, is referred to as external communication. Information exchange within a company is referred to as internal communication. It happens amongst co-workers as well as between employers and employees. Internal communication is therefore essential for connecting with employees, running the business, and improving the company's reputation. No matter how big or how profitable a business is, internal communication is crucial. It significantly affects an organisation's success, since effectively articulated strategies help enhance employee productivity, employee engagement and team collaboration. The open and transparent environment created by the communication process helps employees comprehend the company's objective and their individual role in achieving it. It guarantees excellent employee cooperation in achieving the shared objective. Good internal communication promotes exceptional staff engagement, which in turn increases corporate performance and ensures high levels of customer satisfaction. Internal corporate communication is essential for impacting daily operations, fostering cross-departmental relationships, and, most significantly, dismantling organizational silos. It aids in creating a united culture throughout the company to enable all employees to make the best judgments. Consequently, internal communication has an impact on a company's productivity, profitability, and overall brand image. It also influences both bosses and employees' morale. Thus, one must create a successful internal company communication plan to engage the workforce for greater production and pay attention to their worries and anxieties over their jobs. Therefore, the paper's main goal is to analyze internal communication tasks while concentrating on how they affect various areas of business performance. The paper is based on a critical analysis of the relevant literature, taking into account works that address the problem's practical aspect.*

1.Corporate Communication: Introduction

Communication's purpose is no longer a secret. Nevertheless, whether it is a matter of interpersonal or professional communication, we are unable to manage it in a way that will enable us to achieve our objectives. We typically listen to get criticism and we often make assumptions. To experience the maximum advantages in both the personal and professional arenas, we must incorporate outstanding communication into our daily activities.

Despite having different job names, corporate communications, corporate affairs, communications, and public relations all perform essentially the same tasks (Dolphin and Fan, 2000). The academic literature on communications frequently distinguishes between the terms above, circumscribing their remits to specific areas (see Van Riel, 1995; Balmer and Greyser, 2003). Practitioners tend to use these terms interchangeably. Healthy relationships between organizations and their stakeholders are achieved via the deployment of effective communication methods. If employed properly, these communication techniques are not 'simply' discrete activities that are unrelated to one another in any way. Every organization needs sound shared parameters on which to base its communication strategies in order to give such strategies cohesiveness. By doing this, the likelihood of misunderstanding and disinformation among the organization's audiences can be decreased.

Van Riel (1995:26) defines the term corporate communication as being "an instrument of management by means of which all consciously used forms of internal and external communication are harmonised as effectively and efficiently as possible, so as to create a favourable basis for relationships with groups, upon which the organisation is dependent." Van Riel outlines the precise goals of corporate communication and depicts it as a tool used by management to sculpt an organization's intentional communications with all of its stakeholders. Other forms of communication also significantly influence the relationship between an organization and its stakeholders (or publics), therefore it is crucial to draw attention to the deliberate character of corporate communication. He also uses the phrase "favourable relationships," which suggests a symbiotic link between the organization and its constituents. The differences and disparities between the parties must be eliminated or, at the very least, minimized for the connection to be advantageous to all parties.

2. Organizational Identity. Organizational Image

2.1. Organizational Identity

Albert and Whetten (1985) introduced the idea of organizational identity into the field of organization studies after adapting it from sociology and psychology. They contend that the phenomena of organizational identity arises whenever individuals inside an organization reflect on their own identities(e.g. who are we?"), jobs, and positions (e.g. "what business are we in?"), as well as their preferences and aspirations (e.g., "what do we want to be?"). Members may easily determine their organizational identity when their organizations are distinguishable and different from other organizations, which can be done by comparing their organizations to others and identifying prominent and distinctive qualities and features.

According to Trench and Waddington ,"[o]rganisational identity consists of the sum total of proactive, reactive and unintentional activities and messages of organisations." (Trench, Waddington, 2020:258)

The statement does not specifically include the unintended components, which make up a large portion of an organization's organizational identity. In actuality, the phrase only asserts that every organization has a corporate identity without defining what that term means. As organizations operate in a societal setting, this is the case. Even when an organization does nothing, a message is nevertheless sent. No matter how busy or passive the organization is, its stakeholders will nonetheless develop a perception of it.

Business identity was defined by Balmer (2001a) as "an umbrella label used to cover corporate personality, organizational identification and visual identity". The vast majority of corporate marketing ideas, including image and reputation, among others, are explained using this identity as a foundation (Balmer and Greyser, 2003). For instance, even though a corporation lacks the capacity to directly establish its public image, it can still have an impact on its formation by managing its corporate identity effectively (Dutton and Dukerich, 1991; Dowling, 1994; van Riel, 1995; Hooghiemstra, 2000; Karaosmanoglu and Melewar, 2006). These two ideas are strongly related, according to Karaosmanoglu and Melewar (2006), who believe that corporate image is created by the projection of all indications that contribute to the identity of the organization (Hatch and Schultz, 1997; Christensen and Askegaard, 2001). As a result, the notion of business identity has grown in importance (Melewar and Karaosmanoglu, 2006), and managing it is a crucial component of corporate strategy (Melewar et al., 2006).

There has been some ambiguity in the literature when defining this idea because writers frequently entangle it with other notions that are closely similar. The majority

of the time, these issues result from the variety of academics who have examined this business reality from many domains, such as organizational behavior, marketing, strategy, psychology, or corporate communications.

2.2. The Relation between Organizational Identity and Organizational Image

According to Boroş (2009), "[o]rganizational identity and image are the anima and persona of organizations, the basis of the interlink with internal and external stakeholders (members, clients, providers, competition etc.)." Therefore, it is easy to understand the significance and potential impact of image and reputation. Organizations feel compelled to change the perceptions that their various stakeholders have of them as a result. They employ organizational identity to do this. When the term "identity" was used for the first time in a corporate communications environment, authors specifically pointed to the visual components organizations employed to present themselves to their audiences. The primary component in this case was the organization's logo, which was a visual emblem created by the organization to express a variety of qualities it wanted its audiences to associate with the organization. Additionally, logos were meant to help audiences recognize and set out the organization from others. Organizations spend a lot of time and money on their logo, making sure it conveys the right message and, when necessary, adapting or changing it to fit changes in the environment (such as changes in cultural preferences) or changes in the organization itself.

There are many factors influencing how an organization's image is formed in the minds of customers, many of which it has little or little direct control over. By expanding on this notion, we can assert that every organization has an organizational identity, whether this identity is intended or not. Organizations represent and transmit messages to their many stakeholders just by being there, and it is these messages that shape how those stakeholders view the organization.

On the other hand, organizational image "as perceived by members of an organization is an aggregate of individual employees' perceptions of the organization based on their own experiences and judgments (perceived organizational identity) and outsiders' judgments about the organization (construed external image)." (Lee et al, 2023:53)

More than ever, internal communication is crucial. Employers must be deliberately and often updated with communications that are timely and understandable. High turnover is the price that businesses which do not communicate effectively with their workers pay.

3. Internal Business Communication

Developing a successful internal communication plan is the right approach to increase engagement, productivity, and teamwork at work as workplace communication is the way of the future. A company's success directly depends on the quality of internal communication, whether it is about expanding a small or large organization. Employee productivity, teamwork, experience, and ultimately employee engagement are all greatly impacted by the interaction with the employees. Internal communication (often referred to as IC) is the collective name for a set of procedures or instruments that facilitate efficient information exchange and teamwork within a company. Top management, middle management, and lower management all communicate internally. Making sure staff members are aware of the company's mission and share its values through open and honest communication is a great method to achieve this. Internal communications have a variety of effects on a company, including:

- Day-today operations
- Cross-departmental collaboration
- Strategic alignment within the company
- Leadership
- Employee motivation and productivity
- Customer service
- Innovation
- Employee experience
- Company culture
- Employee engagement
- Employee retention

Additionally, it is critical in destroying organizational silos, as it can be seen in Figure 1.
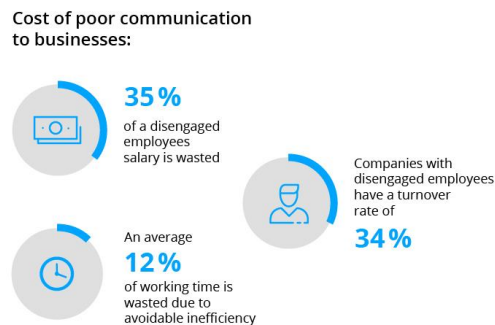
Figure 1: The Effects of Poor Business Communication to Businesses
Source: https://hbr.org/sponsored/2018/12/the-business-case-for-an-employee-communication-app

Effective communication is usually a two-way process that involves both sending and receiving messages. All organization members should engage in this process. Employees are aware of the company's mission and goals thanks to communication, which also helps to shape the company's distinctive culture. Internal communication can improve overall organizational efficiency if it is well managed. As a result, communication strategies should be carefully structured to address the information demands of employees and to facilitate information exchange between employees and managers.

The best and most efficient internal communication tool is face-to-face interaction. Although it does not require financial resources, it is not frequently used.

The primary reason for this circumstance is that managers are frequently under time pressure and do not want to spend a lot of time conversing with staff. Additionally, the majority of them are not big fans of this communication tool or the business is simply too big for them to effectively use face-to-face communication.

There are three crucial areas of interest for every internal communication program: hierarchical communication – a key role in the communication process is played by chief executive officers, vice presidents, directors, managers, and frontline supervisors; mass media communication – newsletters, e-mails, videos, blogs, and other vehicles to reach broad employees audiences; the informal networks of invisible communicators that exist in every organization. (Withworth, 2006:205)

When creating the framework for an internal communication program within the organization, all areas should be taken into account, with particular focus on the last one. An organized internal communication program aids in creating a culture of communication from which a firm will profit, particularly when educating the public about a significant internal change. If employees only receive information from reliable internal sources on a daily basis, they will turn to the same sources when things change. As a result, these media will become the most reliable news sources, and they will also help to prepare and support their staff during periods of significant change and uncertainty. (Gillis, 2006:259)

Every company has informal communication in addition to formal communication. The employees typically cite this as the most trustworthy information flow channel. Informal communication has a good impact on employees' creativity and is supported by organizations with strong corporate cultures built on open, two-way communication and trust. On the other hand, informal communication can exacerbate unfavorable relations between departments, employees, and their supervisors, which reduces job efficiency, if there is an unclear information flow or the improper climate in the business.

3.1. The Stakeholders – The Creators of Corporate Image

Corporate image is the company's standing among the numerous target markets that are significant to it. Stakeholders are the various organizations that have an interest in the business. Stakeholders are impacted by the firm's decisions, and the corporation is also impacted by stakeholder decisions. Consequently, the corporation values how it appears to its stakeholders. Customers, distributors and retailers, financial institutions and analysts, shareholders, governmental regulatory agencies, social action organizations, the general public, and staff are the main stakeholders that most large firms must consider. The perception that stakeholders have of the business will affect their decision to support it or not. As a result, if consumers have a bad impression of a business or its goods, sales and earnings will undoubtedly suffer.

Another significant group of stakeholders is the government regulatory authorities, which are mandated by law to monitor and control businesses for particular, clearly stated objectives. However, these organizations have a lot of latitude in how they interpret and administer the law. They are probably lot less censorious when they have a favorable opinion of the company. Since each stakeholder group is primarily focused on a different aspect of the corporation's operations, it stands to reason that each group will likely have a slightly different impression of the company. Customers are therefore primarily concerned with the cost, level of quality, and dependability of the company's goods and services. The financial structure and performance are important to financial institutions. The key issues that affect employees are pay, working environment, and personnel policies. Therefore, it makes sense that a business would customize its communications to each stakeholder group specifically in order to address their unique problems.

In the same time, the most effective way for knowledge to move from within a corporation to the outside world is through its employees. They represent the organization in the outside world, so they must be well-equipped to carry out this responsibility. As opinion leaders in various groups (such as families, sports teams, and the local community), employees frequently have an impact on potential clients for businesses. The organization's internal image is created by the people working there. If it is good, staff members actively identify with a company, are content with their jobs, and perform better.

4. In conclusion

Corporate identity, corporate communication, corporate image, and feedback are the key factors in maintaining company image. Corporate identity is what makes a firm

what it is—its distinct personality that sets it apart from competing businesses. The collection of sources, messages, and media used by an organization to communicate its distinctiveness or brand to its diverse audiences is known as corporate communication. The perception that various audiences have of the company as a whole is known as its corporate image. The goal of managing corporate image is to convey the identity of the company to the audiences or constituencies that are significant to the business in a way that helps them form and maintain a positive opinion of it. In order to ensure that the message is received favourably, this process include creating a positive identity, presenting this identity to important audiences, and getting feedback from those audiences. Modifying corporate communication, changing the business identity, or both can help to improve a poor image.

References
1. Albert S. and Whetten D. A. (1985). "Organizational identity", in: L. L. Cummings & B. M. Staw (Eds.), *Research in Organizational Behavior*, Vol. 7, pp. 263-295.
2. Balmer, J.M.T. (2001a). "Corporate identity, corporate branding and corporate marketing - Seeing through the fog", *European Journal of Marketing* 35(3/4): 248-291.
3. Balmer, J.M.T. and Greyser, S.A. (2003). *Revealing the Corporation: Perspectives on Identity, Image, Reputation, Corporate Branding, and Corporate-Level –marketing*. London: Routledge.
4. Boroş, Smaranda. (2009). *Identity and Image: The Soul and Face of Organizations*. Available:
https://www.researchgate.net/publication/260246993_Identity_and_Image_The_Soul_and_Face_of_Organizations [23 Apr 2023].
5. Dolphin, R. and Y. Fan (2000). "Is corporate communications a strategic function?". *Management Decision* 38(2): 99–106.
6. Gillis T. L. (2006). "Internal Communication Media" in Gillis T. L. (ed), *The IABC Handbook of Organizational Communication: A Guide to Internal Communication*, *Public Relations, Marketing and Leadership*, Jossey-Bass, San Francisco
7. Melewar, T.C. and Karaosmanoglu, E. (2006). "Seven dimensions of corporate identity", *European Journal of Marketing* 40(7/8): 846-869.
8. Melewar, T.C., Bassett, K. and Simões, C. (2006). "The role of communication and visual identity in modern organisations", *Corporate Communications* 11(2): 138-147.
9. Shinwoo Lee, Taha Hameduddin, Gyeo Reh Lee (2023). "Organizational Image and Employee Engagement: Exploring the Inter-Relationships Between Construed External Image and Perceived Organizational Identity," *The American Review of Public Administration*, 10.1177/02750740221147573,(2), 82-96.
10. Tench, Ralph, Waddington, Stephen. (2020). *Exploring Public Relations and Management Communication,* 5th Edition. Pearson Education**.**

10.Van Riel, C.B.M. (1995). *Principles of Corporate Communication*. London: Prentice Hall.

11. Withworth B. (2006). "Internal Communication" in Gillis T. L. (ed), *The IABC Handbook of Organizational Communication: a Guide to Internal Communication, Public Relations, Marketing and Leadership*, Jossey-Bass, San Francisco

12. https://hbr.org/sponsored/2018/12/the-business-case-for-an-employee-communication-app

DIFFICULTIES IN TEACHING GERMAN MODAL VERBS TO ECONOMICS STUDENTS

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Abstract: *Modal verbs are an important chapter in learning German. The paper presents how the modal verbs are thought to the economics students in our university, emphasizing the common mistakes of the students and possible measures the teacher should take in order to diminish the number of learning mistakes. The first part of the paper deals with the theoretical background, thus being such a difficult subject for the Romanian student, the paper brings up even the conjunction differences on this subject, dealing with different verbal tenses in the German grammar. The second part of this paper presents a text full of modal verbs, in different tenses, the students are asked to recognize them. In the paper I will show the mistakes the students usually make and the proportion of the right answers at this task. The following part deals with different exercises, in order to conclude the mistakes and the proportion of the right answers at this challenge. The final part shows the conclusions of this study that reflects on the results of the conducted measurements. The modal verbs play an important role in facilitating an efficient and understandable communication pattern in the society and therefore, they form significant aspect in the human language. Modal verbs add to the text precision and clearance in its meaning.*

Keywords: *modal verbs, economics students, grammar, rules, meanings*

JEL Classification: *Z19*

1. Introduction

The word grammar comes from the ancient Greek. In this language, the word "gramma" means the letter or the written word. Grammar is, in a sense, the operating system of any language, some experts say. Others believe: grammar is the set of rules of a language that is necessary in order to express oneself intelligibly in this language. Grammar means language learning. A grammar includes all the rules necessary to speak the language. It is only with the help of such a set of rules that is possible to communicate and understand each other. Anyone who makes the effort to deal with it will discover the logic and structure of the language.

Grammar plays a major role, of course, because it is essential to know the rules so that students can express themselves correctly in the foreign language. They must know the structures and then use them in verbal expression. Grammar teaching is an important topic in foreign language teaching, but grammatical knowledge is not the main goal of foreign language teaching. Since learners do not usually associate positive emotions with grammar lessons, it is all the more important that teachers design grammar lessons in such a way that they are both fun and successful. Grammar lessons should be motivating enough to enable learners to achieve quick success. (Bolitho, Tomlinson, 1995)

We have to decide which excerpt is the most important for teaching in a particular academic year, since grammar takes up a lot of time in class. In order not to make the students feel overburdened and at the same time to avoid boring lessons, the grammar rules should be carried out in such a way that students can memorize the material. (Ferris, 2002)

The explanation of the grammar rules must not take a long time and the rules must be repeated several times. "It is therefore not a question of conveying the complete system of scientific rules of a language, but rather of selecting specific elements which are directly relevant for the purposes of communication". (Granzow-Emden, 2019: 74) In grammar teaching, then, it is not a question of purpose, but of the means by which we can better understand the foreign language as a whole.

In speaking skills, success is not so easy to experience without knowing the grammar system. Then you can really practice and master the language. This shows "a close relationship between forms and meanings". (Ellis, 2010: 17) The main forms of attentional control are visual processing and grammatical cues within language materials and production orientation, which help learners to further process and perceive existing language deficits.

2. Research method

First of all, I will describe the differences and nuances between the Romanian and German rules of modal verbs and then I will dedicate myself to this topic in the DAF lessons.

After presenting the theoretical part, the economic students are asked to fill in the blanks, using only modal verbs. After fulfilling the task, I will take a look to the mistakes present in the student's papers and draw the conclusions.

The characteristic of the modal verbs in both languages can be described in such a way that another verb also appears most often in the sentence. In German, this verb

appears at the end of the sentence, unlike in Romanian, where the verb is near the modal verb.

3. Aspects of the modal verbs

The meaning of the modal verbs is to forbid, allow or command. The verb "wissen" (to know) in German ranks with the modal verbs because of the same conjugation. There is no imperative in modal verbs. Modal verbs can then be presented in DAF lessons as the modal verbs in all other languages, only the explanations of the meaning should be more thorough and the conjugation must be shown correctly. Modal verbs are called auxiliary verbs. A subordinate verb that is always combined with the "pure" infinitive of another verb and has the same subject area as this one. "These verbs are connected to the infinitive and fulfill the modal function, i.e. reality is not seen, but is offered as possible, desirable, necessary, etc. We recognize six modal verbs - dürfen, können, mögen, müssen, sollen, wollen. They have morphological, syntactical and semantic characteristics. Depending on which modal verb we use, the meaning of the sentence changes." (Dreyer, Schmitt, 2009: 109-110)

Modal verbs can be divided into three categories according to their meaning:
- Possibility (*können, dürfen*)
- Necessity (*müssen, sollen*)
- Will or desire (*wollen, mögen*).

(http://www.nthuleen.com,
http://www.duden.de/sprachwissen/sprachratgeber/modalverben-und-wissen)

Dürfen expresses:
- Permission

Die Verteiler dürfen den Verkaufspreis für das Produkt selbst festlegen.
There is another way to rephrase this sentence:
The distributors can set the sales price for the product themselves.
The distributors have permission / have the right / have the authority / have the approval / have (received) consent to ....
The distributors are permitted to ….
The distributors are entitled, authorized to ....
It is allowed / permitted the distributors to set the sales price for the product themselves.
- Prohibition *(nicht dürfen)*

Die Produkte dürfen nicht verteilt werden.

There is another way to rephrase this sentence:

It is forbidden / not allowed / inadmissible / prohibited / not permitted to distribute the products. The buyer is not entitled / authorized / empowered to distribute the products.

Können is used in the following situations:

■ Ability

Ein guter Leiter kann sich schnell auf wechselnde Anforderungen einstellen.

There is another way to rephrase this sentence:

A good manager is able to adapt / capable of adapting / is ready to adapt quickly to changing requirements.

A good manager is equipped with the ability / has the ability / has the faculty to adapt quickly to changing requirements.

A good manager is in the position to adapt quickly to changing requirements.

■ Opportunity

Jetzt kann das Produkt besonders gewinnbringend abgesetzt werden.

There is another way to rephrase this sentence:

Now there is a chance, an opportunity to sell the product particularly profitably.

■ Possibility

Das Reiningsprodukt kann mit dem Hausmüll entsorgt werden

The cleaning product can be purchased in any well-stocked specialist shop.

There is another way to rephrase this sentence:

The cleaning product is easily disposed of with household waste.

The cleaning product is easily to be disposed of with household waste.

It is possible to dispose of the product with household waste.

You have the opportunity / it is possible to purchase the cleaning product in any well-stocked specialist shop.

■ Impossibility *(nicht können)*

In dieser Form kann das Reinigungsprodukt nicht auf den Markt gebracht werden.

There is another way to rephrase this sentence:

It is not possible / it is impossible / unacceptable to place the cleaning product on the market in this form.

Mögen is used in the following situations:

■ Wish

Der Kunde möchte das Reinigungsprodukt vor dem Kauf ausprobieren.

There is another way to rephrase this sentence:

The customer would have liked to try the cleaning product before buying it.

The customer would like to try the cleaning product before buying it.

Müssen is used in the following situations:

- Necessity

Die Reningungsproduktpalette muss erweitert werden.

There is another way to rephrase this sentence:

It is needed / necessary / required / essential / inevitable to expand the cleaning product range.

The cleaning product range needs to be expanded.

There is a need to expand the cleaning product range.

There is no escaping the need to expand the cleaning product range.

There is nothing left but to expand the cleaning product range.

- Compulsion

Aufgrund des verschärften Wettbewerbs müssen die Unternehmen laufend neue Dienstleistungen anbieten.

There is another way to rephrase this sentence:

Due to increased competition, companies are forced to constantly offer new services.

Companies are forced / see themselves under pressure to constantly offer new services.

It is inevitable for companies to constantly offer new services.

- Obligation

Ein Handelsvertreter muss sich ständig um den Abschluss von Geschäften bemühen.

There is another way to rephrase this sentence:

A sales representative has the duty / is obliged to make constant efforts to close transactions.

A sales representative has to constantly strive to close transactions.

A sales representative is required / needs to constantly strive to close transactions.

- Command

Das Management muss Maßnahmen zur Verbesserung der Produktqualität ergreifen.

There is another way to rephrase this sentence:

Management must take measures to improve product quality.

Means are to be adopted by the management to improve product quality.

- Lack of compulsion / duty / necessity *(nicht müssen)*

Bei sachgemäßer Anwendung des Produkts muss kein Augenschutz getragen werden.

There is another way to rephrase this sentence:

If the product is used correctly, it is not necessary / essential / required / prescribed to ...

If the product is used correctly, there is no necessity / no obligation / no compulsion to ....

Wollen expresses:

- Will, intention

Die Supermarktkette will zukünftig auch Produkte aus „fairem Handel" in die Regale stellen.

There is another way to rephrase this sentence:

The supermarket chain is determined / ready / willing / prepared to put ….

The supermarket chain plans / intends / is going to put …

The supermarket chain has the intention / has the plan to put ...

Sollen is used in the following situations:

- Order

Das Management soll Maßnahmen zur Verbesserung der Produktqualität ergreifen.

There is another way to rephrase this sentence:

Management is mandated to take action to improve product quality.

Management is given the order / the instruction / the task of taking measures to improve product quality.

- Question of intent

Soll auch für das neue Modell eine 10jährige Garantie gewährt werden?

There is another way to rephrase this sentence:

Is it expected / foreseen / required that a 10-year guarantee be granted for the new model?

- Planning

Das Produkt soll bald auch auf dem amerikanischen Markt angeboten werden.

There is another way to rephrase this sentence:

It is planned / foreseen / intended to offer the product on the American market soon.

There is a plan / intention to offer the product on the American market in the near future.

- Recommendation

Um das Kunden-interesse zu steigern, sollte auch noch die Produkt-gestaltung optimiert werden.

There is another way to rephrase this sentence:

In order to increase customer interest, it is recommended / advisable / appropriate / recommendable to also optimize the product design.

In order to increase customer interest, it would be good / better, if the product design were also optimized.

- ■ Undesirability *(nicht sollen)*

Von der Optik her soll das Produkt nicht nur älteres Publikum ansprechen.

There is another way to rephrase this sentence:

It is not desired / it is not wanted that the product appeals only to an older audience. (Helbig, Buscha, 2013)

4. Hypothesis testing

All these aspects were presented to the economics students. Most of them are not beginners in studying German, I wanted to know what knowledge of the modal verbs the economics students have, so I prepared the following text. They have 20 minutes to find the best solution. In the following text there are 20 gaps that the students should fill in with the appropriate modal forms. After reviewing the works, I will draw the conclusions.

Die Uhr

Gestern kaufte ich eine neue Uhr. "Sie möchten doch sicher etwas ganz Besonderes", sagte der Verkäufer. Er zeigte mir eine silberne Uhr. "Diese Uhr," sagte er, "............. Ihnen die Zeit in Sydney oder New York anzeigen. Aber das ist noch nicht alles. Diese Uhr kann auch Ihre Körpertemperatur messen.

Und .... Sie wissen, wie hoch Ihr Blutdruck ist, ... Sie nur diesen Knopf drücken. So einfach ist das." Ich blickte staunend auf die Uhr.

"Sie .... mit dieser Uhr ein Fax verschicken und telefonieren. Und wenn Sie jemand fragen ...., wie das Wetter in China ist: Das ist kein Problem. Die Uhr .... es Ihnen sogar auf Chinesisch sagen, wenn Sie das ...."

"Aber ich .... kein Chinesisch", sagte ich.

"Sehen Sie", sagte er, "deshalb .... Sie unbedingt diese Uhr haben. Denn diese Uhr .... auch übersetzen. Von Chinesisch auf Deutsch." "Und wenn ich nur die Zeit wissen ....?"

Der Verkäufer winkte ab. "Wer .... heutzutage schon nur die Zeit wissen?"

Ich war überzeugt. Ich .... diese Uhr haben. Sie kostete achthundert Euro. "Sie .... sich glücklich schätzen," sagte der Verkäufer. "Ohne diese Uhr werden Sie nicht mehr leben wollen." Er wuchtete eine schwere Bedienungsanleitung auf den Tisch. "Sie ....nur vorher diese Anleitung lesen", sagte er.

Ich blickte misstrauisch auf das Buch. "Sie .... sich davon nicht abschrecken lassen. Die Anleitung ist ganz einfach", meinte der Verkäufer. "Jeder Idiot .... sie verstehen."

Ich ging mit meiner neuen Uhr auf die Straße. Eine Frau …........ die Zeit wissen. Ich sah ratlos auf meine neue Uhr. "Die Zeit hier …........ ich Ihnen leider nicht sagen", meinte ich. "Aber wenn Sie …........, welches Wetter jetzt in China ist. Das kann ich Ihnen sagen."

After checking, I discovered the following errors:
Only 18% of the students gave the right answers.

- 12% used one incorrect form
- 8% used two incorrect forms
- 14% used three incorrect forms
- 18% used seven incorrect forms
- 8% used ten incorrect forms
- 13% used thirteen incorrect forms
- 9% used fifteen incorrect forms
- 25% could identify the correct verb but the correct grammar form
- 35% could not make the difference between the modal verbs *sollen* and *mussen*
- 12% could not use the verb *können*
- 30% could not use the verb *sollen*
- 25% could not use the verb *müssen*
- 17% could not use the verb *mögen*
- 12% could not use the verb *wollen*
- 5% could not use the verb *dürfen*

5. Summary

The process of learning German especially as a second language is challenging for the Romanian students because of the complicated nature of modal verbs used. Various forms of communications from order to permission usually have varying forms of expression. The modal verbs play an important role in facilitating an efficient and understandable communication pattern in the society and therefore, they form significant aspect in the human language. Modal verbs add to the text precision and clearance in its meaning. (Wilmanns, 2017)

As this study shows, modal verbs are much too difficult for economics students, or students general speaking. Many students usually know the linguistic nuances of the modal verbs, but they do not master the conjugation. When examining their knowledge of the modal verbs, the students are not in very good form, so the teacher

needs to dedicate more time to teaching and practicing the modal verbs. The economics students have great difficulties in dealing with *sollen/müssen* modal verbs. The teacher should practice with the students the conjugation and also the nuances of the modal verbs. A communication pattern without proper modal verb structure is deemed to fail, thus the necessity of having good knowledge on the grammar involved for efficient communication.

References

1. Bolitho, R. & Tomlinson, B. (1995) *Discover English: a language awareness workbook*, Oxford: Heinemann.

2. Celcie-Murcia M., Larsen-Freeman, D. (1999) *The Grammar Book: An ESL/EFL Teacher's Course* (2nd edition ed.), Boston, MA: Heinle & Heinle.

3. Cowan, R. (2008) *The Teacher's Grammar of English*, Cambridge: Cambridge University Press.

4. *** Duden deutsches Universalworterbuch, (2019) Bibliograph. Instit. Gmbh, Berlin Bausch, K.R., Christ, H., Krumm, H.J. (2016) *Handbook of Foreign Language Teaching*, 6th edition, A. Franke.

5. Dreyer, H., Schmitt, R. (2009) *A Practice Grammar of German*, 23 vyd., München: Hueber Publishing house.

6. Ellis, R. (2010) „The Place of Grammar Instruction in the Second/Foreign Language Curriculum" in E. Hinkel *New Perspectives on Grammar Teaching in Second Language Classrooms*, London: Routledge, pp. 14 - 34.

7. Ferris, D. R. (2002) *Treatment of Errors in Second Language Student Writing*, Ann Arbor: The University of Michigan.

8. Funk, H., Koenig, M. (2013) *Teaching and learning grammar*, Berlin: Langenscheidt.

9. Granzow-Emden, M. (2019) *Understanding and teaching German Grammar*, Berlin: Narr Dr. Gunter Publishing house.

10. Helbig, G., Buscha, J. (2013) *German Grammar*, Stuttgart: Ernst Klett Sprachen GmbH Publishing house.

11. Wilmanns, W. (2017) *German Grammar*, Bonn: Hansebooks Publishing house.

12. http://www.duden.de/sprachwissen/sprachratgeber/modalverben-und-wissen

13. http://www.nthuleen.com

THE IMPACT OF THE EUROPEAN COUNCIL DIRECTIVE 86/653/EEC ON THE ROMANIAN LEGISLATION REGARDING THE TERMINATION OF THE AGENCY CONTRACT, AS A MANDATE IN COMMON INTEREST

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Abstract: *This article aims to highlight a contract that has proven its great importance in commerce, namely the agency, as a legal mechanism that provides an extremely flexible juridical framework for many professional activities. In 1986, the agency contract received its own rules at a European Community level, by the adoption of the European Council Directive no. 86/653, regarding the harmonization of the Member States legislations concerning the independent commercial agents. This directive was intended to eliminate the existing regulatory differences in the laws of the Member States relating to commercial representation, which affected competition and the smooth running of trade relations within the Community. Legal doctrine and jurisprudence have revealed the complexity of this type of conventional relations, especially in the case of unilateral termination of contract, since agency is generally considered a type of mandate in common interest and the revocability of such an agreement is questionable, given the mutual and common interest of the contracting parties in the execution of the contract. In this context of uncertainty, the European Council Directive no. 86/653 brought important clarifications, which were later taken over in the national legislation, namely the Law no. 509/2002 and later the Civil Code, regarding the right to unilateral revocation, the limits of its exercise, as well as the indemnity for contractual termination.*

Keywords: *agency; mandate in common interest; unilateral termination of contract; indemnity*

JEL Classification: *K11; K12; K15; K22*

1. Introduction

By the Directive 64/224/EEC of 25 February 1964, the Council of the European Communities abolished the restrictions on the freedom of establishment and the

freedom to provide services in respect to activities of intermediaries in commerce, industry and small craft industries. Still, the differences in national laws concerning commercial representation substantially affected the conditions of competition and the carrying-on of that activity within the Community and were detrimental both to the protection available to commercial agents in relation to their principals and to the security of commercial transactions. Moreover, those differences were such as to inhibit substantially the conclusion and operation of commercial representation contracts where principal and commercial agent were established in different Member States (European Council Directive 86/653/EEC, 1986).

Therefore, the Council considered that trade in goods between Member States should be carried on under conditions which were similar to those of a single market, and this necessitated approximation of the legal systems of the Member States to the extent required for the proper functioning of the common market. In this regard, the legal relationship between commercial agent and principal was considered a priority, which would be achieved by harmonizing the laws of the Member States relating to commercial agents .

To this aim, the Council adopted the Directive of 18 December 1986 on the coordination of the laws of the Member States relating to self-employed commercial agents (86/653/EEC). It provided harmonization measures that would apply to the laws, regulations and administrative provisions of the Member States governing the relations between commercial agents and their principals.

In the Romanian law system, the commercial agents had been submitted to the regulations of the Commercial Code, namely art. 402. Afterwards, the measures prescribed by the Council Directive were integrated into the national legislation by the Law no. 509/2002, and then by the Civil Code, which aimed both to harmonize the conditions of competition in terms of commercial representation within the Community, and to ensure the protection of commercial agents against their principals.

2. Revocability of the agency, as a type of mandate in common interest. The French doctrine theory

From all the legislative innovations that occurred as a result of the transposition of the Council Directive 86/653/EEC into the national legislation, we believe that the issue of revocation of the agency contract requires some special clarifications.

The legal regime of its unilateral termination derives from the fact that this type of contract is generally perceived as a mandate in common interest (Tulai, 2020a: 322).

The common law mandate is concluded and executed in principle in the exclusive interest of the principal, which also explains the power of the principal to revoke it at any time and in any situation, *ad nutum* (art. 2031 para.1 Romanian Civil Code). The right to unilaterally revoke the mandate can also be justified by the traditionally free of charge nature of this contract, as well as by the fact that the mandate was designed in principle to fulfill some tasks of an occasional nature, the trustee acting for the principal only until he will be able to take care of his affairs personally.

The agent, on the other hand, acting to fulfill his tasks, carries out this activity as a regular and independent profession, through which he develops his own activity. The power of attorney given by the principal to the agent usually has a permanent character, being the very support of his professional activity; the agent, developing the principal's clientele, contributes to the growth of his own business. The principal is interested, by concluding the agency contract, to capitalize on his manufactured products or provide the services that are the object of his speculative activity, and the agent is interested in negotiating and concluding as many contracts as possible for the principal, depending on which he will be remunerated. Therefore, the conclusion and execution of the agency contract is in the interest of both parties, benefitting both the principal and the agent. That is why permanent commercial agents have often been qualified by the doctrine as "the prototype of the trustee in common interest" (Collart Dutilleul et al., 1998: 517). The same qualification was given to commercial agents by other French authors, too (Malaurie et al., 2009: 286). French jurisprudence has shown that the pursuit of an own interest by the trustee is the necessary, but not sufficient, condition of the mandate in the common interest. It must be completed by the existence of another condition, namely representation. Therefore, the commissioners, who conclude legal operations in their own name, do not exercise a mandate in the common interest (Malaurie et al., 2009: 286). As article 2043 of the Romanian Civil Code states, *"The commission contract is the mandate whose object is the purchase or sale of goods or the provision of services on behalf of the principal and in the name of the commission agent, who acts in a professional capacity, in exchange for a remuneration called commission."* Thus, in a decision from 1970, the French Court of Cassation established that *"the special rules of the mandate in the common interest (…) only apply to the one who, in relation to the clientele, acts on behalf of the principal, and not on in his own name."* Moreover, neither the concessionaires, who could invoke the fact that they work on their behalf, nor the intermediaries, who carry out material acts for clients, from whom they are independent, will be considered agents in the common interest. Thus, the French doctrine established that *"the exclusive concession contract does not constitute a mandate in the common interest (…), the grantor can terminate the concession*

contract, without giving the reasons, subject to compliance with the notice period and in the absence of abuse of the right to termination. " (Mestre, 1998: 370). In one case, the Galeries Lafayette had granted a merchant a site for the sale of products chosen by the latter, but ordered by the company. When the Galleries revoked this concession, the Court decided that it was not a mandate in the common interest, since the merchant's employees were only carrying out material acts of presentation of the products, excluding the conclusion of any legal documents, on behalf of the company (Malaurie et al., 2009: 286). Another decision in the same sense of excluding the qualification as mandate in common interest of a mobile telephony intermediary was given on the 26ᵗʰ of February 2006 by the same Court.

We must draw attention to a terminological aspect: in legal relations, often the name *"agents"* is also used by other intermediaries from different fields of activity (transport, insurance, guarantees, credits, payments etc.), who are in fact commission agents, consignees, depositaries, brokers, dealers, employees. We believe that the generic use of the name *"agents"* in the case of these categories of persons can generate confusion related to the legal framework in which they carry out their activity, the legislator explicitly stating, in art. 2073 of the Romanian Civil Code, that various persons carrying out mediation or representation activities should not be assimilated to the category of agents.

Thefore, what makes an agent is not the name given by the contracting parties, but the legal framework in which the collaboration relations take place, which will be agency relations only if they comply with the regulations established by the legislator for the contract of mandate. Thus, in a case submitted to the attention of the French Court of Cassation, the contract of the parties qualified a person as an *"independent commercial agent"*. After several years of activity, the company he had worked for decided to terminate the contract. The person in question requested the payment of the indemnity for the termination of the contract, which was refused, the Court showing that *"the application of the status of the commercial agent does not depend either on the will expressed by the parties to the contract, nor on the name they gave to their conventions, but on the conditions under which the activity is actually carried out"* (Malaurie et al., 2009: 286). As regards probation in the matter, unlike the French law, where the agreement of the parties can be expressed in any form, the Romanian Civil Code explicitly imposes, by art. 2078 para. (1), the written form *ad probationem*.

It should also be mentioned that in practice, many agents are bound by an international contract and therefore the provisions of the Romanian Civil Code are applicable to them only to the extent that the Romanian law was chosen as the law of the contract by the parties or, in lack of choice, to the extent that the respective

contract has the closest ties with the Romanian state, or the act was concluded on the territory of the Romanian state. At the same time, special legal provisions are applied to certain categories of agents, in relation to the object of their specific activity.

The agent always works as a trustee with power of representation when concluding contracts in the name and on behalf of the principal and can act not only on behalf, but also in the name of the principal even when his power of attorney only concerns the negotiation of the lattest' future contracts. Therefore, given the fact that in the case of the agency contract both the condition of the common interest of the parties at the conclusion of the contract and the condition of representation are met, we consider that the agent can be qualified as a trustee in common interest. As stated in the doctrine (Clocotici et al.,1995: 81), the contract between the principal and the agent has the legal nature of a *"pact"*, i.e. a mandate of common interest, concerning successive operations over time, with the aim of prospecting the market, finding clients and placing one or more products on a particular market.

In French law, the Council Directive 86/653/EEC was transposed by the Law of June 25th 1991, which clarifies from the beginning (art. 4) the basis of the special protection enjoyed by the agent against his principal: *"Contracts between commercial agents and their principals are concluded in the common interest of the parties."* Moreover, French jurisprudence had identified the mandate of the agent as one of common interest long before the legislator confirmed this theory in explicit terms (Collart Dutilleul et al., 1998: 517).

Thus, the doctrine established that the power of attorney given to the agent by the principal is a mandate in the common interest, which cannot be revoked by the principal except for a just reason, so that its termination entitles the agent to compensation, if necessary (Ripert et al., 1992: 693). The Romanian doctrine embraced the same position on the matter (Cărpenaru, 2012: 87; Popescu, 1983: 344).

The cause of the "common interest" of the parties is justified by two aspects specific to the agency contract, namely, on the one hand, the continuity and duration of collaboration between the parties, and on the other, the joint establishment of a clientele (Leloup, 1998: c.15).

From this naturally follows the mutual obligation of the parties to execute the contract in good faith and loyalty (Civil Code, art. 2079 para. 1, art. 2080 para. 1), as well as the mutual duty to inform (Civil Code, art. 2079 para. 2a, art. 2080 para. 2b). Reciprocal loyalty means that the principal must not limit himself to not hindering the execution of the contract, but must be actively involved in ensuring that the agent is able to achieve the common goal. Moreover, our legislator explicitly

enshrines this duty of the principal, tying it to good faith in the contract and detailing the methods of fulfillment by the principal, through the provisions of art. 2080 Civil Code.

We must specify that the French jurisprudence and doctrine appreciate that the obligation of loyalty falls on both contracting parties only in the case of the mandate in common interest, whereas in the case of the mandate concluded for the achievement of the interest of the principal, this duty falls only on the trustee. In Romanian doctrine, the opinion was expressed, even under the rule of the regulations of the old Civil and Commercial Codes, that the obligation of mutual loyalty would also fall on the parties of the common law mandate, invoking as a legal basis art. 378 Commercial Code, which obliges the trustee *"to inform the principal of all the facts that could determine him to revoke or modify the mandate"*, respectively art. 385 Commercial Code, according to which *"the principal is required to provide the trustee with the means necessary to fulfill the mandate, unless there is an agreement to the contrary"* (Bocșan, 2001: 70-71). More so, there have been proposals in the sense of a legal regulation of the obligation of the trustee to inform the principal about the progress of the operation, but also of the obligation of the principal to create the necessary conditions for the execution of the contract (Munteanu, 1984: 40-42). We embrace this opinion that supports the reciprocal character of the loyalty obligation of the parties in the case of the common law mandate, especially in the context of the current legal regulations, which enshrines in the Civil Code texts, therefore as general rules, the obligations previously established for the principal and the commercial representative. Thus, art. 2018 para. (2) Civil Code shows that *"the agent is obliged to inform the principal about the circumstances that arose after the conclusion of the mandate and that may determine its revocation or modification"*, and art. 2025 para. (1) Civil Code provides that *"in the absence of a contrary agreement, the principal is obliged to make available to the trustee the means necessary for the execution of the mandate."*

As far as the agent is concerned, he will have to perform the necessary diligence for the execution of the power of attorney received in the most advantageous conditions for the principal (Civil Code art. 2079 para. 2b), he therefore owes the diligence of a good owner in the way he seeks to achieve the interests of his principal. The principal himself has the obligation, according to art. 2080 Civil Code, to provide the agent with all the information and documentation necessary for the execution of the mandate, as well as to pay him the remuneration under the conditions and within the terms established in the contract or provided by law. Therefore, the combined efforts of the parties to the agency contact must converge towards achieving the same goal, namely the creation and development of a common clientele, profitable

for each of them. As a result, the contract is often concluded for an indefinite period and can only be revoked unilaterally with the observance of a mandatory notice and the correlative right of the agent to be compensated, except in situations explicitly provided by law as exceptions.

The notion of *"common interest"* also justifies the rights of the agent in case of termination of the contract (Tulai, 2021: 78).

However, French doctrine draws attention to the fact that the regime of revocation of the agent is not identical to that of the trustee in common interest (Malaurie et al., 2009: 286; Collart Dutilleul et al., 1998: 518). In case of termination of his relations with the principal, including in the event of death, and excluding situations where the agent is the one who initiated the termination of the contract, or the principal terminates the contract due to the agent's violation of his obligations (art. 2092 Civil Code), the agent will be entitled to an allowance, intended to compensate him within a certain limit, set by the legislator, the loss of benefits that the agent would have gained from the continuation of contractual relations (art. 2091 Civil Code). In doctrine (Gaudemet-Tallon, 1981: 118), the opinion was expressed that this allowance is autonomous and independent of the contract, finding its basis directly in the law.

If the contract is concluded for a fixed period, it ends at the end of the term. If, however, it continues to be executed by the parties after the expiration of the term, it is transformed, unless there is a contrary agreement of the parties, into a contract for an indefinite period (Civil Code art, 2088). The contract concluded for a definite period can be unilaterally terminated by any of the parties, with the provision of a mandatory notice, only if it provides for an express clause that allows the possibility of early unilateral termination (Civil Code art. 2089 para. 2).

The agency contract concluded for an indefinite period can be terminated unilaterally by any of the parties, but only with the observance of a mandatory notice, established by the legislator through a provision of public order (Civil Code art. 2089), which also fixes its duration. The Civil Code does not allow the parties to shorten the notice periods established by the legislator, but they can be longer, without the principal being able to benefit from a shorter term to free himself from the contractual relationship than the one provided for the agent.

However, the legislator (Civil Code art. 2090) allows any of the parties, in *"exceptional circumstances"*, to terminate the contract without notice, but imposing the correlative obligation to repair the damage thus caused to the other party, unless the party terminating the contract is unable to continue it due to force majeure or fortuitous circumstances. We consider that, despite the legislator's omission to mention it, the fault of the co-contractor also removes the obligation to pay damages

that falls on the party that denounces the contract without notice, of course, on the condition that they prove the fault of the contractual partner, which makes it impossible to continue the collaboration.

3. The termination of the contract in *"exceptional circumstances"*

Regarding the phrase *"exceptional circumstances"*, the legislator does not clarify its meaning, limiting himself to showing that they are *"other than force majeure or fortuitous circumstances"*, and that they *"make it impossible to continue the collaboration between the principal and the agent"*.

The wording chosen by the legislator, which refers to *"exceptional circumstances, other than force majeure or fortuitous event"*, could suggest the application of the theory of unpredictability in contracts in the special matter of the relations between agent and principal, an institution that was introduced for the first time in the Romanian private legislation by the regulations of the new Civil Code, namely by art. 1271.

Thus, according to it, *"if the execution of the contract has become excessively onerous due to an exceptional change in circumstances that would make it manifestly unfair to compel the debtor to perform the obligation, the court may order: a) adaptation of the contract, in order to fairly distribute the losses between the parties and the benefits resulting from the change in circumstances; b) termination of the contract, at the time and under the conditions it establishes."* For this, it is necessary to meet several conditions expressly provided by the legislator, namely: the change in circumstances must have occurred after the conclusion of the contract, without the debtor being able to reasonably have considered it at the time of the conclusion of the contract; also, the debtor must not have accepted the risk of the change of circumstances, nor could it reasonably have been assumed that he would have taken this risk; finally, the debtor must have tried, within reasonable time and in good faith, to negotiate a reasonable and fair adaptation of the contract to the new circumstances.

As it can be easily seen, the unpredictability, as it is regulated by the Civil Code art. 1271, does not give the right to the contracting party that would be disadvantaged by the change in contractual circumstances to unilaterally terminate the contract. The parties will be able to try to revise the agreement by mutual agreement, in order to rebalance the benefits, and if they fail to reach an agreement, it will be up to the court to decide the fate of the contract. The disadvantaged party will not even have the right to suspend the execution of the contract until it is readjusted, as stipulated by the UNIDROIT Principles (art. 6.2.3 para. 2)., Therefore, they will be even less

entitled to decide unilaterally the termination of contractual relations, this being the exclusive attribute of the court, in the absence of an agreement of the contracting parties. Art. 1271 Civil Code unequivocally stipulates that the court will be able, if the revision of the contract by the parties has failed, to decide between the adaptation of the contract or its termination, at the time and under the conditions established by the court.

Therefore, we think that the *"exceptional circumstances"* referred to by the legislator in art. 2090 of the Civil Code are not those that would lead to the appearance of unpredictability in the agency contract.

The legislator stipulates that there would be circumstances whose exceptional character will allow any of the parties to terminate the agency contract without notice, through a simple written notification, which will cause the contractual relations to cease from the date of receipt of this notice of unilateral termination of contract (art. 2090 Civil Code).

Therefore, it remains unclear, in the context of the current regulations, the meaning and content of the notion of *"exceptional circumstances"* referred to by art. 2090 C. civil.

To make it even more difficult to understand the purpose of this provision, the legislator stipulates that these exceptional circumstances do not exempt the party that terminates the contract from repairing the damages thus caused to the other party, therefore the only advantage being that they will no longer have to comply with the period of notice, which is otherwise mandatory in case of unilateral denunciation.

Trying to find a justification for the regulation contained in art. 2090 C. civ., we can also think of a possible attempt to transpose the *"frustration of contract"* theory into our private law. This doctrine, enshrined in the Anglo-Saxon legal system, also known frequently as *"commercial frustration"*, is somewhere between unpredictability and fortuitous impossibility of execution (Tița-Nicolescu, 2012: 16) It appears when an unforeseen event compromises the very reason or purpose for which a person took part in a contract, without being a fortuitous case or force majeure and excluding the fault of the parties. In such situations, it is possible to unilaterally denounce the convention. But this theory does not find its applicability in the situations regulated by the Romanian legislator in art. 2090 C.civ., since, in the case of this frustration of the contract, the party that cannot fulfill its obligations is not liable, whereas the regulation mentioned in our Civil Code does not exempt the party that terminates the contract from paying compensation to the contractual partner for the damage thus caused.

As rightly noted in the doctrine (Iacob, 2010: 66), even under the provisions of the Law no. 509/2002, which contained a provision similar to that of the Civil Code, under these conditions, in which the *"exceptional circumstances"* that make it *"impossible to continue the collaboration"* do not exonerate the party invoking them from liability, we do not see where their exceptional character resides and what is the difference from the situation in which the party that no longer wishes to continue the contractual relationship simply ceases to perform its obligations derived from the contract, in which case they would also owe damages.

4. The right to claim an indemnity for unilateral termination. The exceptions

The termination of the contractual relationship between the agent and the principal entitles the agent to an indemnity, which is intended to cover, to a certain extent, potential benefits that the agent would have achieved in the case of continuing the contract; thus, the agent will be entitled to be compensated only if they have provided the principal with new clients, or they have significantly increased the volume of operations with the current clientele, and the principal continues to obtain substantial benefits from the operations intermediated by the agent; also, only if the payment of this indemnity for termination of collaboration is fair, taking into account the benefits that the agent would have achieved by continuing the contract, in particular the commissions that he would have received following the operations concluded for the principal with these clients ; also, the allowance is intended to cover the losses that the agent will record as a result of the restriction of his professional activity due to the existence of a non-competition clause in the agency contract (Civil Code art. 2091).

We therefore conclude that the notion of *"termination of the contract"* is understood by the legislator in a broad sense, the agent having the right to this allowance not only in the case of unilateral termination of the contract for an indefinite period, but also in the case of non-renewal of a contract for a fixed period and even in those situations in which the agent can no longer continue his activity due to objective causes, for which he is not to blame, such as advanced age, illness, infirmity or death (Civil Code art. 2091 para. 4).

Therefore, we cannot share the opinion expressed in the doctrine, that the purpose of the legal establishment of the right to compensation is to protect the agent *"against untimely termination of his contract or unjustified non-renewals"* (Collart Dutilleul et al., 1998: 522). On the contrary, the right to indemnity is recognized to the agent independent of any fault of the principal, the causes of termination of the contract being diverse. If the principal in bad faith terminates the contractual

relations with the agent, thus causing him damages, it is a case of culpable non-execution of the principal's contractual obligations, which will entail his contractual liability, under common law. Moreover, the legislator expressly states that the payment of this indemnity for termination of the contract does not remove the agent's right to claim compensation, under the law (Civil Code art. 2091 para. 3). In fact, the agent is always required to compensate the principal for the damages he caused by not respecting the power of attorney received, regardless of whether the contract was terminated for a just or unjust cause (Sasu, 2005: 30), but only under the condition of proof by the principal, under common law, of a fault on the part of the agent related to the diligence, good faith or loyalty he showed in the execution of the contract.

Also, the parties cannot derogate from the legal stipulations that give the agent the right to indemnity, any such clause being considered unwritten (Civil Code art. 2094). Therefore, the agent's waiver of the indemnity will not be possible before the termination of the contract.

However, the compensation conferred as a principle, to the agent, in cases of termination of the contract, will not be due in certain situations, expressly mentioned by the legislator.

Thus, the agent will not be entitled to the indemnity if the contractual relationship ends with the dissolution of the contract by the principal, due to the agent's violation of his obligations (Civil Code art. 2092a). The agent's fault therefore naturally leads to his forfeiture of the right to collect the indemnity, with the condition of its proof by the principal. The jurisprudence decided as such, for example, in a case when the principal denounced and proved an insufficient prospecting of the clientele by the agent, which led to a decrease in sales, or the agent's non-compliance with the non-competition clause, or the agent's refusal to practice sales methods adapted to the respective sector of activity (Stancu, 2007: 17).

Likewise, the agent will not be able to claim the allowance if he himself has the initiative to terminate the contract, except in cases where he cannot reasonably be expected to continue his activities, for reasons such as age, infirmity or illness (Civil Code art. 2092b). Unjustified resignation of the agent shows his disinterest in the common value established together with the principal and reveals the violation of the obligation of loyalty and information, which are at the very basis of the permanent character of this mandate and consequently determine the agent's loss of the right to compensation.

The agent will also not be able to claim the indemnity in situations where he assigns the agency contract to a third party with the consent of the principal (Civil Code art. 2092c); also, if the contract is transformed by replacing the agent with a third party,

provided that the parties have not agreed on maintaining the right to compensation of the replaced agent (Civil Code art. 2092 d). It should be noted that if the assignment of the contract by the agent takes place without the consent of the principal, the agent will not only be deprived of the right to compensation, but he may be obliged to pay compensation for any damages caused to the principal in this way, based on contractual liability, under common law conditions. The same will happen if the agent refuses to fulfill his contractual obligations unjustifiably, without being able to invoke as an excuse his advanced age, infirmity or illness, or any fault of the principal that makes it impossible to continue the collaboration.

The legislator stipulates that the agent's right to indemnity is conditioned by him notifying the principal that he intends pursuing his entitlement, within 1 year following termination of the contract (Civil Code art. 2091 para. 5).

As regards the amount of compensation to which the agent is entitled, its value is determined by special provisions of the law, which indicate both the criteria by which the parties or the court have to make the evaluation (Civil Code art. 2091 para. 1), as well as its maximum value (Civil Code art. 2091 para. 2), which *"cannot exceed an amount equivalent to an annual remuneration, calculated on the basis of the annual average remuneration received by the agent during the last 5 years of contract. If the duration of the contract does not add up to 5 years, the annual remuneration is calculated based on the average remuneration collected during the respective period."* Therefore, it will not be calculated according to the rules of common law regarding the assessment of damage caused by non-compliance with obligations (Civil Code art. 1531), since the indemnity for termination of the contract is due to the agent independent of any fault of the principal. In cases where the termination of the contract occurs as a result of the principal's fault, the agent's right to be compensated extends beyond the limits established by the legislator for the aforementioned indemnity, the damages that the principal will owe having to cover, according to the rules of common law, the entire damage caused to the agent. Of course, however, that the granting of these damages, under common law, will be conditioned by the agent's proof of the principal's fault and of the direct causal relationship between his culpable act and the damages invoked by the agent. These damages may be at a much higher value than what could be covered by the contract termination indemnity; they may result, for example, from the loss of the relationships established with the clientele around the principal's brand and products or services (more precisely, the commissions that the agent would have collected if he had continued the relations with the principal), but also from the personnel expenses, caused by the dismissal of certain employees or subcontracting with third

parties, or from the lack of profitability of the investments made by the agent for the execution of the contract with the principal.

The agent maintains his right to compensation even if he terminates the contract for reasons attributable to the principal, such as his systematic delay in paying the commission, or the non-communication of information necessary for the execution of the mandate; such situations were taken into account by the legislator when they stipulated that the granting of the indemnity does not affect the agent's right to claim compensation (Civil Code art. 2091 para. 3). The termination of the contract will therefore take place under the conditions of common law (Civil Code art. 1549-1554), being conditioned by the agent's proof of the principal's fault and attracting the correlative right to request damages for the full reparation of the damage thus suffered. Of course, the right to request termination can be exercised at any time, regardless of the fact that the parties have established a fixed duration of the contract or not and without requiring the observance of any notice period addressed to the party faulty for termination.

5. Conclusions

The current status of the agent, as enshrined by the Romanian Civil Code, under the impact of the European Council Directive 86/653/EEC, aims at increased protection granted to him in relation to common law trustees, who carry out occasional activities, in the exclusive interest of the principals, in contrast to the agent, who works professionally and permanently, in the common interest of himself and the principal (Tulai, 2020b: 69). Thus, for example, the agent has the right to commission for contracts concluded thanks to him or even without him, but with a client from a group of determined persons or from a region for which the agent has exclusivity (art. 2083 Civil Code); the notice is in principle mandatory before the termination of the contract concluded for an indefinite period, or for a fixed period, with an early termination clause (art. 2089 Civil Code); the transformation of a fixed-term contract into an open-ended contract, when the parties continue to perform even after the term has expired (art. 2088 Civil Code); the right to compensation in case of termination of the contract, whatever the cause of termination may be, with the exception of the agent's initiative or fault (art. 2091 - 2092 Civil Code).

References

1. Bocșan, M. D. (2001) Mandatul în interes comun, *Dreptul* no. 2, pp. 70-71.

2. Cărpenaru, St. D. (2012) *Tratat de drept comercial român conform noului Cod civil*, București: Universul juridic, pp. 87.

3. Clocotici, D., Gheorghiu, Gh. (1995) Unele considerații privind contractul comercial de agent, în contextul relațiilor comerciale internaționale, *Revista de drept comercial* no. 2, pp. 81.

4. Codul Civil român (2009).

5. Collart Dutilleul, F., Delebecque, Ph. (1998) *Contrats civils et commerciaux*, Paris: Dalloz.

6. *European Council Directive no. 86/653/EEC on the coordination of the laws of the Member States relating to self-employed commercial agents* (1986).

7. *European Council Directive 64/224/EEC concerning the attainment of freedom of establishment and freedom to provide services in respect of activities of intermediaries in commerce, industry and small craft industries* (1964).

8. Gaudemet-Tallon (1981) Commentary on Cour d'Appel Angers decision of 29th January 1980, *Revue critique de droit international privé*, pp. 118.

9. Iacob, I. L. (2010) Reglementarea europeană a contractului de agenție comercială (II), *Revista de drept comercial* no. 2, p. 66.

10. Leloup, J. M. (1998) *Les agents commerciaux*, Paris: Delmas.

11. Malaurie, Ph., Aynès, L., Gautier, P.-Y. (2009) *Drept civil. Contractele speciale*, București: Wolters Kluwer.

12. *Mestre, J. (1998) Commentary on Cass. com. 7th of October 1997, Maine Auto, Bull. Civ. IV, no. 252, Revue trimestrielle de droit civil, pp. 370.*

13. Munteanu, R. (1984) *Contractele de intermediere în comerțul exterior al României*, București: Ed. Academiei, pp. 40-42.

14. Popescu, T. R. (1983) *Dreptul comerțului internațional*, București: Ed. Didactică și Pedagogică, pp. 344.

15.. Ripert, G., Roblot, R. (1992) *Traité de droit commercial*, tome 2, 13e éd., Paris: L.G.D.J., pp.693.

16. Sasu, H. (2005) Perspectivele practice ale aplicării articolului 26 din Legea nr. 509/2002 privind agenții comerciali permanenți, *Revista română de drept al afacerilor* no. 5, pp. 30.

A BLUEPRINT FOR EUROPEAN UNION ECONOMIC INTEGRATION THROUGH SOCIAL ECONOMY INNOVATION

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Abstract: *Romania, a member of the European Union (EU) since 2007, has been riding the high-hopes-low-expectations EU integration carousel for over a decade and a half. Its resilient, dwindling and aging population has seen its share of shattered dreams, stemmed from the 40-year failed communist social experiment, and continuing into the ill-fated socio economic reforms of the 90s. While joining the EU marketplace seemed initially the right answer to all the economic worries, the difficulty in implementing and adapting to the new socio-economic structures, and laws, created new headwinds for the already fragile Romanian business space. With an overstretched public sector marred by corruption, with private sector battered by the headwinds of countless fiscal reforms, and a frail voluntary sector, the country is still trying to find its economic footing, and a master plan for socio-economic development is needed more than ever. We posit that a profit-making, commercial structures, such as the social enterprise, which has its primary goal to achieve certain social objectives, has the potential to make a strong business, societal, and environmental impact. Our qualitative, interventionist research methodology aims to bring more arguments in favor of adding social entrepreneurship skills such as creative bricolage, as well as soft skills like critical thinking and empathy to the business toolkit competencies, in order to improve the business paradigm. Our attempts to measure the social enterprise model impact on rural economies are intended to work towards creating a blueprint for sustainable, long term economic growth, and ease the integration within the EU business model.*

Keywords: Social entrepreneurship, social innovation, multiple capitals, European Union, economic integration

JEL Classification: O35, Q1

1. Introduction – a tale of three sectors

In our society there has long been a perceived separation, largely based on ownership, between the public, private, and voluntary sectors. With the public and private sectors still disputing the 'first' title, the voluntary sector gets to be called,

seemingly unfairly, the "third" sector. Yet, it is the 'third" sector that comes to the rescue in dire circumstances, in a Cinderellaesque fashion, when corporations fail to clean up after themselves, or when governments fail to act. Yet, the three above-mentioned sectors share common goals, and values. They often act in partnership during challenging times, such as not-so-distant economic downturns, recent wars, or the latest health crisis, the COVID-19 pandemic, which have shown the strength of the three sectors coming together to resolve global problems.

While the public, and private sectors are rather well defined, 'third sector organizations' (TSOs) include a wide range of organizations that belong to the voluntary sector. They are *value-driven organizations,* such as voluntary and community organizations, social enterprises, cooperatives, associations, and other non-profits (National Audit Office, 2022), and they are increasingly contributing to their communities' socio-economic development. For this reason, TSOs are most similar to 'not-for-profit organizations', yet a more suitable name may be 'not-for-personal-profit'. They do indeed need to make profits in order to be financially sustainable, hence they are combining their resources in new ways in order to mix social, economic and/or environmental goals and pursue them through entrepreneurial means. (Defourny and Nyssens, 2006).

Alongside co-operatives, and trading charities, the social enterprise comes at the intersection of so called 'for profit' and 'not for profit' worlds, as a business with social purpose, that seeks to maximize its profits, with the goal of also maximizing benefits to society and the environment, while most (up to 100%) of the profits go towards funding and developing social programs. With over a decade expertise in social enterprise interventionist research, the author is humbly trying to join the growing group of concerned voices that argue that the social enterprise is a more suitable business model for times of economic distress, as it has lately emerged as a beacon of economic sustainability. In trying to prove our hypothesis, we are showcasing several examples from rural Romania, and in doing so, we aim to determine businesses' abilities to grow sustainably, and be viable in performing their functions on a larger scale.

Social entrepreneurship nowadays continues to shift the business paradigm through a socially innovative business model. It is looking for a robust resolve of existing socio-economic problems across the world by fostering grassroots, bottom-up approaches to development. Since it shares business entrepreneurship and for-profit management credo, it is able to infuse the conventional business strategy with socially-conscious principles, for a greater impact (Velez, 2023).

During COVID-19 pandemic the governments have once again intervened (as many times before) to support companies that seemingly lost money because of the

shutdowns. Through government intervention, many companies have largely recovered, with top 5 oil and gas companies posting their largest profits ever. Unlike others, most of these profits went towards stock buybacks and dividends (Milman, 2023), while another 70 million people were pushed back into extreme poverty. This created a hidden, but huge collapse in human capital for the young, in one the most vulnerable moments of their lives, for the generation will make up to 90 percent of the prime-age workforce by 2050 (World Bank Group, 2023).

In opposition to the shareholder value 'tyranny', the recent rise of social entrepreneurs within corporations, with the business sector borrowing ideas from the voluntary sector, shows that 'for-profit' world is ripe for change, externally and from within, with the concept of 'corporate social responsibility' being one of the latest additions to the corporate menu. Despite a plethora of great examples of TSOs being successful as full-fledged businesses, ideas that TSOs are not reporting well, or 'well-enough', still persist – which is something worth investigating. We will be looking at the social enterprise model through multiple lenses, financial viability being one of them, but also considering the availability of several other sources of 'wealth': the natural capital, social capital and human capital (
Ostr
ö
m, 2005), intrinsic to social enterprise.

The role of the social enterprise, as a for-profit-yet-not-for-personal-profit vehicle of economic stability and sustainability, cannot be underestimated. Maximizing profits, as well as social, and environmental benefits, represents a win-win for the global economy, especially for rural areas where most of vulnerable population still live. Rural areas have a lot of human, social, and natural capital, but little financial capital, so there's worth looking at the blend of capitals working towards the success of the social enterprise. Aside from that, one needs to look through the legislative lens as well, pondering whether the existing Romanian laws create a supporting framework for already fragile social economy.

2. Literature review

TSOs have been generally asked to be more accountable, which is to render their actions measurable, and their performance commensurable, therefore consistent and comparable. (Power, 1994). Aside from that, there's a well-known adagio how a non-profit 'has to be managed like a for-profit', which unjustly sets the for-profit, and the voluntary sectors, against each other. Shedding light on the origins of such dichotomy, McCullogh and Ridley-Duff (2019) start with the Aristotelian definitions of 'economics', of two seemingly antithetical systems, for-profit vs. non-profit, in
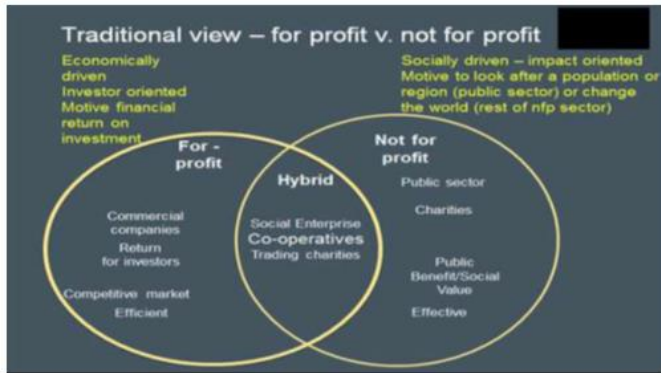
Figure 1: Representations of For-Profit v. Not-for-Profit
Source: McCulloch, Ridley-Duff, 2019

order to expose some misconceptions about a dual accounting paradigm, namely 'for' vs. 'non' profit accounting. The intersection of profit-oriented businesses, with the mission-oriented organizations, aptly named 'hybrid', is the space where co-operatives, trading charities, and social enterprises live.

Current accounting archetypes fail to support the diversified (and diversifying) world of social organizations, meant to fulfill the growing needs of new categories of populace, and their various inherent purposes. In their research, McCullogh and Ridley-Duff showcase two seemingly diverging paradigms, based on distinct outputs, the pursuit of profit (the for-profit mantra) and the pursuit of social objectives (in the not-for-profit world), currently feuding in the social sphere (Nicholls, 2010). Yet, adding social and environmental sustainability reports to existing financial reports, they argue, would make for a better integrated reporting, in which financial can be on equal footing with social and environmental. This also includes existing accounting approaches, such as 'triple bottom line' and the theory of 'multiple capitals'.
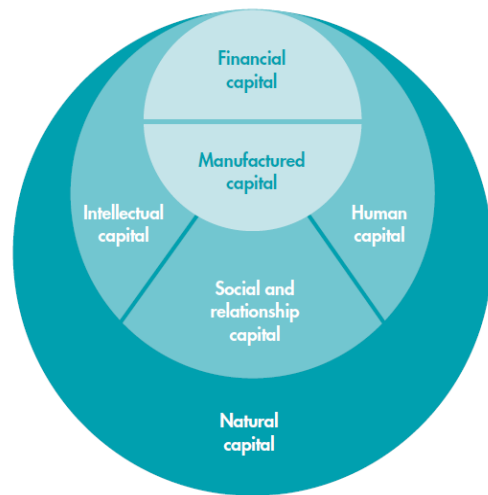
Figure 2: IIRC Representation of Six Capitals
Source: IIRC, 2013

The International Integrated Reporting Council (IIRC) distinguishes between six types of capital: human capital, social and relationship capital, financial capital, manufactured capital, intellectual capital, and finally, natural capital, as shown in figure 2 (IIRC, 2013).

Aristotle's view of economics was not only as a way of increasing financial capital, but favored a more judicious allocation of wealth which would further lead to an increase in various other forms of capital, such as the creation of social capital, and

the (re)generation of social wealth, alongside the natural, human, and intellectual wealth (Ridley-Duff, Wren and McCulloch, 2019). Oström observed that social capital is increased, rather than decreased, through use (Oström, 2005). A similar argument can be applied to human capital, as the more we use our skills, we become better at what we do.

Following the theory of multiple capitals, measuring the social enterprises solely in terms of financial performance only shows a fraction of the picture. The big picture has to take into account the value of each of multiple capitals, and how they add to measure the full extent of the social enterprise impact.

3. Methodology and framework

The social enterprise has, equally, a financial, a social, and an environmental effect on the community, so framing its impact needs to keep track of all of these components. The mere suggestion that third sector organizations may be less concerned with making profit, or even profit-averse, cannot be farther from truth. Social enterprises need financial capital to pursue their social and environmental goals, and accomplish their mission.

Based on researchers' involvement in rural social enterprises in Romania, the interventionist research (IVR) methodology, with its both theoretical and practical perspectives, plus its capacity to influence social change (Baard and Dumay, 2020), has been the logical choice. While IVR produces theoretically interesting contributions, whether a new concept, or a more traditional input to existing research (Lukka and Wouters, 2022), our interest was piqued by one important trait of the IVR research methodology, which is the pragmatic impact in the community where the research is conducted. This being the *raison d'être* of our research, which consists in the practical application of our work, and making significant change in any system we work with. Since 2018 we have immersed ourselves in small communities of Romania, studying the impact ramifications of social enterprises in rural areas, and the ensuing community response.

Our research hypothesis aims to prove that socially-innovative organizations utilizing ALL forms of capital, rather than solely focusing on growing the financial capital, have a better chance to thrive long term, in complex and volatile markets, thus creating a more robust and sustainable business outcome, capable of integrating new concepts, with stronger ties with socially innovative economies from Western Europe, UK, and USA.

Using IVR, in a blend of knowledge and action, the author has performed ethnographic research, having spent several years directly involved in a community

powered by a social enterprise, using the etic and emic perspectives, and studying the impact on such organization in impoverished areas of the country. During this time, after observations and semi-structured interviews, we have performed interventions in management accounting, also those targeting social enterprise management operations.

Seeing that our methods and processes work well and produce impactful results for the community, and towards advancing sustainable business models in vulnerable economies, we are attempting to emulate certain aspects from already established TSOs, seeing how this brings more economic stability, and long-term business clarity. An expanded concept of accountability favored by O'Dwyer and Unerman (2008), and Freeman (2010), eliminates the limitations of measurement-only variations of financial capital, which, outside the financial value of the organization, fail to consider its actual wealth. We argue for a more balanced perspective on judiciousness of resource allocations, therefore considering the impact on our society by organizations that blend financial, social and environmental goals, such as social enterprises, and other innovative, value-creating, business models.

4. Results and discussions

The Barometer of Romanian Social Economy was published in May 2021, and includes almost two decades of research. This independent study financed through EU funds paints an unflattering picture of the Romanian social economy, with some occasional bright spots. The report starts by admitting the challenge in articulating the social economy principles in Romania, due to vague legislation, with unclear definitions which makes the statistical calculation difficult; on top of that, excessive taxation stymies a business sector in its infancy. The picture below shows commercial businesses, and sole proprietorships (Romanian translation: "persoana fizica autorizata") being the overwhelming majority, while social enterprises, co-operatives, and trading charities being almost non-existent. The report finds that this share is generally small in the new EU member states - which are facing an accelerated decline of the co-operative sector, with the exception of Hungary, Bulgaria and Poland. It is

Figure 3: All businesses in Romania, 2008 -2018
Source: Institutul Roman de Statistica

also found that this share is very high in countries with a strong social economy. The tragic story of co-operatives in Romania started in the 1950s when the communist regime took ownership of almost all the land in the country, and forced everyone in rural areas to work within a co-operative (in a painful, at times bloody, process of cooperativization). People virtually worked their own land, with their own machinery, yet none if it belonged to them, but being taken away by the government. Thus, co-operatives were equivalent with forced labor camps, and the knee jerk reaction in 1989, after the fall of the communist regime, was to disband them almost immediately. In doing so, the country lost valuable material, intellectual, natural, and human capital. The loss in financial capital was incommensurable. Nowadays, a co-operative, as an alliance of small farmers, seems the logical alternative to ever-expanding big agribusiness, yet over three decades later, the trauma inflicted by forced cooperativization still persists, hence the strong disdain towards working the land in common, or sharing the crops.

Partly due to abovementioned circumstances, Romania, with 0.4%, is, along with Croatia and Slovakia, in last place in the European Union from the point of view of the share of enterprises with other legal forms - partnerships, associations, cooperatives and in total active enterprises. While zooming into third sector organizations, one interesting fact is that European Union funding created a flurry of new social enterprises. The conditions for funding were limitative, in the sense that money was only granted for 'new' start-ups, and not for the development of existing social enterprises. This was detrimental to Romanian social economy, and unfairly tilted the balance towards new organizations, many possibly lacking experience, and being created for the apparent sole purpose of obtaining EU funds. This is shown in Figure 4, below (Fundația „Alături de Voi" România (ADV), 2022).
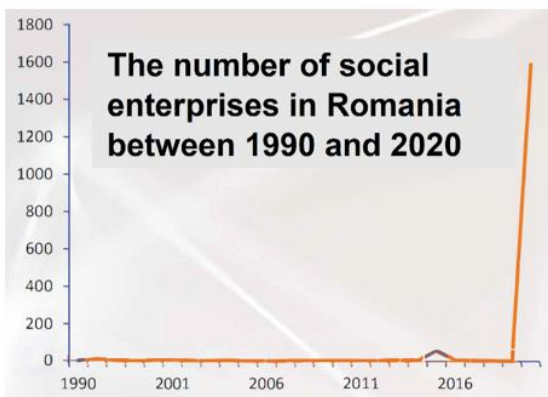
Figure 4: Romanian social enterprises, 1990 - 2020
Source: Fundația „Alături de Voi" România

The graph on the left is showing two fascinating trends: first, an uptick in creation of new social enterprises in 2015, which is the year when the Romanian Government has passed the Social Economy Laws. Then, a sharp decline in interest, which was piqued again by recent EU funding in social enterprise sector. Unfortunately, as mentioned above, the financing was conditioned by the creation of a new organization, which skewed the graph, and the perception of EU grants in Romania. The ensuing financing frenzy was short

lived, as the grants had strings attached, and became insufficient for starting a social enterprise, even less to jumpstart the already weak Romanian social economy.

We are presenting four case studies of for-profit organizations, which devote a large share of their profits (up to 100%) towards social programs. In our quest for a socially innovative, financially viable, business model, which blend social, environmental, and business skills, researchers are trying to define a sustainable business vehicle that may gradually replace traditional financially-laden, exclusively profit-driven enterprises, for a stronger global economy, which starts at local level.

4.1. Radinesti-Gorj Cultural Scientific Society

This social enterprise is investing in cultural and educational programs for the young, vulnerable, rural population, in developing musical education for children aged 6 – 18. It has provided free musical classes for 45 children, out of which 15 gifted children were selected to participate in an folk orchestra, participating in musical events all over the country. The Cultural Scientific Society hosts annual festivals, and musical events for the community. It has revived old rural traditions, starting with the local annual fair, and has created and published a local cultural magazine, and a plethora of documents regarding the cultural heritage of the land. It helped rebuilt the local school through public-private partnerships, and printed the local monography, in a bid to transform a rural area into a thriving cultural touristic destination.

4.2. "Cartea Calatoare" Foundation

The foundation's mission is to facilitate direct access to information, education and employment for visually impaired people in Romania. It created first courses for blind students and teachers, with more than 200 people trained. It also created the first electronic library with accessible books for the visually impaired, and a monthly publication addressed to blind people of Romania. For over two decades, it has been making movies and documentaries accessible for the blind, internet connectivity for all special schools and high schools for the visually impaired, and equipped 10 branches of the Association of the Blind from Romania with computers. The foundation has organized the first Film Festival for the Blind. In a country where physical impairments trigger social isolation, the foundation has been working tirelessly to create education opportunities, and employment, for a vulnerable segment of population.

4.3. "New Horizons" Foundation

Founded in 2000, New Horizons uses the transformative power of experiential education for children to grow nurtured to become better, stronger, wiser, to fulfill their potential and use it for the development of their communities, and the world. In the summer of 2021 alone, the organization has worked with 2008 children, helped by 277 teachers, in 175 locations, with the help of 74 volunteers. Currently, the organization offers 12 online, self-paced courses in various vocational programs. It also offered online classes for teachers, with 434 participants from 74 schools. The alternative learning classes were followed by 1909 children, with 539 educators, in a total of 23 programs. It developed IMPACT Clubs, where children learn about environmental protection, entrepreneurship, education, civic engagement – helping them build confidence, independence, resilience and compassion. In 2021 there were a total of 696 children in 32 clubs, while 630 children participated in community fairs, selling their own artefacts, raising 7000 EUR for future vocational programs.

4.4. "Floare la Ureche" Farms

The farming social enterprise known as 'Floare la Ureche', which researchers are currently building, while still funded through external grants as of this moment, has become an engine for positive change, shaping the lives of people in a small community of 20.000 inhabitants. First, by providing jobs in agriculture, which provides 4.2% of Romanian GDP (Statista, n.d.), then by funding vocational programs for the young, and finally by building a community center dubbed as cultural center, with a small library, for the local populace.

IVR has the capability to produce research with theoretical, practical, and societal relevance, which allows for multidimensional aspects of types of capital. "Floare la Ureche" Farms is a Romanian social enterprise focused on a more holistic, stakeholders' impact reporting, considering metrics such as the number of people in vocational programs, the square meters (sqm) of community space built, the number of families impacted by social enterprise work, or the number of beds available in guestrooms, for teachers, doctors, or anyone in need of temporary accommodations. The graphs below show not only the obvious financial capital investment, but the investment in the other types of capital: manufactured, social and relationship, human, intellectual, as well as natural capital, the organization being part of a larger bio-cluster, with emphasis on preserving biodiversity, and natural resources.
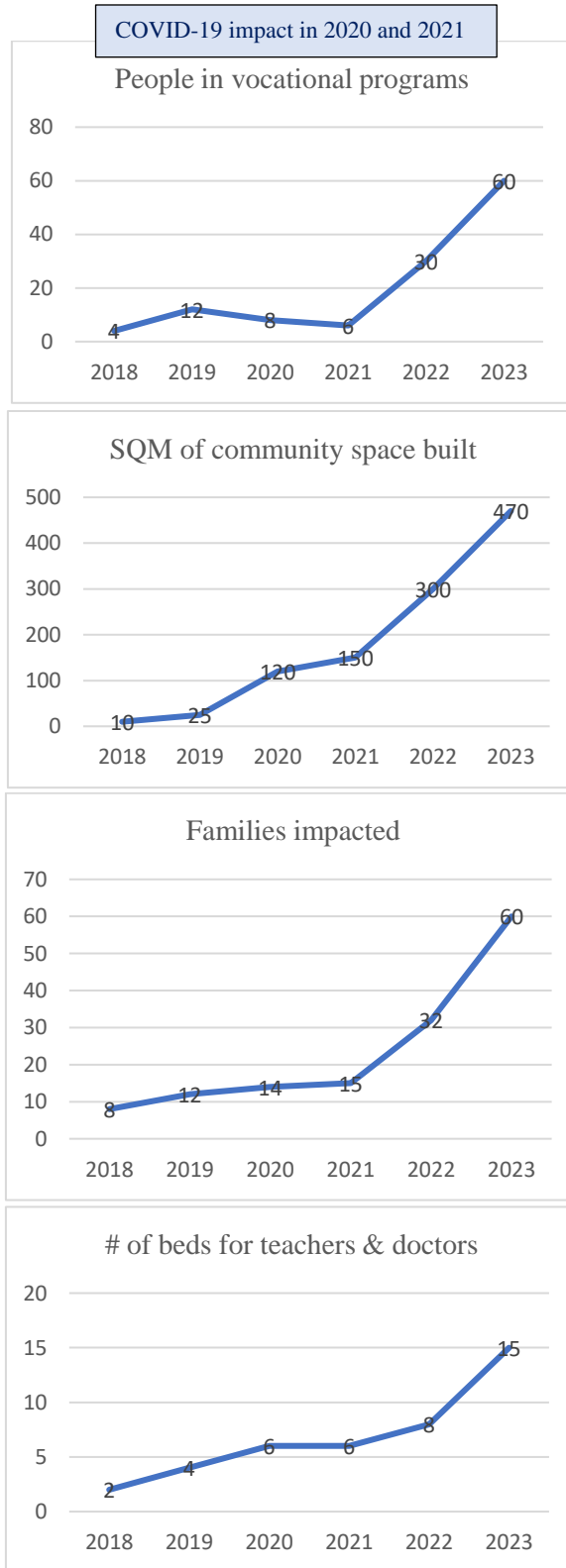
Figure 5: Expanded, holistic reporting in Romania towards the impact of multiple capitals
Source: Author, 2023

5. Conclusion

We have analyzed the dichotomy 'for' vs. 'not for' slash 'non' profit, and highlighted some perceptions, even negative connotations associated with third sector organizations' ability to make profit, which are unfounded in the light of their financial capital needs. The idea that social enterprises are not reporting 'well-enough', seems rather unfounded, in a world where corporations are more and more committed to *triple bottom line (TBL) reporting* (of profit, people, and the planet), while non-profits are fully disclosing their finances. As a blend of multiple capitals, TSOs report on utilization of each capital, hence their impact on environment, economy and people.

In Romania, the supporters of social economy are enthusiastically swimming against the tide. Seeing the advantages of growing the human, intellectual, natural, capitals alongside the financial capital, they are (mostly fruitlessly) searching for social investors, businesspeople with best intentions, who have neither proper information about social investing, nor a friendly taxation framework in order to support them. Among the many impediments towards growing a robust social economy in Romania, are a lack of legislative framework, with proper definition of social entrepreneurship. There is still a knee jerk reaction to co-operatives in rural areas, as for businesspeople, they see meager financial incentives, with the burden of excessive taxation added, as there seems to be no place for social investors in Romanian laws. Overall, scarce information on social economy, and lack of incentives for social innovation are stifling the social sector. On top of that, EU financial incentives are poorly defined, counterintuitive, and very constraining. Despite lots of talk, Romanian social sector is still ailing, and unless there is a coordinated effort, top-down and bottom up, with real involvement of government, business and voluntary sectors, the social economy, with its inherent innovation, will suffer dearly. As we have proved the hypothesis that a *socially-innovative organizations utilizing ALL forms of capital has a substantial impact on its environment, and a better chance to thrive long term* than organizations focusing solely on growing their financial capital, sadly, the current state of affairs is tilted towards chrematistics, at any cost.

The realm of social enterprises is a profitable one, where the goal of profit-making is subsumed to social, and environmental causes, and ultimately to the betterment of our world. In order to quell anxieties about our ever-increasingly unpredictable world, where private corporations have consistently played an outsized role, our argument is merely about more balance between private and voluntary sectors, yet

with government (or EU) interventions. This, in turn, would increase the prominence of the social enterprises and other third sector organizations, as profit-making organizations in their own rights, with deep knowledge in their communities, and a set of solid business principles, to share across the financial world.

In changing the quality of relationships between people (and *within* people), and between people and their places of work, and between people and nature, wealth in this wider sense came from shifting discussions of quantity to quality. *Our research is calling for a better business model, alongside a better definition of wealth, and a wiser resource allocation.* A social enterprise, with its blend of social, economic and/or environmental goals, is perfectly suited for this kind of balanced resource allocation, and growing – equitably – several forms of capital, instead of solely focusing on the financial one. Newest entrants to EU economic space particularly should take note.

Social economy allows for sustainable growth, at a different pace from business world, yet at a growth rate that is still under further scrutiny, possibly to be analyzed in future studies, when more data is available from third sector in Romania.

Many businesses, pursuing short-time financial goals, have seen their innovation evaporating, and, amid countless stock buybacks, they have lost track of their longer term goals. On the same token, governments, focused on cost cutting measures and political survival, have lost track of their very reason of being – which is, among others, governance, infrastructure, market engagement, citizen engagement, human capital growth, and public financial management. The Romanian government needs to invest in growing the six capitals equally. Social enterprises, with their capacity for bricolage (viewed here through 2009 Alex Nicholls' lens as the use of available resources, practices, cultural artefacts or institutions in new combinations to achieve change), use their limited resources and infuse them with innovation and social transformation, with a scrappy mentality, thus building economic resilience and sustainability within the third sector. Cooperation and cross pollination between the three sectors will create progressively a stronger business paradigm, devoted to long-term economic growth.

The scalability of a social enterprise is only limited by its business model. What is lost in growth speed is gained in sustainability, and resilience. First thing before considering scalability is to eliminate the artificially drawn line in the sand, between 'non' and 'for' profits. Instead, focus needs to be on the business values that allow impactful innovation, entrepreneurship endeavors, and 'creative destruction' within organizations, proven, once again, in Western Europe, UK, USA, as well as in rural Romania. This socially innovative business model needs to be further explored,

grown, and applied with local adjustments, over and over, again, for a better, and more sustainable business future, while tested thoroughly for scalability.

In a constructive criticism of the current state of affairs, we're merely attempting to improve capitalism, albeit slightly. In thier quest of improving the business status quo, researchers need to ask themselves: what if the real stalwarts of the capitalism are not the overarching, multinational corporations, but smaller, scrappy, innovative social enterprises, trading charities, cooperatives, and the like? Non-profits and for profits may seem vastly different at surface; yet they are powered by the same engine. As always, asking the right question points in the right direction, whether is the interventionist researcher, a volunteer, a government employee, or a decision-maker in a business organization. Given the outsized human capital share of a nimble social enterprise, we are calling for a larger role of of such organizations in the business world. Proper blend of right skills, and the judicious use of capitals create a recipe for social, environmental, financial, and human advancement.

References:

1. Acceleratorul de Intreprinderi Sociale. (2021). *Economia socială în România - statistici, date şi tendinţe*. [online] Available at: https://acceleratorul.alaturidevoi.ro/barometrul-economiei-sociale-din-romania-editia-2021/ [Accessed 7 Apr. 2023].

2. Baard, V. C., and Dumay, J. (2020) Interventionist Research in Accounting: A Methodological Approach (Routledge Studies in Accounting) (1st ed.). Routledge.

3. Defourny, J., and Nyssens, M. (2006) Defining Social Enterprise. In M. Nyssens, Social Enterprise: At the Crossroads of Market, Public Policies and Civil Society (1st ed., pp. 3-27). Routledge.

4. Freeman, R. (2010) *Strategic Management: A Stakeholder Approach*. Cambridge University Press.

5. Lukka, K., and Wouters, M.J. (2022) Towards Interventionist Research With Theoretical Ambition. Management Accounting Research.

6. McCulloch, M., and Ridley-Duff, R. (2019) To Profit Or Not To Profit? That Is The Wrong Question.

7. Milman, O. (2023). 'Monster profits' for energy giants reveal a self-destructive fossil fuel resurgence. *The Guardian*. [online] 9 Feb. Available at: https://www.theguardian.com/environment/2023/feb/09/profits-energy-fossil-fuel-resurgence-climate-crisis-shell-exxon-bp-chevron-totalenergies [Accessed 2 Apr. 2023].

8. Mitchell, R. K., Agle, B. R., and Wood, D. J. (1997) Toward A Theory Of Stakeholder Identification And Salience: Defining The Principle Of Who And What Really Counts. Academy of Management Review.

9. Nicholls, A. (2009) 'We Do Good Things, Don't We?': 'Blended Value Accounting' In Social Entrepreneurship. *Accounting Organizations and Society*, *34*(6–7), 755–769.

10. Nicholls, A. (2010) The Institutionalization of Social Investment: The Interplay of Investment Logics and Investor Rationalities. *Journal of Social Entrepreneurship*, *1*(1), 70–100.

11. O'Dwyer, B., and Unerman, J. (2008) The Paradox Of Greater NGO Accountability: A Case Study Of Amnesty Ireland. *Accounting Organizations and Society*, *33*(7–8), 801–824.

12. Oström, E. (2005) Social Capital: A Fad Or A Fundamental Concept?*.

13. Power, M. (1994) *The Audit Explosion*. Demos.

14. Ridley-Duff, R., Wren, D. and McCulloch, M. (2019) 'Wealth, Social Enterprise And The Fairshares Model', Cooperative and Social Enterprise, Springer

15. Statista. (n.d.). *Romania: share of agriculture in GDP 2021*. [online] Available at: https://www.statista.com/statistics/1236456/romania-share-of-agriculture-in-gdp/ [Accessed 3 Apr. 2023].

16. National Audit Office (2013) *What are third sector organisations and their benefits for commissioners?*-. [online] Nao.org.uk. Available at: https://www.nao.org.uk/successful-commissioning/introduction/what-are-civil-society-organisations-and-their-benefits-for-commissioners/.

17. Velez, H. (2021). What Is A Social Enterprise? [online] The Good Trade. Available at: https://www.thegoodtrade.com/features/what-is-a-social-enterprise/ [Accessed 25 Mar. 2023].

18.World Bank. (n.d.). *Collapse & Recovery: How COVID-19 Eroded Human Capital and What to Do About It*. [online] Available at: https://www.worldbank.org/en/publication/human-capital/publication/collapse-recovery-how-covid-19-eroded-human-capital-and-what-to-do-about-it [Accessed 27 Mar. 2023].

17. Stancu, Gh. (2007) Privire comparativă a contractului de agenție în cadrul legislației europene, *Revista de drept comercial* no. 11, pp. 17.

18. Stătescu, C., Bîrsan, C. (2002) *Drept civil. Teoria generală a obligațiilor*, București: All Beck, pp. 95.

19.Tița-Nicolescu, G. (2012) Excepțiile de la principiul obligativității efectelor contractului prevăzute în noul Cod Civil, *Pandectele române* no. 11, pp. 16.

20. Tulai, D. L. (2021) The issue of Revocability of the Mandate in Common Interest, *Innovation and Development in Business Law* , București: Ad Juris, pp. 78.

21. Tulai, D. L. (2020a) The Mandate and the Agency Contract, *The Annals of the University of Oradea. Economic Sciences*, tom XXIX, Oradea, pp. 322.

22. Tulai, D. L. (2020b) Denunțarea unilaterală a contractelor în noul Cod Civil român. Impactul articolelor 1276-1277 asupra contractului de mandat și a celui de agenție, *Revista română de drept al afacerilor* no. 5, pp. 69.

MANAGEMENT, MARKETING, ECONOMIC INFORMATICS
AND CYBERNETICS

PRINCIPAL'S LEADERSHIP AND THE TEACHERS' STRESS AND SATISFACTION IN BEDOUIN SCHOOLS IN ISRAEL

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Abstract*: Stress among teachers at work stems from the working conditions, especially the satisfaction that mediates stress and burnout at teachers' work. Hence, this research investigates the teachers' stress and satisfaction in Bedouin schools in Israel. Data were collected in this research by combining a quantitative and qualitative mixed method. A quantitative research questionnaire was conducted for 303 teachers in schools in Bedouin, Israel, in addition to an interview with four teachers based on the teacher's stress and satisfaction at work. Research outcomes show that the mean score for teacher satisfaction level was 3.24 (64.8%). The highest mean score among the sub-scales was for the principal's relationship with his teachers (M =3.62, 72.4%), which is moderate. In contrast, the principal's professional relationship with his teachers had a lower mean score (3.11, 62.2%), the mean score of teacher stress was (3.16, 63.2%), and the mean score of the job satisfaction sub-scale was the highest (3.27, 65.4%), s.d=0.90. We discuss the implications of these findings, which have significant implications when the teachers are the primary, and the school principals are the secondary influences within the classrooms.*

Keywords*: Bedouin; Teachers stress; teachers' satisfaction; School principal*
JEL Classification; **M12**.

Introduction

Stress's effect on teachers' work in schools is considered one of the most critical issues today. Recognizing the importance of this topic, many studies sought to identify the factors affecting teachers' stress and job satisfaction.

Understanding the meaning of teachers' stress and satisfaction guided this research. The reasons for this are that the teachers are the cornerstone of the school's success,

and their job satisfaction is also related to the stress at work and the principal's professional and personal relationship with his teachers. Another reason the school principal's leadership in the Bedouin sector is also the key to the school's success by properly managing the resources available to the school to improve student learning. In addition, the results of schools in the Bedouin sector are the lowest in Israel and need proper teaching and learning (Weisblai, 2017). In schools in Israel and around the world, it has been reported that the behaviors of school principals, as well as leadership styles, have a positive effect on teacher satisfaction, school performance, teacher motivation, student achievement, and also on reducing stress (e.g., Aburkayek, 2022; Grissom et al., 2021; Alasad, 2017; Smyth & Dermody) 2011: Corrigan et al.; 2002: Okorji et al.; 2016: Louis et al. In contrast, when the school principals and staff teachers are under stress, the school's teaching quality and achievement will be negatively influenced, and teachers' satisfaction will be shallow (Aburkayek, 2022). It will also negatively impact student teaching in general (Moody & Barrett, 2009). This study focuses on the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel.

1. School principal in the Bedouin sector

Andrews and Soder (1987) defined the school principal as an instructional leader seeking continuous improvement of educational programs involved in the employees' development, aiming to improve classroom environments that will enhance student learning. The principal should be an excellent example for all teachers and students at the school. He is responsible for producing a healthy school life and performance that contributes to and supports. There are seven leading roles in implementing and building character in the school: having a clear vision, a more collaborative approach, being proactive and responsive to what is happening outside the school, being consistent in enforcing rules and activities, giving many social rewards, creating a variety of activities that can develop social skills, and devotion to students (Asmendri, 2014). Currently, few studies have investigated the subject of the school principal's leadership in the Bedouin sector of Israel. According to Aburkayek (2022), the political appointments to school principals in the Bedouin sector may reflect their lack of management training, leading to poor performance and affecting the satisfaction of the teachers and staff at the school. The process of appointing school principals is tainted by clan competition for school management and political interference (Abu-Saad, 2006; Arar, 2018). Therefore, school principals use policies and procedures that are inconsistent with the policies of the school management (Alasad, 2017). Hence, the school principal's leadership affects both

stress and teacher satisfaction. As a result, stress and satisfaction among teachers are also a result of the school principal's leadership, which has clear implications for the teachers' performance, affecting the students.

2. Teachers' stress

It can be explained in general that the occupational pressure perceived by the teachers can be one of the following factors: gender, age of the teacher, teaching experience, school climate, teacher's personality, school principals' behaviors, teacher's relationship with the school's principal, parents' involvement in students' achievements, and disciplining students in classrooms. In addition, teachers perceive classroom teaching as a stressful profession. These factors can contribute to the level and symptoms of stress among teachers and directly impact job satisfaction. Kyriacou (1987), who researched teachers' stress in their work, defined stress as the experience of unpleasant feelings such as tension and irritableness arising from daily work, anxiety, anger, and depression, which will lead to a greater risk of exhaustion (Madigan & Kim 2021, p. 11). While High teaching pressure from teachers affects school results, absenteeism, school climate, and burnout (Embse et al., 2019). All of the above is consistent with studies indicating concern about teacher satisfaction and the professional and personal relationship with the principal. Satisfaction is the mediator between stress and teachers and school principals. The principal's relationship with teachers highly influences job satisfaction (Wang et al., 2018). According to Lambersky (2016), the behaviors of school principals also affect the teaching staff's feelings, such as teacher satisfaction, psychological pressure, respect, and organizational commitment. In addition, the research literature has emphasized the importance of teacher satisfaction alongside the teacher's work stress, and they are seen as directly influencing the organization.

3. Teacher satisfaction

Satisfaction is a pleasurable state of affection resulting from appreciating one's work (Locke, 1969). Evans (1997, p. 327) refers to two components of teacher satisfaction at work: comfort at work and fulfillment at work. The first refers to the extent of the individual's feelings of comfort at work. That is, the conditions and circumstances of the individual for himself but not for work. In contrast, the latter refers to the individual's extent of satisfaction with personal achievements related to aspects of his work. The literature pointed out some factors that contribute to teachers' dissatisfaction with work, such as a heavy workload, factors related to the content of the work, and the context at work (Gu, 2016; Tien, 2018). As a result, there can be a greater risk of attrition than the satisfaction that protects teachers (Madigan & Kim

2021, p. 11). According to the Herzberg's dual-factor theory (1959) is one of the most common theories of job satisfaction. The significant idea of this theory is the difference between motivation and hygiene factors when both affect job satisfaction. Hygiene factors are less critical for satisfaction because they lead to negative motivation at work, such as comfort, work environment, work procedures, and salary. Hence, motivation leads to job satisfaction due to individual identification and emotional satisfaction at work. Motivation factors included responsibility, the possibility of growth and advancement, and recognition. Supporting the idea that motivational factors contribute to and improve employee satisfaction at work and contribute to practical work in the organization. According to Alrawah et al. (2020, p. 6), the results of their research supported Herzberg's two-factor theory approach. Among the employees, the hygiene factors for job dissatisfaction were identified: heavy workload, promotion, salary, recognition, and policies of the organization, while the motivational factors for job satisfaction were identified: professional development and relationships with leaders and co-workers. In addition, Alfayad and Arif (2017, p. 5) indicated a positive relationship between employee voice and job satisfaction.

4. Methodology and results

Objective of the study

This study aims to investigate the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel.

Methodology

The outcomes of this study were collected from 303 school teachers in primary schools, junior high schools, and high schools in the Bedouin south of Israel. The research included questionnaires based on the teacher's satisfaction, measuring the teacher's stress and satisfaction level through five sub-scales: teacher stress, the principal's professional relationship with his teachers, the principal's personal relationship with his teachers, job satisfaction, and teacher satisfaction. The "teacher satisfaction questionnaire" was adopted by Alsahli (2017). Additionally, the researcher added items to the teacher satisfaction questionnaire to adapt it to the study population. In addition, an interview was conducted with four teachers to gather information about their personal opinions through open-ended questions with four items on various topics related to their levels of stress and satisfaction at work. Each interview lasted about 35 minutes and was conducted with four teachers from different settlements. The names of the participants remain anonymous, following research ethics. The researcher used numbers and letters instead of their real names;

the interviews took place in April 2023; and the interviews were recorded and transcribed by the researcher.

Results

The research examines the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel. The research showed important results about the principal's relationship with his teachers and its effect on teachers' stress and satisfaction in the Bedouin education system in Israel.

5. Background Variables

Three hundred and three (303) teachers responded to the teachers' satisfaction questionnaires; 50.2% were female, and the majority (47.2%) worked in junior high schools. Regarding the educational level, the respondents had 45.2% of a bachelor's degree, 49.8% of a master's degree, and 5% of a PhD degree. As Table 3 shows, about 59% of the respondents were from the south of Israel, while the rest were from the north of Israel. As for the age of the teachers, 23.8% were less than 30 years old, 22.1% were between 31 and 40 years old, 33% were between 41 and 50 years old, and the rest were more than 50 years old. Regarding the years of experience, about 38% of the respondents had less than ten years of experience, and 34.7% of them had more than 20 years of experience in education.

According to Table 1 below, the characteristics of the participants are shown in the following table:

Table 1: Characteristics of the participants

Names	Gender	School Type	Teachers Experience	Interview Duration
1A	female	Junior High school	22	31.30
1B	Male	Junior high school	12	34
1C	Male	High school	20	32.20
1D	female	Primary school	14	33

According to Table 2 below, the teacher satisfaction scale was measured using four subscales, as shown in Table 2; the mean score for teacher satisfaction level was 3.24 (64.8%), s.d. = 0.53. The highest mean score among the sub-scales was for the principal's personal relationship with his teachers (3.62, 72.4%), which is moderate. In contrast, the principal's professional relationship with his teachers had a lower mean score (3.11, 62.2%), the mean score of teacher stress was (3.16, 63.2%), and the mean score of the job satisfaction sub-scale was the highest (3.27, 65.4%), s.d. = 0.90.

Table 2: mean scores and standard deviations of the teacher satisfaction scale

Scale	Mean score	Percentage	Level	Std. Deviation
Teacher stress	3.16	63.2	Moderate	.83
Principals professional relationship with his teachers	3.11	62.2	Moderate	.78
Principals personal relationship with his teachers	3.62	72.4	Moderate	.78
Job satisfaction	3.27	65.4	Moderate	.90
Teacher satisfaction	3.24	64.8	Moderate	.70

Figure 1: mean scores and standard deviations of the teacher satisfaction scale can be indicated in figure 1.

Figure 1: Teachers stress and satisfaction

6. Interviews Analysis

The main challenge currently facing the Bedouin education system in Israel is to provide quality education to all students. This study indicates that teachers in the nomadic education system are an important primary resource that directly influences student achievement.

All four participants stated that they experience stress and challenges in their work. They said that difficult work with teenage students, disciplinary behaviors that affect other students, and the fact that the class size and school are large and it is pedagogically difficult to follow everyone in terms of their levels add stress at work.

The teachers told that the decisions are made individually, and he does not share decisions with the teachers. And the teachers believe that they are part of the reality of changes, and participation in decision-making strengthens belonging to the school. School teachers state that there is a need for improvements, particularly in school leadership in terms of pedagogical direction and team leadership. There is a need for attention on his part, pedagogically. The school principal focuses more on daily routines, such as solving and dealing with daily problems. It is necessary to work with students' levels pedagogically in all classes.

Most of the teachers told about principals' relationships with teachers; there is no personal relationship between the principal and the teachers. Socially, he is not close to teachers. He works only with the management team, and they believe that the principals' personal relationships with teachers reduce stress and increase teacher satisfaction.

All four participants stated that they loved their students and their work and were satisfied with belonging to their students and facing the existing challenges. They said that they feel satisfied at work, especially with the salary.

7. Discussion

This study investigates the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel. This study showed that the participating teachers had moderate to high-stress levels and satisfaction. According to Table 2, the mean score for teacher satisfaction level was 3.24. While the highest mean score among the sub-scales was for the principal's personal relationship with his teachers (3.62), the principal's professional relationship with his teachers was moderate. This indicates that the teachers want more of a personal relationship than a professional one. In other words, the personal moderate predicts professionalism at work.

The school teachers' interview findings reveal that they face stress in their teaching. During the interview, the teachers said they face challenges related to the class size, the number of students, disciplinary behaviors and laziness among students, reducing educational gaps, and teenagers. All of the above indicates that teaching in the teachers' classrooms is stressful, which adds to their fatigue at work. According to the literature, teacher stress and burnout may have a negative effect on students (Herman et al., 2020; Ramberg et al., 2020). It can be varied that there are several reasons associated with this stress in schools in the Bedouin sector, which may be due to the lowest socio-economic cluster in the Bedouin sector and a lack of parental involvement in school life (Tirosh & Eyal, 2018: Aburkayek, 2022, p. 6). Consequently, teachers working in schools suffer from the lack of parental involvement with them and the low social and economic status of parents and

students. This will increase fatigue and emotional exhaustion among teachers. In other words, each school's specific characteristics clearly impact stress levels among teachers. Therefore, successful leadership can counteract stress and protect teacher satisfaction. Our results are consistent with previous studies showing that teacher stress and complaints due to an unfavorable climate are essential for school performance and student well-being (Ramberg et al., 2020, p. 825).

Teachers also talked about the relationship between the principal professional relationship and the need for more participation in decision-making. Teachers in the Bedouin sector indicated that it affects them and predicts stress and job satisfaction. School principal behaviors that encourage sharing leadership, flexibility, participation, and individual support have been revealed to increase satisfaction (Cansoy, 2019, p. 44). According to Table 2, the principal's relationship with his teachers indicates that the teachers have no personal relationship with the principals. This result is consistent with interviews with teachers in the Bedouin sector, who told me there is no personal relationship. They also said a manager's relationship is only expressed with his management team. Personal relationships are defined as trust, respect, cooperation, attention, helping with personal issues, and showing emotionality towards teachers with personal conflicts when they affect the teachers' work during the day. This can be explained as being related to tradition. According to the literature, the political appointments and clan competition for school management among school principals in the Bedouin sector may reflect their lack of teacher satisfaction (Aburkayek, 2022; Abu-Saad, 2006; Arar, 2018). As a result, it can be expected that school principals in the Bedouin sector use policies and procedures inconsistent with school management policies (Alassad, 2017). According to the results in Table 2, the mean score of the job satisfaction sub-scale was the highest. This indicates that teachers in the Bedouin sector are satisfied with their job and have a greater sense of belonging and commitment towards their students than with the atmosphere in the school, which is the relationship between the principal and the teachers. This finding is in line with the interviews with the teachers in the Bedouin sector, who told me that they love the job they perform and have a sense of belonging with their students regardless of school politics. According to Ramberg et al. (2020, p. 825), teachers showed more caring relationships with their students than school satisfaction. In contrast, the interviews with the Bedouin sector teachers indicated that they feel satisfied with their salary at work, especially with the recent increase in teachers' salaries. In addition, they said they were satisfied with the promotions in their positions at school. The finding can be explained by Herzberg's dual-factor theory (1959), which states that motivation factors include

salary, recognition, and responsibility. Improve teachers' job satisfaction and contribute to effective work in schools.

Conclusion

The present study showed some significant results for the Bedouin education system in Israel. Based on the results presented above, it is recommended that the principals of schools in the Bedouin sector improve their personal relationships with the teachers. Listening and talking with them after work about their difficulties creates training and strengthens their relationship. It is recommended that school administrators expand the division of duties and responsibilities among most school teachers. Moreover, I suggest that administrators demonstrate behaviors based on trust in teachers and their participation in decision-making and a vision that defines goals and is common to all when it comes to promoting educational activity on the part of teachers because teachers are an important resource and play a central role in the education of students, which has a social impact as well as on student achievements. Also, it is recommended that policymakers adopt programs and professional development for teachers, together with school administrators, with tools and skills to deal with pressures in teaching in particular and work in general. Because today's teaching is stressful, teachers must work with students at different levels, in different classes, and with different behaviors, which directly affects their stress and satisfaction with student learning.

References

Aburkayek, S. (2022) The relationship between the principal's leadership style and teachers' job satisfactions in Bedouin sector in Israel. Annals of the University of Oradea, Economic Science Series. Jul2022, Vol. 31 Issue 1, p347-360. 14p

Aburkayek, S.(2022) The Principals Stress and Coping Strategies in Bedouin Schools in Israel. Chinese Business Review, May-June 2022, Vol. 21, No. 3, 91-101.

Aburkayek, S. (2022) Principal Leadership Teacher Satisfaction and School Performance in Bedouin Schools in Israel. China-USA Business Review, May-June 2022, Vol. 21, No. 3, 96-105.

Abu-Saad, I. 2006. "Palestinian Education in Israel: The Legacy of the Military Government." Holy Land Studies, 5(1): 21-56.

Alasad, S. (2017) The Leadership Styles of Principals in Bedouin Secondary School and Teachers Motivation. Philosophy Study, March 2017, Vol. 7, No. 3, 153-168.

Alfayad, Z., & Arif, L. S. M. (2017) Employee Voice and Job Satisfaction: An Application of Herzberg Two-factor Theory. International Review of Management and Marketing, 7(1), 150–156. Retrieved from https://www.econjournals.com/index.php/irmm/article/view/3342.

Alrawahi, S., Sellgren, S.f., Altouby, S., Alwahaibi, N & Brommels, M. (2020) The application of Herzberg's two-factor theory of motivation to job satisfaction in clinical laboratories in Omani hospitals. Heliyon. 6. e04829.

Alsahli H. (2017) The quality of education (39), The Ministry of Education of Saudi Arabia, Saudi Arabia.

Andrews, R., & Soder, R. (1987) Principal leadership and student achievement. Educational Leadership, 44, (6), 9-11.

Andrews, R., & Soder, R. (1987) Principal leadership and student achievement. Educational Leadership, 44, (6), 9-11.

Arar, K. (2018) Policy and Praxis of Principals' Appointment: The Case of Palestinian-Arab Minority Education in Israel Policy and Praxis of Principals' Appointment: The Case of Palestinian-Arab Minority Education in Israel. International Journal of Educational Development.

Asmendri, A. (2014) The Roles of School Principal in the Implementation of Character Education at Boarding School. Volume 21, Number 2, July 2014, Page 104-111.

Cansoy,R. (2019) The Relationship between School Principals' Leadership Behaviors and Teachers' Job Satisfaction: A Systematic Review, International Education Studies; Vol. 12, No. 1; 2019.

Corrigan, P. C., Diwan, S., Campion, J., & Rashid, F. (2002) Transformational leadership and the mental health team. Administration and Policy in Mental Health, 30(2), 97-108.

Darmody,M., & Smyth,E. (2011) Job Satisfaction and Occupational Stress among Primary School Teachers and School Principals in Ireland, Dublin, Ireland., ESRI / The Teaching Council, June, 2011. p. 1–47.

Embse, N., Ryan, S. V., Gibbs, T., & Mankin, A. (2019) Teacher stress interventions: A systematic review. Psychology in the Schools.

Evans, L. (1997) Addressing problems of conceptualization and construct validity in researching teachers' job satisfaction. Educational Research, 39(3), 319–331.

Gu, X. (2016) Teacher Job Satisfaction in Public Schools: The Relation to the Years of Teaching Experience. Elementary Education and Reading Theses. Paper 1

Herman, K ., Reinke, W., Eddy. (2020) Advances in understanding and intervening in teacher stress and coping: The Coping-Competence-Context Theory. Journal of school psychology. 78. 69-74. 10.1016/j.jsp.2020.01.001.

Herzberg, F., Mausner, B., & Snyderman, B. (1959) The motivation to work. New York, NY: Wiley Publishers.

Kyriacou, C. (1987) Teacher stress and burnout: An international review. Educational Research, 29(2), 146-152.

Lambersky, J. (2016) Understanding the Human Side of School Leadership: Principals' Impact on Teachers' Morale, Self-Efficacy, Stress, and Commitment, Leadership and Policy in Schools, 15:4, 379-405.

Locke,E.A.(1969) what is job satisfaction? Organizational Behavior and Human Performance, 4(4), 309-336.

Louis, K. S., Murphy, J. F., & Smylie, M. (2016) Caring leadership in schools: findings from exploratory analyses. Educational Administration Quarterly, 52(1), 1–37.

Madigan, D. J., & Kim, L. E. (2021) Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. Teaching and Teacher Education, 105, 103425.

Moody, R., Barrett, J. (2009) Stress levels of school administrators and teachers in November and January. Academic Leadership. Retrieved from http://www.academicleadership.org/emprical_research/618.shtml

Okorji,P., Igbokwe,I., Ezeugbor,O. (2016) Relatıonshıp Between School Clımate And Prıncıpals' Job Performance In Secondary Schools European Scientific Journal February 2016 edition vol.12, No.4 ISSN: 1857 – 7881.

Ramberg, J., Låftman,S.B., Åkerstedt,T., Modin,B. (2020) Teacher Stress and Students' School Well-being: the Case of Upper Secondary Schools in Stockholm, Scandinavian Journal of Educational Research, 64:6, 816-830.

Tien, T.N. (2018) Determinants of Job Satisfaction among Teachers in Vietnam. Journal of Education & Social Policy, Vol. 5, No. 1, March 2018.

Tirosh, O., Eyal, Y. (2018) Socio-economic measures for the Bedouin population in the Negev. Myers- Jdc-Brookdale. Jerusalem (Israel). https://brookdale.jdc.org.il/

Wang, f. ,Pollock,k., Hauseman,c. (2018) School Principals' Job Satisfaction: The Effects of Work Intensification. Canadian Journal of Educational Administration and Policy, 185,73-90.

Weissblai, A. (2017) Education in the Bedouin Society in the Negev: Situation. Knesset: Research and Information Center.

PRINCIPAL'S LEADERSHIP AND THE TEACHERS' STRESS AND SATISFACTION IN BEDOUIN SCHOOLS IN ISRAEL

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Abstract: *Stress among teachers at work stems from the working conditions, especially the satisfaction that mediates stress and burnout at teachers' work. Hence, this research investigates the teachers' stress and satisfaction in Bedouin schools in Israel. Data were collected in this research by combining a quantitative and qualitative mixed method. A quantitative research questionnaire was conducted for 303 teachers in schools in Bedouin, Israel, in addition to an interview with four teachers based on the teacher's stress and satisfaction at work. Research outcomes show that the mean score for teacher satisfaction level was 3.24 (64.8%). The highest mean score among the sub-scales was for the principal's relationship with his teachers (M =3.62, 72.4%), which is moderate. In contrast, the principal's professional relationship with his teachers had a lower mean score (3.11, 62.2%), the mean score of teacher stress was (3.16, 63.2%), and the mean score of the job satisfaction sub-scale was the highest (3.27, 65.4%), s.d=0.90. We discuss the implications of these findings, which have significant implications when the teachers are the primary, and the school principals are the secondary influences within the classrooms.*

Keywords*: Bedouin; Teachers stress; teachers' satisfaction; School principal*

JEL Classification; **M12**.

Introduction

Stress's effect on teachers' work in schools is considered one of the most critical issues today. Recognizing the importance of this topic, many studies sought to identify the factors affecting teachers' stress and job satisfaction.

Understanding the meaning of teachers' stress and satisfaction guided this research. The reasons for this are that the teachers are the cornerstone of the school's success, and their job satisfaction is also related to the stress at work and the principal's

professional and personal relationship with his teachers. Another reason the school principal's leadership in the Bedouin sector is also the key to the school's success by properly managing the resources available to the school to improve student learning. In addition, the results of schools in the Bedouin sector are the lowest in Israel and need proper teaching and learning (Weisblai, 2017). In schools in Israel and around the world, it has been reported that the behaviors of school principals, as well as leadership styles, have a positive effect on teacher satisfaction, school performance, teacher motivation, student achievement, and also on reducing stress (e.g., Aburkayek, 2022; Grissom et al., 2021; Alasad, 2017; Smyth & Dermody) 2011: Corrigan et al.; 2002: Okorji et al.; 2016: Louis et al. In contrast, when the school principals and staff teachers are under stress, the school's teaching quality and achievement will be negatively influenced, and teachers' satisfaction will be shallow (Aburkayek, 2022). It will also negatively impact student teaching in general (Moody & Barrett, 2009). This study focuses on the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel.

1. School principal in the Bedouin sector

Andrews and Soder (1987) defined the school principal as an instructional leader seeking continuous improvement of educational programs involved in the employees' development, aiming to improve classroom environments that will enhance student learning. The principal should be an excellent example for all teachers and students at the school. He is responsible for producing a healthy school life and performance that contributes to and supports. There are seven leading roles in implementing and building character in the school: having a clear vision, a more collaborative approach, being proactive and responsive to what is happening outside the school, being consistent in enforcing rules and activities, giving many social rewards, creating a variety of activities that can develop social skills, and devotion to students (Asmendri, 2014). Currently, few studies have investigated the subject of the school principal's leadership in the Bedouin sector of Israel. According to Aburkayek (2022), the political appointments to school principals in the Bedouin sector may reflect their lack of management training, leading to poor performance and affecting the satisfaction of the teachers and staff at the school. The process of appointing school principals is tainted by clan competition for school management and political interference (Abu-Saad, 2006; Arar, 2018). Therefore, school principals use policies and procedures that are inconsistent with the policies of the school management (Alasad, 2017). Hence, the school principal's leadership affects both stress and teacher satisfaction. As a result, stress and satisfaction among teachers are

also a result of the school principal's leadership, which has clear implications for the teachers' performance, affecting the students.

2. Teachers' stress

It can be explained in general that the occupational pressure perceived by the teachers can be one of the following factors: gender, age of the teacher, teaching experience, school climate, teacher's personality, school principals' behaviors, teacher's relationship with the school's principal, parents' involvement in students' achievements, and disciplining students in classrooms. In addition, teachers perceive classroom teaching as a stressful profession. These factors can contribute to the level and symptoms of stress among teachers and directly impact job satisfaction. Kyriacou (1987), who researched teachers' stress in their work, defined stress as the experience of unpleasant feelings such as tension and irritableness arising from daily work, anxiety, anger, and depression, which will lead to a greater risk of exhaustion (Madigan & Kim 2021, p. 11). While High teaching pressure from teachers affects school results, absenteeism, school climate, and burnout (Embse et al., 2019). All of the above is consistent with studies indicating concern about teacher satisfaction and the professional and personal relationship with the principal. Satisfaction is the mediator between stress and teachers and school principals. The principal's relationship with teachers highly influences job satisfaction (Wang et al., 2018). According to Lambersky (2016), the behaviors of school principals also affect the teaching staff's feelings, such as teacher satisfaction, psychological pressure, respect, and organizational commitment. In addition, the research literature has emphasized the importance of teacher satisfaction alongside the teacher's work stress, and they are seen as directly influencing the organization.

3. Teacher satisfaction

Satisfaction is a pleasurable state of affection resulting from appreciating one's work (Locke, 1969). Evans (1997, p. 327) refers to two components of teacher satisfaction at work: comfort at work and fulfillment at work. The first refers to the extent of the individual's feelings of comfort at work. That is, the conditions and circumstances of the individual for himself but not for work. In contrast, the latter refers to the individual's extent of satisfaction with personal achievements related to aspects of his work. The literature pointed out some factors that contribute to teachers' dissatisfaction with work, such as a heavy workload, factors related to the content of the work, and the context at work (Gu, 2016; Tien, 2018). As a result, there can be a greater risk of attrition than the satisfaction that protects teachers (Madigan & Kim 2021, p. 11). According to the Herzberg's dual-factor theory (1959) is one of the

most common theories of job satisfaction. The significant idea of this theory is the difference between motivation and hygiene factors when both affect job satisfaction. Hygiene factors are less critical for satisfaction because they lead to negative motivation at work, such as comfort, work environment, work procedures, and salary. Hence, motivation leads to job satisfaction due to individual identification and emotional satisfaction at work. Motivation factors included responsibility, the possibility of growth and advancement, and recognition. Supporting the idea that motivational factors contribute to and improve employee satisfaction at work and contribute to practical work in the organization. According to Alrawah et al. (2020, p. 6), the results of their research supported Herzberg's two-factor theory approach. Among the employees, the hygiene factors for job dissatisfaction were identified: heavy workload, promotion, salary, recognition, and policies of the organization, while the motivational factors for job satisfaction were identified: professional development and relationships with leaders and co-workers. In addition, Alfayad and Arif (2017, p. 5) indicated a positive relationship between employee voice and job satisfaction.

4. Methodology and results

Objective of the study

This study aims to investigate the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel.

Methodology

The outcomes of this study were collected from 303 school teachers in primary schools, junior high schools, and high schools in the Bedouin south of Israel. The research included questionnaires based on the teacher's satisfaction, measuring the teacher's stress and satisfaction level through five sub-scales: teacher stress, the principal's professional relationship with his teachers, the principal's personal relationship with his teachers, job satisfaction, and teacher satisfaction. The "teacher satisfaction questionnaire" was adopted by Alsahli (2017). Additionally, the researcher added items to the teacher satisfaction questionnaire to adapt it to the study population. In addition, an interview was conducted with four teachers to gather information about their personal opinions through open-ended questions with four items on various topics related to their levels of stress and satisfaction at work. Each interview lasted about 35 minutes and was conducted with four teachers from different settlements. The names of the participants remain anonymous, following research ethics. The researcher used numbers and letters instead of their real names; the interviews took place in April 2023; and the interviews were recorded and transcribed by the researcher.

Results

The research examines the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel. The research showed important results about the principal's relationship with his teachers and its effect on teachers' stress and satisfaction in the Bedouin education system in Israel.

5. Background Variables

Three hundred and three (303) teachers responded to the teachers' satisfaction questionnaires; 50.2% were female, and the majority (47.2%) worked in junior high schools. Regarding the educational level, the respondents had 45.2% of a bachelor's degree, 49.8% of a master's degree, and 5% of a PhD degree. As Table 3 shows, about 59% of the respondents were from the south of Israel, while the rest were from the north of Israel. As for the age of the teachers, 23.8% were less than 30 years old, 22.1% were between 31 and 40 years old, 33% were between 41 and 50 years old, and the rest were more than 50 years old. Regarding the years of experience, about 38% of the respondents had less than ten years of experience, and 34.7% of them had more than 20 years of experience in education.

According to Table 1 below, the characteristics of the participants are shown in the following table:

Table 1: Characteristics of the participants

Names	Gender	School Type	Teachers Experience	Interview Duration
1A	female	Junior High school	22	31.30
1B	Male	junior high school	12	34
1C	Male	High school	20	32.20
1D	female	Primary school	14	33

According to Table 2 below, the teacher satisfaction scale was measured using four subscales, as shown in Table 2; the mean score for teacher satisfaction level was 3.24 (64.8%), s.d. = 0.53. The highest mean score among the sub-scales was for the principal's personal relationship with his teachers (3.62, 72.4%), which is moderate. In contrast, the principal's professional relationship with his teachers had a lower mean score (3.11, 62.2%), the mean score of teacher stress was (3.16, 63.2%), and the mean score of the job satisfaction sub-scale was the highest (3.27, 65.4%), s.d. = 0.90.

Table 2: mean scores and standard deviations of the teacher satisfaction scale

Scale	Mean score	Percentage	Level	Std. Deviation
Teacher stress	3.16	63.2	Moderate	.83
Principals professional relationship with his teachers	3.11	62.2	Moderate	.78
Principals personal relationship with his teachers	3.62	72.4	Moderate	.78
Job satisfaction	3.27	65.4	Moderate	.90
Teacher satisfaction	3.24	64.8	Moderate	.70

Figure 1: mean scores and standard deviations of the teacher satisfaction scale can be indicated in figure 1.

Figure 1: Teachers stress and satisfaction

6. Interviews Analysis

The main challenge currently facing the Bedouin education system in Israel is to provide quality education to all students. This study indicates that teachers in the nomadic education system are an important primary resource that directly influences student achievement.

All four participants stated that they experience stress and challenges in their work. They said that difficult work with teenage students, disciplinary behaviors that affect

other students, and the fact that the class size and school are large and it is pedagogically difficult to follow everyone in terms of their levels add stress at work. The teachers told that the decisions are made individually, and he does not share decisions with the teachers. And the teachers believe that they are part of the reality of changes, and participation in decision-making strengthens belonging to the school. School teachers state that there is a need for improvements, particularly in school leadership in terms of pedagogical direction and team leadership. There is a need for attention on his part, pedagogically. The school principal focuses more on daily routines, such as solving and dealing with daily problems. It is necessary to work with students' levels pedagogically in all classes.

Most of the teachers told about principals' relationships with teachers; there is no personal relationship between the principal and the teachers. Socially, he is not close to teachers. He works only with the management team, and they believe that the principals' personal relationships with teachers reduce stress and increase teacher satisfaction.

All four participants stated that they loved their students and their work and were satisfied with belonging to their students and facing the existing challenges. They said that they feel satisfied at work, especially with the salary.

7. Discussion

This study investigates the principal's leadership and the teachers' stress and satisfaction in Bedouin schools in Israel. This study showed that the participating teachers had moderate to high-stress levels and satisfaction. According to Table 2, the mean score for teacher satisfaction level was 3.24. While the highest mean score among the sub-scales was for the principal's personal relationship with his teachers (3.62), the principal's professional relationship with his teachers was moderate. This indicates that the teachers want more of a personal relationship than a professional one. In other words, the personal moderate predicts professionalism at work.

The school teachers' interview findings reveal that they face stress in their teaching. During the interview, the teachers said they face challenges related to the class size, the number of students, disciplinary behaviors and laziness among students, reducing educational gaps, and teenagers. All of the above indicates that teaching in the teachers' classrooms is stressful, which adds to their fatigue at work. According to the literature, teacher stress and burnout may have a negative effect on students (Herman et al., 2020; Ramberg et al., 2020). It can be varied that there are several reasons associated with this stress in schools in the Bedouin sector, which may be due to the lowest socio-economic cluster in the Bedouin sector and a lack of parental involvement in school life (Tirosh & Eyal, 2018: Aburkayek, 2022, p. 6).

Consequently, teachers working in schools suffer from the lack of parental involvement with them and the low social and economic status of parents and students. This will increase fatigue and emotional exhaustion among teachers. In other words, each school's specific characteristics clearly impact stress levels among teachers. Therefore, successful leadership can counteract stress and protect teacher satisfaction. Our results are consistent with previous studies showing that teacher stress and complaints due to an unfavorable climate are essential for school performance and student well-being (Ramberg et al., 2020, p. 825).

Teachers also talked about the relationship between the principal professional relationship and the need for more participation in decision-making. Teachers in the Bedouin sector indicated that it affects them and predicts stress and job satisfaction. School principal behaviors that encourage sharing leadership, flexibility, participation, and individual support have been revealed to increase satisfaction (Cansoy, 2019, p. 44). According to Table 2, the principal's relationship with his teachers indicates that the teachers have no personal relationship with the principals. This result is consistent with interviews with teachers in the Bedouin sector, who told me there is no personal relationship. They also said a manager's relationship is only expressed with his management team. Personal relationships are defined as trust, respect, cooperation, attention, helping with personal issues, and showing emotionality towards teachers with personal conflicts when they affect the teachers' work during the day. This can be explained as being related to tradition. According to the literature, the political appointments and clan competition for school management among school principals in the Bedouin sector may reflect their lack of teacher satisfaction (Aburkayek, 2022; Abu-Saad, 2006; Arar, 2018). As a result, it can be expected that school principals in the Bedouin sector use policies and procedures inconsistent with school management policies (Alassad, 2017). According to the results in Table 2, the mean score of the job satisfaction sub-scale was the highest. This indicates that teachers in the Bedouin sector are satisfied with their job and have a greater sense of belonging and commitment towards their students than with the atmosphere in the school, which is the relationship between the principal and the teachers. This finding is in line with the interviews with the teachers in the Bedouin sector, who told me that they love the job they perform and have a sense of belonging with their students regardless of school politics. According to Ramberg et al. (2020, p. 825), teachers showed more caring relationships with their students than school satisfaction. In contrast, the interviews with the Bedouin sector teachers indicated that they feel satisfied with their salary at work, especially with the recent increase in teachers' salaries. In addition, they said they were satisfied with the promotions in their positions at school. The finding can be explained by

Herzberg's dual-factor theory (1959), which states that motivation factors include salary, recognition, and responsibility. Improve teachers' job satisfaction and contribute to effective work in schools.

Conclusion

The present study showed some significant results for the Bedouin education system in Israel. Based on the results presented above, it is recommended that the principals of schools in the Bedouin sector improve their personal relationships with the teachers. Listening and talking with them after work about their difficulties creates training and strengthens their relationship. It is recommended that school administrators expand the division of duties and responsibilities among most school teachers. Moreover, I suggest that administrators demonstrate behaviors based on trust in teachers and their participation in decision-making and a vision that defines goals and is common to all when it comes to promoting educational activity on the part of teachers because teachers are an important resource and play a central role in the education of students, which has a social impact as well as on student achievements. Also, it is recommended that policymakers adopt programs and professional development for teachers, together with school administrators, with tools and skills to deal with pressures in teaching in particular and work in general. Because today's teaching is stressful, teachers must work with students at different levels, in different classes, and with different behaviors, which directly affects their stress and satisfaction with student learning.

References

Aburkayek, S. (2022) The relationship between the principal's leadership style and teachers' job satisfactions in Bedouin sector in Israel. Annals of the University of Oradea, Economic Science Series. Jul2022, Vol. 31 Issue 1, p347-360. 14p

Aburkayek, S.(2022) The Principals Stress and Coping Strategies in Bedouin Schools in Israel. Chinese Business Review, May-June 2022, Vol. 21, No. 3, 91-101.

Aburkayek, S. (2022) Principal Leadership Teacher Satisfaction and School Performance in Bedouin Schools in Israel. China-USA Business Review, May-June 2022, Vol. 21, No. 3, 96-105.

Abu-Saad, I. 2006. "Palestinian Education in Israel: The Legacy of the Military Government." Holy Land Studies, 5(1): 21-56.

Alasad, S. (2017) The Leadership Styles of Principals in Bedouin Secondary School and Teachers Motivation. Philosophy Study, March 2017, Vol. 7, No. 3, 153-168.

Alfayad, Z., & Arif, L. S. M. (2017) Employee Voice and Job Satisfaction: An Application of Herzberg Two-factor Theory. International Review of Management and Marketing, 7(1), 150–156. Retrieved from https://www.econjournals.com/index.php/irmm/article/view/3342.

Alrawahi, S., Sellgren, S.f., Altouby, S., Alwahaibi, N & Brommels, M. (2020) The application of Herzberg's two-factor theory of motivation to job satisfaction in clinical laboratories in Omani hospitals. Heliyon. 6. e04829.

Alsahli H. (2017) The quality of education (39), The Ministry of Education of Saudi Arabia, Saudi Arabia.

Andrews, R., & Soder, R. (1987) Principal leadership and student achievement. Educational Leadership, 44, (6), 9-11.

Andrews, R., & Soder, R. (1987) Principal leadership and student achievement. Educational Leadership, 44, (6), 9-11.

Arar, K. (2018) Policy and Praxis of Principals' Appointment: The Case of Palestinian-Arab Minority Education in Israel Policy and Praxis of Principals' Appointment: The Case of Palestinian-Arab Minority Education in Israel. International Journal of Educational Development.

Asmendri, A. (2014) The Roles of School Principal in the Implementation of Character Education at Boarding School. Volume 21, Number 2, July 2014, Page 104-111.

Cansoy,R. (2019) The Relationship between School Principals' Leadership Behaviors and Teachers' Job Satisfaction: A Systematic Review, International Education Studies; Vol. 12, No. 1; 2019.

Corrigan, P. C., Diwan, S., Campion, J., & Rashid, F. (2002) Transformational leadership and the mental health team. Administration and Policy in Mental Health, 30(2), 97-108.

Darmody,M., & Smyth,E. (2011) Job Satisfaction and Occupational Stress among Primary School Teachers and School Principals in Ireland, Dublin, Ireland., ESRI / The Teaching Council, June, 2011. p. 1–47.

Embse, N., Ryan, S. V., Gibbs, T., & Mankin, A. (2019) Teacher stress interventions: A systematic review. Psychology in the Schools.

Evans, L. (1997) Addressing problems of conceptualization and construct validity in researching teachers' job satisfaction. Educational Research, 39(3), 319–331.

Gu, X. (2016) Teacher Job Satisfaction in Public Schools: The Relation to the Years of Teaching Experience. Elementary Education and Reading Theses. Paper 1

Herman, K ., Reinke, W., Eddy. (2020) Advances in understanding and intervening in teacher stress and coping: The Coping-Competence-Context Theory. Journal of school psychology. 78. 69-74. 10.1016/j.jsp.2020.01.001.

Herzberg, F., Mausner, B., & Snyderman, B. (1959) The motivation to work. New York, NY: Wiley Publishers.

Kyriacou, C. (1987) Teacher stress and burnout: An international review. Educational Research, 29(2), 146-152.

Lambersky, J. (2016) Understanding the Human Side of School Leadership: Principals' Impact on Teachers' Morale, Self-Efficacy, Stress, and Commitment, Leadership and Policy in Schools, 15:4, 379-405.

Locke,E.A.(1969) what is job satisfaction? Organizational Behavior and Human Performance, 4(4), 309-336.

Louis, K. S., Murphy, J. F., & Smylie, M. (2016) Caring leadership in schools: findings from exploratory analyses. Educational Administration Quarterly, 52(1), 1–37.

Madigan, D. J., & Kim, L. E. (2021) Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. Teaching and Teacher Education, 105, 103425.

Moody, R., Barrett, J. (2009) Stress levels of school administrators and teachers in November and January. Academic Leadership. Retrieved from http://www.academicleadership.org/emprical_research/618.shtml

Okorji,P., Igbokwe,I., Ezeugbor,O. (2016) Relatıonshıp Between School Clımate And Prıncıpals' Job Performance In Secondary Schools European Scientific Journal February 2016 edition vol.12, No.4 ISSN: 1857 – 7881.

Ramberg, J., Låftman,S.B., Åkerstedt,T., Modin,B. (2020) Teacher Stress and Students' School Well-being: the Case of Upper Secondary Schools in Stockholm, Scandinavian Journal of Educational Research, 64:6, 816-830.

Tien, T.N. (2018) Determinants of Job Satisfaction among Teachers in Vietnam. Journal of Education & Social Policy, Vol. 5, No. 1, March 2018.

Tirosh, O., Eyal, Y. (2018) Socio-economic measures for the Bedouin population in the Negev. Myers- Jdc-Brookdale. Jerusalem (Israel). https://brookdale.jdc.org.il/

Wang, f. ,Pollock,k., Hauseman,c. (2018) School Principals' Job Satisfaction: The Effects of Work Intensification. Canadian Journal of Educational Administration and Policy, 185,73-90.

Weissblai, A. (2017) Education in the Bedouin Society in the Negev: Situation. Knesset: Research and Information Center.

WHAT MOTIVATES CUSTOMERS TO RECYCLE? SUSTAINABLE CONSUMER BEHAVIOUR

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Abstract: *Pollution is a problem that humanity faces more and more frequently. Every day we generate increasing amounts of waste and consume more and more exhaustible resources. In this sense, recycling can be considered the response of consumers to the appearance of pollution, being a mediatized concept in the public space. Both through these sources and through the lens of companies, the concept of "recycling" is brought to the attention of consumers. Starting from these considerations, this research aims to identify the best ways to motivate people, as well as analyze recycling behaviour in case of offering a reward. Thus, the research questions are "Do rewards motivate consumers to recycle?" "Do consumers only recycle in the presence of incentives for recycling?" To provide answers to these questions, we started a research together with the retailer Profi Romania. Thus, as part of a pilot project, SGR machines were installed that allow the recycling of plastic packaging and aluminum cans, with customers receiving a reward in the form of a voucher for the recycled packaging. The data provided by the retailer include information on the number of recycled packaging, its type, and weight, as well as the number of vouchers issued and their value. In this case, it was possible to observe the recycling behaviour of consumers under the conditions of offering vouchers, respectively how this behaviour evolves in the absence of incentives for recycling. Most of the studies carried out and presented in the literature analyze aspects related to the importance of recycling, the pillars on which it is based, respectively the types of materials that we should recycle, and under what conditions. The element of novelty that this research brings to the specialized literature is represented by the consideration of motivations (intrinsic, but also extrinsic), considering the recycling behaviour of consumers as a consequence of the motivations that the customer experiences. The results obtained can be generalized for the Fast-moving consumer goods (FMCG) field, the information showing interest for the entire retail field.*
Keywords: *sustainable behaviour; recycling; fast-moving consumer goods; incentives for recycling; retail; Profi Romania*

JEL Classification: *Q01; Q56; L81*

1. Introduction

Recycling has become an integral part of the modern lifestyle, with people realizing the importance of reducing waste and conserving resources. Recycling involves the process of collecting and reprocessing materials that would otherwise be discarded as waste and turning them into new products. This helps to conserve natural resources, reduce pollution, and save energy.

Plastic packaging is one of the most ubiquitous materials in modern life, found in everything from food containers to consumer products. However, plastic packaging is also a major contributor to the waste stream, with millions of tons ending up in landfills each year. Recycling plastic packaging is an essential step toward reducing waste and promoting sustainability.

Recycling has become a crucial element in our efforts towards a more sustainable future. However, despite the clear benefits of recycling, many individuals still do not recycle regularly. One of the key factors in encouraging behaviour change toward recycling is motivation. Also, incentives can be a powerful motivator to encourage recycling behaviour.

2. Literature review

Recycling helps to conserve natural resources by reducing the need for raw materials. For instance, paper can be recycled and made into new paper products, which reduces the need to cut down trees for pulp production. The same goes for other materials like metal, plastic, and glass, which can be recycled and turned into new products instead of extracting virgin resources. According to the United States Environmental Protection Agency (EPA), recycling 1 ton of paper can save 17 mature trees, 7,000 gallons of water, and 3 cubic yards of landfill space (EPA, 2021a).

Recycling also helps to reduce pollution by diverting waste from landfills and incinerators, which can release harmful gases and chemicals into the environment. When organic waste like food scraps and yard waste decompose in landfills, they produce methane, a potent greenhouse gas that contributes to climate change (EPA, 2021a). Recycling these materials reduces the amount of waste sent to landfills and reduces the amount of methane produced. Recycling also reduces the energy required to extract, transport, and process raw materials, which reduces the amount of greenhouse gas emissions from these activities.

Recycling also saves energy by reducing the need for energy-intensive processes like mining, refining, and manufacturing. According to the EPA, recycling

aluminum cans can save up to 95% of the energy required to produce new cans from virgin materials (EPA, 2021a). Recycling also saves energy by reducing the amount of waste that needs to be transported and processed. For instance, recycling plastic bottles can save up to 80% of the energy required to produce new bottles from virgin materials (EPA, 2021a).

2.1. Recycling Plastic Packaging

Recycling plastic packaging offers several environmental benefits, including reducing the amount of waste sent to landfills and conserving natural resources. According to the Environmental Protection Agency (EPA), recycling 1 ton of plastic packaging can save up to 5,774 kWh of energy and reduce greenhouse gas emissions by 1.6 metric tons of carbon dioxide equivalent (EPA, 2021a). Recycling plastic packaging also reduces the amount of virgin plastic needed for new products, which conserves natural resources and reduces the energy required for extraction and processing.

While there are numerous benefits to recycling plastic packaging, there are also significant challenges in implementing effective recycling programs. One of the biggest challenges is the complexity of plastic packaging itself. Plastic packaging is often made up of multiple layers of different materials, which can make it difficult to separate and recycle effectively. In addition, different types of plastic packaging require different recycling processes, which can be confusing for consumers and municipalities.

Another challenge is the lack of infrastructure for recycling plastic packaging. Many communities do not have the necessary facilities or programs to recycle plastic packaging effectively. This can result in plastic packaging being sent to landfills or incinerated, which is not a sustainable solution.

Despite the environmental benefits of recycling plastic packaging, recycling rates are still relatively low. One reason for this is that not all plastic packaging is recyclable, and some recycling programs only accept certain types of plastic. To increase recycling rates, it is essential to educate consumers about what types of plastic packaging can be recycled and how to properly prepare them for recycling.

Another way to increase recycling rates is to improve access to recycling programs. Many communities do not have access to curbside recycling programs, and even when programs are available, they may not be convenient or accessible to all residents. To address this issue, some companies have implemented take-back programs that allow consumers to return used packaging to the manufacturer for recycling.

In addition, some companies are exploring new technologies to improve the recyclability of plastic packaging. For example, some companies are developing plastic packaging that can be easily recycled using existing recycling infrastructure, while others are exploring new recycling technologies like chemical recycling that can convert used plastic into new products.

2.2. Motivation to Recycle

Motivation refers to the internal and external factors that drive individuals to act in a particular way. In the context of recycling, motivation can be classified into intrinsic and extrinsic motivation. Intrinsic motivation refers to the inherent desire to recycle, driven by a personal sense of responsibility towards the environment. Extrinsic motivation, on the other hand, refers to the external factors that encourage individuals to recycle, such as financial incentives or social norms (Chen et al., 2021).

Studies have shown that intrinsic motivation is a more effective driver of behaviour change in recycling compared to extrinsic motivation. For instance, a study conducted by Chen and colleagues (2021) found that individuals who were motivated by intrinsic factors such as environmental concern and personal values were more likely to engage in recycling behaviour compared to those who were motivated by extrinsic factors such as financial incentives.

To encourage recycling behaviour, it is essential to understand the factors that motivate individuals to recycle. One effective strategy is to appeal to intrinsic motivation by promoting environmental awareness and the benefits of recycling. For example, educational campaigns that emphasize the positive impact of recycling on the environment and community can inspire individuals to act more sustainably. Another effective strategy is to make recycling more convenient and accessible. This can include providing easily accessible recycling bins, ensuring that recycling information is readily available, and implementing curbside recycling programs. By making recycling more convenient, individuals are more likely to incorporate recycling into their daily routines.

Finally, social norms can be a powerful motivator for recycling behaviour. By highlighting the prevalence of recycling in the community and the positive impact it has on the environment, individuals are more likely to perceive recycling as a social norm and engage in recycling behaviour as a result.

Several factors influence people's decision to recycle, including attitudes, social norms, convenience, and knowledge. Attitudes towards recycling are a key driver of recycling behaviour. People who believe that recycling is important for the environment and that their actions can make a difference are more likely to recycle

(Schultz et al., 2007). Social norms, or the perceived expectations of others, can also influence recycling behavior. People are more likely to recycle when they believe that their peers and community members value recycling (Dietz et al., 2002). Convenience is another factor that influences recycling behavior. People are more likely to recycle when recycling programs are easily accessible and convenient. For example, curbside recycling programs are more effective than drop-off programs because they require less effort on the part of the consumer (Gleim et al., 2016). Finally, knowledge and awareness of recycling programs and their benefits can also motivate recycling behaviour. People who are informed about the environmental and economic benefits of recycling are more likely to participate in recycling programs (Steg & Vlek, 2009).

2.3. Incentives for recycling

Incentives can take many forms, including rewards and punishments. Rewards are positive incentives that are given to people who recycle. Rewards can include financial incentives, such as rebates, discounts, and tax credits, or non-financial incentives, such as public recognition and social approval. Punishments are negative incentives that are given to people who do not recycle. Punishments can include fines, fees, and other penalties (Hopper & Nielsen, 1991).

Research has shown that incentives can be effective in promoting recycling behaviour. A study conducted by the Environmental Protection Agency (EPA) found that offering financial incentives, such as discounts on garbage fees, can increase recycling rates by up to 30% (EPA, 2019). Another study found that offering non-financial incentives, such as social recognition, can also be effective in promoting recycling behaviour (Hopper & Nielsen, 1991).

The effectiveness of incentives can be influenced by several factors, including the type of incentive, the amount of the incentive, and the target audience. Financial incentives are generally more effective for people who are motivated by financial gain, while non-financial incentives are more effective for people who are motivated by social approval (Schultz et al., 2007). The amount of the incentive can also influence its effectiveness, with larger incentives generally being more effective than smaller ones (Gächter & Renner, 2010).

In addition, the target audience can influence the effectiveness of incentives. Different incentives may be more effective for different age groups, income levels, and educational backgrounds. For example, a study found that financial incentives were more effective in promoting recycling behaviour among low-income households, while social recognition was more effective among high-income households (Lokhorst et al., 2013).

Financial incentives are one of the most common strategies used to encourage recycling behaviour. These incentives can include monetary rewards, such as cash payments or tax credits, for recycling certain materials. Studies have shown that financial incentives can be effective in increasing recycling rates, particularly for materials that are difficult to recycle or have low market value (Kinnaman & Fullerton, 1998). However, financial incentives may not be effective for all types of recyclable materials and may be costly to implement on a large scale.

Non-financial incentives can also be effective in encouraging recycling behaviour. These incentives can include rewards such as discounts, coupons, or other benefits that are not monetary. For example, some recycling programs offer incentives such as free compost or energy-efficient light bulbs to participants. These types of incentives can be more cost-effective than financial incentives and may be more appealing to individuals who are motivated by environmental or social goals (Van Houten et al., 1989).

3. Methodology

To carry out this research, we took into account one of the most important retailers in Romania, active in the field of fast-moving consumer goods (FMCG), PROFI Romania.

Fast-moving consumer goods (FMCG) are a type of consumer product that is in high demand and have a rapid turnover rate. These products are typically low-priced and are sold in large quantities, making them an important part of the global economy. FMCG products include everyday items such as food, beverages, personal care products, and household cleaning products. The FMCG industry is a critical part of the consumer goods sector, and its growth has significant impacts on the global economy.

As part of a partnership with this company, we set out to track the recycling behaviour of consumers regarding plastic packaging or aluminum cans. Thus, through a pilot project, the PROFI retailer has installed SGR machines that allow the recycling of these packaging in some stores in Timisoara, Cluj-Napoca, and Bucharest. For recycled packaging, customers received a voucher that could be used in stores during subsequent visits. The information presented was collected between November 2022 – March 2023.

4. Results and discussions

Studies show that at the level of our country, the consumer segment that is most involved in the recycling process is represented by members of Generation Z.

According to statistics, four out of ten Gen Z representatives reused plastic packaging, and one in fifth avoided buying it to fight climate change. So, by analyzing the behaviour of young people, we can mention that they adopt different measures to combat climate change (Figure 1).
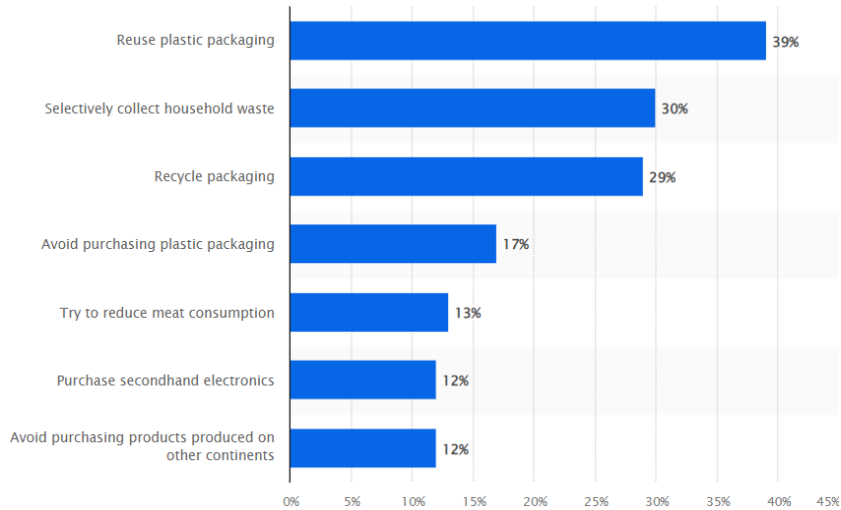
Figure 1: Top five actions against climate change
Source: (Statista.com, 2022)

The data collected with retailer PROFI reflects the recycling behaviour not only for members of Generation Z but for the entire segment of consumers that the retailer has. Thus, there was no customer segmentation according to demographic variables (age, gender, income, education, etc.) or psychographic variables (personality, lifestyle, etc.). Considering the territorial distribution of the stores, the locations included in the pilot project were Timisoara (one store), Bucharest (4 stores), and Cluj-Napoca (one store). Recycled packaging consisted of aluminum cans, plastic PET, and bottles.

Figure 2 reflects the recycled packaging in December. During that period, most vouchers were issued, and the number of recycled packaging is shown in the image below.
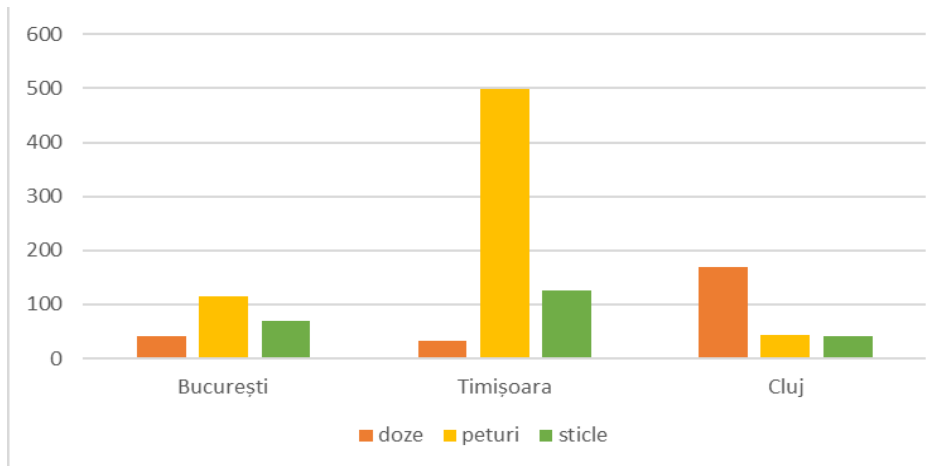
Figure 2: Recycled packaging in December 2022
Source: made by the authors

According to the graph, the most recycled packaging was plastic bottles, this aspect being also because most products are sold in this packaging.

For January, the packaging recycling situation is presented in Figure No. 3.
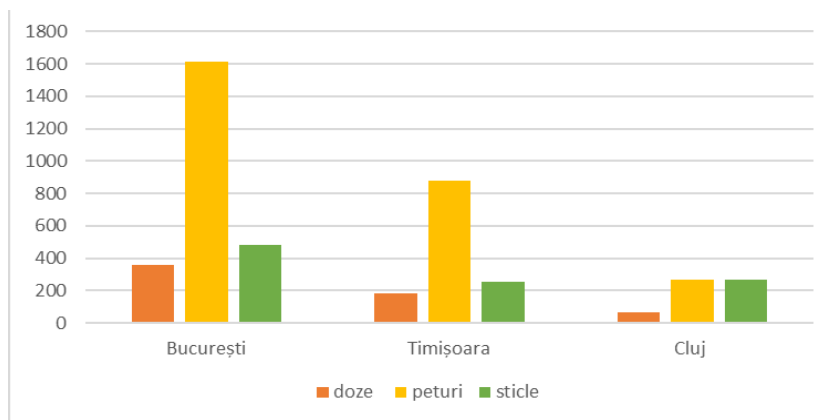
Figure 3: Recycled packaging in January 2023
Source: made by the authors

According to the results of profi Romania, a significantly lower number of vouchers were issued in January compared to December. However, the number of recycled packaging has increased for most stores, which indicates the desire of customers to get involved in the recycling process and protect the environment, to have a cleaner community and a healthier environment, not only because of the material rewards they would receive as a result of the recycling process.

Of course, it is important to remember that the collected data is obtained considering a very small number of stores, from the largest cities of the country. Thus, there is a

possibility that by expanding the sample and installing recycling machines also in stores in smaller towns or rural areas, the results may not be as gratifying or the motivation to recycle may be material.

For example, regarding the circular material use rate, at the level of the European Union, Romania is the only country that recorded a decrease at the level of 2020, compared to 10 years ago (Figure 4).
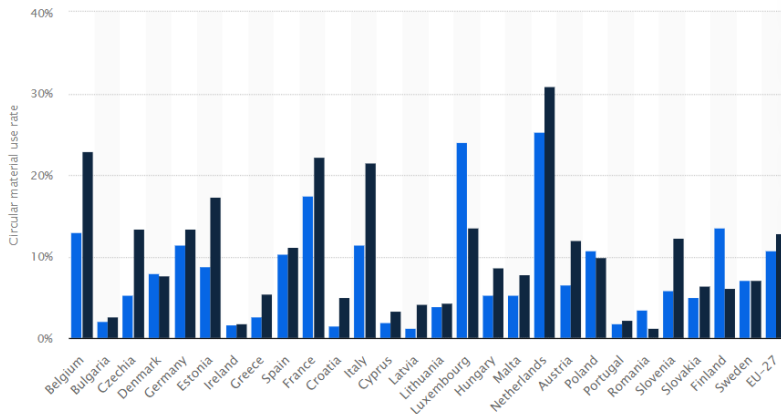
Figure 4: Circular material use rate in the European Union, by country
Source: (Alves, 2023)

5. In conclusion

Recycling is a critical step toward achieving sustainable development. By conserving natural resources, reducing pollution, and saving energy, recycling helps to create a more sustainable and resilient society. However, recycling alone is not enough to address the environmental challenges we face. It is essential to reduce consumption, reuse materials, and design products that are easier to recycle. By working together to reduce waste and promote sustainable practices, we can create a healthier and more sustainable world for future generations.

Recycling plastic packaging is an important step towards reducing waste and promoting sustainability. By reducing the amount of plastic sent to landfills, conserving natural resources, and reducing greenhouse gas emissions, recycling can help to create a more sustainable and resilient society. To increase recycling rates, it is essential to educate consumers, improve access to recycling programs, and explore new technologies to improve the recyclability of plastic packaging.

Motivation plays a crucial role in promoting recycling behaviour. By understanding the factors that drive behaviour change and implementing effective strategies, we can encourage individuals to recycle and contribute to a more sustainable future. By appealing to intrinsic motivation, making recycling more convenient and accessible,

and highlighting social norms, we can inspire individuals to act more sustainably and promote a more sustainable society for future generations.

Incentives can be a powerful tool to promote recycling behaviour. Financial and non-financial incentives, such as discounts, tax credits, public recognition, and social approval, can all be effective in motivating people to recycle. However, the effectiveness of incentives can be influenced by several factors, including the type of incentive, the amount of the incentive, and the target audience. By tailoring incentives to the needs and preferences of different groups, we can create more effective and sustainable recycling programs.

6. Acknowledgements

References
1. Alves, B. (2023, 04 17). *Circular material use rate in the EU-27 2010-2020, by country.* Available Statista.com: https://www.statista.com/statistics/1316475/circular-material-use-rate-in-european-union-by-country/
2. Chen, M., Tung, P., & Chen, S. (2021). Motivational factors influencing recycling intentions of residents in Taiwan. *Journal of Cleaner Production*, 315, 128112. doi:10.1016/j.jclepro.2021.128112
3. Dietz, T., Stern, P., & Guagnano, G. (2002). Social structural and social psychological bases of environmental concern. *Environment and Behavior*, 34(4), 450-471.
4. EPA. (2019). *Recycling incentives*. Available Environmental Protection Agency: https://www.epa.gov/recycle/recycling-incentives
5. EPA. (2021a). *United States Environmental Protection Agency*. Available Recycling Basics: https://www.epa.gov/recycle/recycling-basics
6. EPA. (2021b). *Advancing Sustainable Materials Management: Facts and Figures.* Available Environmental Protection Agency: https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/advancing-sustainable-materials-management
7. Gleim, M., Smith, J., Blake, R., & Garris, R. (2016). Effectiveness of curbside recycling: An empirical estimation of recycling rates. *Journal of Environmental Management*, 172, 111-119.
8. Hopper, J., & Nielsen, J. (1991). Recycling as altruistic behavior: Normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, 23(2), 195-220.
9. Kinnaman, T., & Fullerton, D. (1998). The economics of residential solid waste management. *Journal of Economic Perspectives*, 12(4), 159-177.

10. Lokhorst, A., Werner, C., Staats, H., van Dijk, J., & Gale, J. (2013). Commitment and behavior change: A meta-analysis and critical review of commitment-making strategies in environmental research. *Environment and Behavior*, 45(3), 233-256.

11. Schultz, P., Nolan, J., Cialdini, R., Goldstein, N., & Griskevicius, V. (2007). The Constructive, Destructive, and Reconstructive Power of Social Norms. *Psychological Science*, 18(5), 429-434. doi:10.1111/j.1467-9280.2007.01917.x

12. Statista.com. (2022, 09 13). *Energy & Environment - Climate and Wheather*. Available Statista.com: https://www.statista.com/statistics/1320718/romania-direct-actions-to-fight-climate-change-by-gen-z/

13. Steg, L., & Vlek, C. (2009). Encouraging Pro-Environmental Behavior: An Integrative Review and Research Agenda. *Journal of Environmental Psychology*, 29, 309-317. doi:10.1016/j.jenvp.2008.10.004

14. Van Houten, R., Nau, P. A., & Merrigan, M. (1989). Reducing litter along highways: A behavioral analysis. *Journal of Applied Behavior Analysis*, 22(3), 319-327.

THE IMPACT OF DIGITAL TRANSFORMATION ON STRATEGIC MANAGEMENT

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Abstract: *Currently, there are many discussions about the impact of digital transformation on company management, with success primarily reliant on firms' ability to adapt to new market demands. Consequently, to maintain their positions or to evolve, companies across all industries need to regularly update their structures and ideals in line with digital transformation. Although the precise definition of digital transformation is still unclear, as evidenced by inconsistencies in the literature, it is already influencing management practices carried out by companies. The goal of this paper is to analyze the impact of digital transformation, with its highly dynamic characteristics, on strategic management. In this sense, we perform a literature review of the papers which describe how the two topics are related. We discover that strategic management has evolved in response to digital transformation as conventional managerial practices nowadays would no longer work at maximum efficiency. Strategic management has changed, adopting new features, most notably faster decision-making and less arduous tasks for top managers, allowing them to focus exclusively on performing tasks that match their specific competencies. These results are useful for both practitioners and researchers in performing their daily strategic management activities, and research efforts, respectively.*

1. Introduction

In the last 10 years, there has been so much interest in the study of digital transformation that even the business world has become interested in studying this phenomenon, in addition to researchers, who already have the study as their main activity (Rêgo et al, 2021). Additionally, most businesses are under strong pressure to revamp their operating systems in compliance with the new regulations introduced by digital transformation (Rêgo et al, 2021). Despite the attention given

to digital transformation, its meaning is not completely comprehended, leading to some differences that may occur in studies (Gong & Ribiere, 2021).

Strategic management has long been a crucial element of the economy, but it is necessary to update principles over time in response to changing market demands. The dynamic nature of the digitalization process has prompted changes in strategic management practices, highlighting the significant influence of digital transformation on this field. The emergence of digital transformation has brought changes in strategic management, particularly in the incorporation of technology into its processes. As a result, top managers can now focus on identifying and solving the critical issues that arise in a company, utilizing their specialized competencies, while technology assists with the less complex tasks. Until the advent of technology, strategic problem-solving managers were faced with various impediments that caused them to lose time and concentration. However, the research on the impact of digital transformation on strategic management, although it is acknowledged that digital transformation affects various aspects of modern society, has been less considered in the literature.

In this context, we aim to contribute to the rather unanswered question of how digital transformation affects strategic management. In this regard, we perform a literature review of the most visible papers, analyzing how these topics are interrelated, by considering the most relevant articles concerning digital transformation and strategic management, such as Vial et al. (2019) and Ribiere (2020). These have been analyzed by concerning the changes they identify concerning strategic management and changes associated with the digital transformation phenomenon.

The article has the following structure, by considering the major topics identified while reviewing the articles: in the first part, we describe the concept of digital transformation, followed by a discussion on the role of the leader in the digital era. The third section analyzes the impact of digital transformation on strategic management, and the last part concludes.

2. The Digital Transformation Phenomenon

Nowadays, technology seems to be taking over more and more spheres of activity, and many companies redesigning their business in such a way that without technology they would be unable to operate. Practically, the whole of society has become dependent on technology. The development of digitization has led to a strong change in business around the world. Thus, companies, regardless of their industries or age, are encouraged to adapt their business model, including aspects related to digital transformation. It is important to do this to count on the market (Fernandez-Vidal et al., 2022). The emergence of digital technologies has also

fundamentally changed both the nature and scope of existing market competition and consumer behavior (Wrede et al, 2020).

Many industry leaders are referring to this technology transformation as a digital transformation. This term is used to describe various strategic and organizational changes (Gong and Ribiere, 2021), and due to its complexity, it involves numerous scientific disciplines, while having a direct impact on professional practice (Gong and Ribiere., 2021). Although existing studies support the fact that the level of research depth for digital transformation is deepening, it is evident that there are gaps in understanding this concept (Gong and Ribiere, 2021), and these gaps leave their profound mark on the many levels of analysis (Vial, 2019), which creates various contradictions in field studies (Gong and Ribiere, 2021). At the same time, academics and practice groups do not share the same views on digital transformation's fundamental and actionable features of this digitization process (Gong and Ribiere, 2021), and the understanding of the essence of this concept is lost. However, despite its complexity and understanding by the literature, digital transformation requires continuous evolution of all scientific disciplines to achieve scientific progress and build sustainable knowledge (Gong and Ribiere, 2021). It is also very important that this progress is achieved through a more careful and systematic differentiation, leading to an improvement in the complexity of the process (Mertens and Wiener, 2018). Observing the trend in the global economy, companies around the world have redefined themselves through digital transformation. These have been defined by Vial (2019) as a process that generates strategic and operational changes in the company as a result of opportunities and threats generated by digital technologies.

Digitalization has resulted in a complete redefinition of the entire economy. The degree of international competitiveness between new digital companies, being companies founded recently, thus young firms, and traditional companies, well developed over time and stable over the years, is an extremely strong example to argue this hypothesis. In 2004, the S&P 500 stock market index ranked General Electric, Exxon Mobil, Microsoft, Citigroup, and Walmart (Wrede et al, 2020) as the most valuable companies at the top of the ranking, with only one digital company in the true sense of the word, the others being in the traditional economic categories. A re-examination of the rankings 15 years later revealed a radical change in the companies at the top, including a radical change in the field in which they operated, with digital companies taking the lead. These are Apple, Alphabet, Amazon, and Facebook (Wrede et al, 2020).

Digital transformations in companies can be divided into 3 categories: automation, extension, and transformation (Rego et al, 2021). Automation refers to the use of

digital technologies by a company to automate its entire business or to improve processes and activities that the company currently carries out without using digital technology. The extension illustrates cases where a company uses digital technologies to support the development of alternative ways of doing business, ways that complement but do not replace the processes and activities that the company currently carries out. Transformation is when digitization is used in the business process, renewing its core techniques.

Many companies are currently undergoing digital transformation. According to a Deloitte survey from 2020, 87% of CEOs consider digital transformation an important strategic goal of their business. This statistic is extremely encouraging, highlighting the benefits of digital transformation for companies, businesses, and society. However, digital transformation also brings numerous challenges, one of the most generally valid is that of throwing the company into unknown, uncharted territory, which can stir up anxiety and resistance among some managers and, in particular, employees. All employees need to be part of the digital transformation, the digital transformation being in essence the equivalent of a comprehensive transformation of the entire business.

Digital transformation has emerged in companies across the economy, from manufacturing to companies operating in areas such as healthcare and education. Companies have transformed their business model, using digital technologies to stay competitive in the marketplace. Failing to adapt to the digital economy can result in "Digital Darwinism," where businesses that resist change risk being replaced by more adaptable competitors. Digital transformation has an important impact on consumer behavior. Consumers' purchasing habits have shifted, increasingly preferring online purchases. The increasing volume of online sales reflects this shift in purchasing habits. According to Statista, in 2019, online commerce (e-Commerce) held a 14.1% share of total global sales, but researchers predict it will grow to 22% of total global sales by 2023.

3. Strategic management and digital transformation

"*In times of change, the greatest danger is to act with yesterday's logic*." Peter Drucker (1909-2005)

Companies have undergone several changes as a result of the digitization and climate change processes enabled by modern technologies. These changes require new skills from top management, particularly in developing the company's human resources (Vidal et al, 2022).

For a company to successfully cope with the changes brought by digitization, strategic/top management must initiate certain changes. But to initiate this change process, top management must first be convinced that a change is needed both in terms of the current top management activity and structure, as well as in terms of the company in all aspects that can influence the company's productivity. It is also necessary for top management to recognize the positive effects of the proposed changes to drive the change process forward. The chosen change process must bring success to the organization, as well as its development in various aspects. The motivation for change coming from strategic management is given by the desire to cope with the increasing competition in the market and the desire to run a digital company. Thus, one of the most widely used and simplest ideas for company change, used by top management, is to abandon old habits and paradigms in favor of new organizational cultures that prioritize digitalization. It is important to note that digital transformation is not possible without a leader who creates the platform on which it can develop and leads stakeholders toward concrete action. This shows how important leadership is to a company's digital transformation, regardless of the nature of its business. The leader is the person who provides thoughtful application of technology to drive the company toward sustainable company development (Graima Sainger, 2018).

For top managers/strategic managers and those who are considered by companies as playing a key role in their leadership, (Wrede et al, 2020) digital transformation represents a change in the decision-making context, which inevitably leads to real challenges. Because digitization is a relatively new process, top managers cannot rely on already known and proven approaches. Instead, a new assessment of the company's current situation is needed, to create new responses that meet new requirements in the market (Wrede et al, 2020).

The role of managers is critical in the smooth running of organizations. In the new context, where digitalization dominates the economy, managers have roles adapted to this situation, so that in addition to their classic responsibilities, they will have the obligation to coordinate changes in the company. Given the expanding roles of managers, it is understandable that the challenges arising from digital technologies and digital transformation processes necessitate the development of new skills and capabilities from managers. The literature is increasingly focused on identifying the key skills required for leaders in a digitized market. Many studies are analyzing these skills to promote harmonious development. However, researchers are questioning the extent to which digital companies require different leadership skills compared to traditional ones (Cortellazzo et al, 2019).

The literature emphasizes several key skills necessary for a leader during digital transformation, including effective communication through digital media, quick decision-making, adeptness at managing connectivity, and technical proficiency.

Communicating through digital media

Due to global interconnectivity and the fact that information is transmitted at an astonishing speed, the degree of competition in the market has greatly increased and digital companies have to cope with the various changes occurring in this very environment, both in terms of customer preferences and those arising from the evolution of technology (Wrede et al, 2020)
Thus, top managers should apply a more comprehensive way of leadership (Wrede et al., 2020), considering to a large extent the ideas of subordinates. Considering the ideas of non-managerial employees is extremely important, as they are the ones who implement all decisions made by strategic management, and at the same time, they are the ones who first realize whether the ideas put into practice are effective or not. Also, without executing employees, top managers would not be able to perform their roles in companies. Adopting a two-way style of interaction and communication enables leaders to gain direct insight into employee perspectives on changes, increasing their sense of importance. At the same time, researchers argue that giving employees more autonomy and the opportunity to participate in the management of the company will substantially increase their sense of responsibility for the work they do and their attachment to the company. This, in turn, should lead to a need to control their behavior, a function previously exercised by managers (Wrede al., 2020)

Rapid decision-making

The advent of technology in companies has profoundly changed organizational life from many perspectives, one of which is the increasing speed. Studies indicate that digital firms are being forced to make decisions faster (Cortellazzo et al, 2019). This context suggests that digital leaders should possess specific skills, such as decisiveness and the ability to solve problems effectively (Cortellazzo et al, 2019)
To cope with different situations, leaders must first tolerate ambiguity but also prove creativity (Cortellazzo et al, 2019). In the digital world, leaders must scrutinize problems and provide answers to various situations that arise within companies. With the use of information technology, leaders can make more informed decisions. Therefore, the ability to process large volumes of data (input/output - Big Data),

analyze and prioritize them for decision-making has become and will continue to be important for a leader's activities in the future.

Managing connectivity

In the current era, leaders operate in a highly interconnected environment, especially with the ubiquity of social networks and other digital platforms, which offer new opportunities by facilitating access to a larger group of people.

Studies argue that digital leaders need to boost their networking skills, as doing so will enable them to identify various opportunities more easily. As innovation has become a top priority for many digital leaders, they need to understand how they can reap the benefits of networking (Cortellazzo et al, 2019). Also, in addition to the need to explore and obtain both resources and stakeholder support (Cortellazzo et al, 2019), leaders need to develop their social interaction abilities, as these appear to play an extremely important role in innovation development.

While any leader must have the ability to maintain social relationships with various stakeholders, an effective leader is differentiated by the ability to recognize those relationships that will lead to tangible benefits (Cortellazzo et al, 2019).

Several other essential skills define a successful manager in the context of digital transformation, including agility, which refers to the ability to foresee market opportunities that arise from digital technologies and to act upon them quickly and adaptively.

Additionally, possessing advanced technical and digital capabilities and a deep understanding of how digital technologies can enhance the company's competitiveness, are almost indispensable traits for new managers.

4. The impact of digital transformation on organizational strategies

There is no doubt that digital technologies are almost ubiquitous in everyone's life lately (social networks, mobile phones, cloud) and have a huge impact on both organizations' and individuals' personal lives (Colbert, Yee, & George, 2016). Thus, organizations must reevaluate their entire business model, including the provided products and services, to align with the new concept of digital transformation (Rego et al, 2021), integrating all these new technologies into the new business systems because competition in markets is increasing and digitization is perceived as the future of all humanity. To compete successfully in a digital world, companies need to attract skilled employees who are familiar with the latest technological developments. Successful digital transformation is recommended to involve both

re-engineering and optimizing all processes in a given company in a way that is fully in line with the strategy adopted by the company.

Digital transformation considerably influences the different stages of the innovation process in an extremely complex and sometimes ambiguous way, due to the extremely wide variety of technologies used, but also due to the numerous ways in which digitization claims to increase the performance of goods and services, respectively.

Digital transformation strategies are important because they reflect the pervasiveness of changes brought about by digital technologies in an organization (Chanias and Hess, 2016). To keep pace with the evolving market demands, organizations need to re-evaluate their traditional business models that have been solid for many decades. While these models have proven their effectiveness, with the economy in constant change and enterprises needing to keep up with new market demands, companies need to transform their business models to adapt to these trends (Kotarba, 2018; Riasanow et al., 2017).

Although many studies attempt to provide a standard process for the digital transformation of companies that is generally successful, digital transformation is a different, particular process that applies to different companies in many ways, so it is impossible to generate a standard recipe for the digitization that is generally successful, as each company creates its process.

Digital transformation has many benefits for companies, including financial benefits. According to a study by the Massachusetts Institute of Technology, companies that have gone digital are 26% more profitable than normal companies.

An important element of digital transformation is illustrated by establishing a strategy based on a clear vision for business development and addressing the opportunities offered by new technologies. Without establishing such a strategy, the vast majority of companies focus more on the technological process, instead of the main focus falling on customer needs and determining the most efficient way to meet them.

Thus, digital transformation can be considered successful if the company has a well-developed strategy that is always up-to-date with the changes that are constantly occurring in the market, and also strong leadership. To implement a digital transformation of the company, changes are needed in key aspects of the company, such as strategy, leadership, and organizational culture. Business practice studies have shown that a successful digital firm needs to meet several conditions, some of which are: having a developed strategy, top management commitment to change, active involvement of all employees in the digitization process; and a company-wide focus on customer needs and interests.

Studies in the field of information systems have long shown that digital transformation within a company implies radical changes for that organization (Scott Morton, 1991). Changes often also involve numerous challenges, and in the case of digitization of the activity of a business entity, these most often have to do with the strategy and the realization of extremely rapid digitization (Markus and Benjamin 1997), the complete reorganization of processes within the firm, but also with the organizational structure and the existing culture (Ashurst et al. 2008).

One of the main impacts of digital transformation refers to project management. Mobile hardware, cloud computing, and integrated software are just some of the benefits it has brought in practical ways to the lives of companies everywhere. These digital tools are currently used for data storage, automated information search, and simulation functions (Whyte, Sta-sis, and Lindkvist, 2016). Thanks to cloud-based technologies, contacts with customers or product recipients are changing and can also be done remotely (Guinan, Parise, and Langowitz, 2019).

5. Conclusion

Digital transformation is now a reality rather than a utopian concept. It has become so pervasive in today's economy that the majority of strategic managers cannot envision running their day-to-day business without it. Furthermore, we can now say that the digital transformation of any company's activity is a criterion for economic success since it has an impact not only on the economy but on society as a whole. Moreover, it has changed market requirements to the extent that customers demand that certain services be digitized. Basic digitization involves simple and natural tasks, such as presenting products and services online and electronic invoicing.

Digitization means evolution. Our stance is supported by research on several companies that have revolutionized their operations using digital principles. The findings indicate that digitization has only served to simplify people's tasks by automating manual and repetitive tasks that don't require human intelligence. As far as strategic management is concerned, the main responsibility of a top manager is to enhance a company's value, while influencing the factors that are beneficial to the organization.

At the same time, for a strategic manager, the most important resource is time. Digitization significantly transforms strategic managers' work styles by simplifying their tasks. Through technology, unimportant activities can be automated, allowing them to concentrate exclusively on accomplishing vital objectives within their area of expertise. Digitization also enables strategic managers to carry out planned tasks in a shorter time while accessing superior-quality information from numerous digital sources, diminishing the need to filter and assimilate data.

Bibliography

1. Ashurst, C., Doherty, N.F., Peppard, J., 2008. Improving the impact of IT development projects: the benefits realization capability model. European Journal of Information Systems 17, 352–370.

2. Babin, R., Grant, K., 2019. How do CIOs become CEOs? Journal of Global Information Management (JGIM) 27, 1–15.

3. Chanias, S., Myers, M.D., Hess, T., 2019. Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. The Journal of Strategic Information Systems 28, 17–33.

4. Colbert, A., Yee, N., George, G., 2016. The digital workforce and the workplace of the future. Academy of management journal.

5. Cortellazzo, L., Bruni, E., Zampieri, R., 2019. The role of leadership in a digitalized world: A review. Frontiers in psychology 10, 1938.

6. Fernandez-Vidal, J., Perotti, F.A., Gonzalez, R., Gasco, J., 2022. Managing digital transformation: The view from the top. Journal of Business Research 152, 29–41.

7. Gong, C., Ribiere, V., 2020. Developing a unified definition of digital transformation. Technovation 102217.

8. Guinan, P.J., Parise, S., Langowitz, N., 2019. Creating an innovative digital project team: Levers to enable digital transformation. Business Horizons 62, 717–727.

9. Hausberg, J.P., Liere-Netheler, K., Packmohr, S., Pakura, S., Vogelsang, K., 2019. Research streams on digital transformation from a holistic business perspective: a systematic literature review and citation network analysis. Journal of Business Economics 89, 931–963.

10. Kotarba, M., 2018. Digital transformation of business models. Foundations of Management 10, 123–142.

11. Li, F., 2020. The digital transformation of business models in the creative industries: A holistic framework and emerging trends. Technovation 92, 102012.

12. Llopis-Albert, C., Rubio, F., Valero, F., 2021. Impact of digital transformation on the automotive industry. Technological forecasting and social change 162, 120343.

13. Mertens, P., Wiener, M., 2018. Riding the Digitalization Wave: Toward a Sustainable Nomenclature in Wirtschaftsinformatik: A Comment on Riedl et al.(2017). Business & Information Systems Engineering 60, 367–372.

14. Noja, G., Pânzaru, C., 2021. Five Possible Impacts of Digitalisation in Romania. European Review of Applied Sociology 14, 1–10.

15. Piccinini, E., Hanelt, A., Gregory, R., Kolbe, L., 2015. Transforming industrial business: the impact of digital transformation on automotive organizations.

16. Rêgo, B.S., Jayantilal, S., Ferreira, J.J., Carayannis, E.G., 2021. Digital transformation and strategic management: A systematic review of the literature. Journal of the Knowledge Economy 1–28.

17. Riasanow, T., Galic, G., Böhm, M., 2017. Digital transformation in the automotive industry: towards a generic value network.

18. Sainger, G., 2018. Leadership in digital age: A study on the role of leader in this era of digital transformation. International Journal on Leadership 6, 1.

19. Schwertner, K., 2017. Digital transformation of business. Trakia Journal of Sciences 15, 388–393.

20. Vial, G., 2019. Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems 28, 118–144.

21. Whyte, J., Stasis, A., Lindkvist, C., 2016. Managing change in the delivery of complex projects: Configuration management, asset information and 'big data.' International journal of project management 34, 339–351.

22. Wrede, M., Velamuri, V.K., Dauth, T., 2020. Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. Managerial and Decision Economics 41, 1549–1567.

THE BENEFITS OF SOFTWARE SOLUTIONS IN MEDICAL PATIENT CARE. A DOCVISER ONCOLOGY CASE STUDY.

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Abstract: *This paper presents a study that looked at the influence of Docviser, an oncology patient management app, on the efficiency and quality of patient care in a hospital context. The research topic was whether doctors could take advantage of Docviser to save time on drug management activities and enhance dosage calculation accuracy. A semi-structured interview with a doctor who had been using Docviser for over a year was conducted. The software considerably reduced the time spent on medication management activities, with treatment administration time cut by at least two hours per patient, according to the data. According to the study, using Docviser provides evident benefits for patient care, such as greater speed and accuracy, as well as improved communication among doctors, pharmacists, and nurses. The findings have significance for medical practitioners, hospital administrators, and governments interested in improving patient care and lowering costs. The study's shortcomings include a small sample size and a narrow area of inquiry, indicating the need for additional research on the app's impact on costs as well as patient outcomes.*

Keywords: *Docviser; Oncology; Patient management; Healthcare technology.*

JEL Classification: *M15; I15*

Introduction

Background and Rationale for the Study
The healthcare industry is facing increasing pressure to provide high-quality patient care while reducing costs and improving efficiency. To address these challenges, healthcare providers are turning to technology, such as software solutions, to help improve patient outcomes and streamline operations (Adler-Milstein, 2017). One such software solution is the Docviser oncology platform, designed to support medical professionals in diagnosing and treating cancer patients. This platform provides physicians with access to a range of features, such as real-time access to

patient data, decision support tools, and patient management features, all of which can contribute to improved patient care.

This research aims to explore the benefits of software solutions, specifically the Docviser oncology platform, in medical patient care from a business perspective. To achieve this, we will conduct a case study of the Docviser platform's impact on patient care outcomes in the oncology department of a county hospital in Romania. We will focus on evaluating the platform's ability to improve patient care, reduce costs, and enhance operational efficiency.

Previous studies have shown the potential of software solutions to improve patient care outcomes, but there is a need for more empirical evidence to support these claims (Lluch, 2011). Furthermore, there is a gap in the literature regarding the business perspective of the benefits of software solutions in healthcare. This study aims to fill this gap by providing insights into the business benefits of the Docviser oncology platform and its impact on patient care outcomes.

The findings of this research will have implications for healthcare providers, policymakers, and software developers. By understanding the benefits of software solutions in medical patient care from a business perspective, healthcare providers can make informed decisions about the adoption of such solutions to improve patient outcomes, reduce costs, and enhance operational efficiency (Topol, 2012). Similarly, software developers can use this research to develop software solutions that better meet the needs of healthcare providers and their patients.

Purpose and Objectives of the Study

This study aims to investigate the operational advantages of software solutions, particularly the Docviser oncology platform, in medical patient care. The paper's specific goal is to assess the effect of Docviser on patient treatment flow in a county hospital's oncology section.

The research aims to accomplish the following specific goals:

- To investigate the effect of the Docviser oncology platform on operational efficacy within the hospital's oncology section, including decreased patient wait periods, increased staff productivity, and better workflow.
- To assess the cost-effectiveness of adopting the Docviser oncology platform within the hospital's oncology section, including possible expense savings and income growth.
- To identify the difficulties and impediments that may hamper the adoption of the Docviser oncology platform within the hospital's oncology section, and to make suggestions for overcoming these obstacles.

The study's results will have far-reaching consequences for healthcare providers, lawmakers, and program developers. The research will shed light on the commercial advantages of healthcare software solutions, such as improving patient outcomes, lowering expenses, and increasing operational productivity. Overall, this research will add to the increasing corpus of writing on the benefits of software solutions in healthcare and will provide critical insights into the Docviser oncology platform's effect on patient care outcomes.

Development of the conceptual framework

Every part of the economy has benefited from the IT industry. The healthcare industry is no different from them. Software solutions are employed to minimize manpower for labour-intensive or time-consuming tasks through automation and benefit from intelligent software solutions that not only store data in electronic form but also expedite the decision-making process. An important scope is also to speed up your business by delivering a service concurrently and providing maintainable and consistent service (Kabakus & Kara, 2016).

In sectors such as trade, media and advertising, lack of digitization means non-existence in the market. With the help of innovative technologies such as machine learning, artificial intelligence, and the Internet of Things (IoT), a significant increase in revenue is expected and the short-term investment is amortized (BÂRU, et al., 2019). Regardless of the degree of digitization, one thing is certain. Any section of the economy requires some degree of digitization to survive in the market. The medical field, which belongs to the service industry, can be said to be a field in which digitization has progressed further. Romania's situation is a little more specific than the situation in Europe and at the global level. According to (Eurostat, 2019), Romania's healthcare expenditure relative to the GDP is 5,74%, which is 4,18% lower than the EU average expenditure, and the third lowest in the entire EU.

Figure 5: Healthcare expenditure relative to GDP in the EU
Source: (Eurostat, 2019)

This is mainly due to the state system in Romania where medical conditions are not always at the highest level (BÂRU, ABRUDAN, FETTI, NICULA, & VOINA-TONEA, 2019). Of course, there are also European-level government agencies with good staff and facilities, but mostly below the EU average. And when it comes to the deficit in healthcare services, digitization is less of a priority than a "must have" and emerges as an ideal usually not found in the investment plans of healthcare institutions.

Also, patient safety has become an increasing concern in recent years. It is estimated that 1 in 10 patients will experience a hospitalization-related adverse event field. The greatest risk factors associated with these events are ineffective care processes, poor communication, and lack of documentation. Hospital communication challenges include large multidisciplinary teams with complex hierarchies managing patient care, large amounts of time-sensitive clinical information, and moving within and between hospitals and healthcare facilities, staff included. Traditional communication platforms such as paging are unreliable and two-way communication is difficult. Furthermore, the digitalization of the Romanian healthcare service sector is a subject of particular importance since there is an obvious crisis in hospitals all around the country from several points of view: from personnel shortages, and basic medical supplies management, to leveraging crucial patient data for research and labour management.

It seems that the Romanian authorities acknowledged these issues, and according to (Ministry of Health, 2022), the government made a commitment in the strategy for 2022-2030 to develop and implement a national eHealth strategy and strategic plan for health information systems that will provide the following goals and interventions:

- construction of an integrated information system in the field of health,

- institutional and technical frameworks for their coordination and management,
- coordinating and consolidating the current information systems administered by the Ministry of Health, the National Health Service, other public agencies in the field and the public health sector,
- development of information systems for decision support,
- interoperability with information systems used by commercial healthcare providers.

The chosen topic thus comes in line with the increasingly obvious realities as a result of Romania's involvement in a new stage of development, thus being a favourable moment for the analysis of a real functioning product, already being used in multiple oncology hospitals in the country, that has outputted amazing results.

Synthesizing and clarifying the concepts of medical IT systems

Medical information technology (IT) systems are a type of software solution that is designed to support healthcare providers in managing patient care. These systems typically include features such as electronic health records (EHRs), clinical decision support tools, patient management features, and other functions that can improve patient care outcomes (Kashyap, 2018). The use of medical IT systems has been shown to improve the quality of patient care, increase efficiency, and reduce healthcare costs (Bates, 2014).

To better understand the benefits of medical IT systems, it is important to clarify some key concepts. Electronic health records (EHRs) are one of the most used medical IT systems. EHRs are digital versions of a patient's medical history and include information such as medications, allergies, test results, and diagnoses. The use of EHRs can improve patient safety and reduce medical errors by providing healthcare providers with real-time access to patient data (Blumenthal, 2011).

Clinical decision support tools are another important component of medical IT systems. These tools can assist healthcare providers in making more informed treatment decisions by providing real-time access to clinical guidelines, treatment recommendations, and other relevant information (Kawamoto, 2005). The use of clinical decision-support tools has been shown to improve patient outcomes and reduce healthcare costs (Bates, 2014).

Patient management features are also commonly included in medical IT systems. These features can assist healthcare providers in managing patient care by providing access to patient data, appointment scheduling, and other important functions (Kashyap, 2018). The use of patient management features has been shown to improve patient satisfaction and reduce healthcare costs (Bates, 2014).

The integration of medical IT systems is an important consideration for healthcare providers. Integration refers to the ability of different medical IT systems to work together and share data seamlessly. The integration of medical IT systems can improve patient care outcomes by providing healthcare providers with a more complete picture of a patient's medical history and treatment plan (Ammenwerth, 2012).

Despite the potential benefits of medical IT systems, there are challenges in implementing them in healthcare settings. One of the main challenges is the cost of implementation, including the cost of purchasing and maintaining the systems, as well as the cost of training healthcare providers to use them (Hillestad, 2005). Additionally, there may be resistance from healthcare providers who are accustomed to traditional paper-based systems (Jha, 2009). Finally, there may be concerns about patient privacy and data security (Blumenthal, 2011).

Medical IT systems, including software solutions such as the Docviser oncology platform, can provide significant benefits in providing documented, effective and high-quality patient care. Electronic health records, clinical decision support tools, and patient management features are some of the key components of medical IT systems. Integration of medical IT systems is important for improving patient care outcomes, but there are challenges in implementing these systems in healthcare settings. By understanding the benefits and challenges of medical IT systems, healthcare providers can make informed decisions about the adoption and integration of these systems to improve patient outcomes, reduce costs, and enhance operational efficiency.

Introducing the Docviser oncology platform

Docviser is a medical platform created for better patient data and treatment management that ultimately results in a more efficient treatment process and predictability. It was developed with the direct participation of medical oncologists and tailored to their needs. Docviser streamlines the flow of information from patients to physicians, medical staff and pharmacists by displaying the real-time status of treatment protocols. It is an app that is paving its way into providing quick care management for cancer patients and provides (Docviser, 2021):

Improved health data collection

Accurate and up-to-date data is critical for providing high-quality medical care, especially when lives are at risk. As a result, the app enables clinicians to gather and save crucial data for each patient, ranging from basic data such as vitals, weight, height, age, and gender to more intricate data such as prior diagnostic and treatment protocols, electronic medical files, and so on. Based on this, there is the potential to

make significant advances in the centralization and efficiency of patient care information. In addition, having electronic health records (EHR) enables the generation of structured data on the patient's health status.
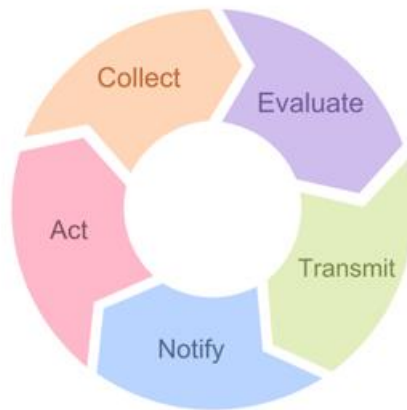
Figure 2: Docviser information flow
Source: Own source

More accurate diagnosis
Because every patient and case is unique, it can be difficult for a doctor to establish an accurate diagnosis in part to the number of variables and aspects that must be considered in the medical sector. As a result, having all the relevant patient health status data consolidated on hand, together with the computational aid of medicine dosage and creatinine, makes it much easier for a professional to offer a diagnosis, significantly reducing mistakes. At the end of the day, this improves the efficacy of patient care.

Customized treatment protocols for every patient
Because every patient already has an EHR and a certain diagnosis, the app supports clinicians in prescribing the most exact treatment plan, complete with the proper dosage and chemical compositions. Docviser has created an internationally recognized database with over 440 Treatment protocols that are constantly updated by oncology doctors. Docviser ensures correct therapy options for each tumour localization, allowing the oncologist to pick or, if necessary, assign a new treatment.

The capability to track drug administration
After the doctor gives a diagnosis and assigns the appropriate treatment for the patient, the protocol is validated by the app. The case information about the treatment is then shared with the pharmacists to prepare the necessary drug. Furthermore,

doctors can appoint caregivers to schedule and administer the required medication to the patient.

The ability to communicate between doctors and physicians
Docviser allows for cross-clinic treatment protocols for patients, which means that doctors may consult and seek advice from other professionals who use the app. Communication can take place via videoconference, comments, notes, or phone calls. At the same time, patient case folders may be shared and examined, allowing for more effective engagement and knowledge sharing of the circumstances.

What differentiates certain healthcare facilities from others is their ability to recognize the information and data they generate and use that information productively in patient care (Docviser oncology, 2021). Therefore, Docviser was designed to be the hub for cancer care services in the healthcare industry. This platform becomes an essential tool for medical centres. Used properly, it not only opens new horizons in cancer treatment and research. Using machine learning, artificial intelligence, big data and other intelligent technologies can revolutionize the healthcare system as we know it.

Research Methodology
This chapter describes the research methodology utilized in this study, which sought to determine the influence of Docviser on the efficiency and safety of healthcare delivery. The sections that follow describe the study strategy and approach, the development of the research questions, data collecting, data processing and research question testing.
This study employed a qualitative technique, specifically a semi-structured interview with a doctor who had been using Docviser for a year. The semi-structured interview allowed for some flexibility in inquiry while also ensuring that all important topics were covered. The face-to-face interview was intended at collecting the doctor's perceptions and experiences using Docviser, particularly in terms of its impact on healthcare efficiency and safety.
Based on the evaluation of the literature, the following questions were developed for this study:

RQ 1: Does Docviser minimizes the number of time doctors, pharmacists, and nurses spend managing the overall clinic flow?
RQ 2: Does Docviser shortens the wait time for patients visiting the clinic for treatment?
RQ 3: Does Docviser results in faster treatment allocation?

RQ 4: Does Docviser increases medicine administration safety by assuring correct dosage estimations?

These research questions were created using Docviser's primary features as well as current literature on the influence of similar technology on healthcare efficiency and safety.

A semi-structured interview with a doctor who has been using Docviser for over a year was used to obtain data for this study. The interview lasted about an hour and was aimed to gather the doctor's perceptions and experiences using Docviser. The interview was recorded with the interviewee's permission and afterwards transcribed for analysis. The doctor was asked about their experience with Docviser, including the influence on workflow, time spent on various tasks, and dosage calculation correctness, throughout the interview.

The data gathered from the interview was examined using a content analysis method. The data were analyzed to look for themes and patterns linked to the research hypotheses, and the results were summarized for easy comparison. The quantitative data provided by the interviewee was also examined using descriptive statistics to determine the degree of change in the clinic's efficiency and safety as a result of Docviser adoption. The findings were then compared to the hypotheses that had been developed earlier to see if they were supported or rejected.

Empirical Results

The findings of the empirical investigation done to test the research questions outlined in Chapter 3 are presented in this chapter. The study investigated the influence of Docviser on clinical workflow and patient outcomes based on input from a doctor who had been using the platform for a year.

Presentation of the empirical findings
The Impact on Clinic Workflow

The study's empirical findings reveal that using Docviser, a medical software developed to ease communication and coordination among healthcare workers, resulted in significant improvements in healthcare process efficiency. Table 1 summarizes the findings.

Table 1: Comparison of healthcare processes with and without Docviser.

Actions	Average duration without Docviser	Average duration with Docviser
Documentation analysis	15 min	3 min
Treatment allocation	10 min	5 min

Actions	Average duration without Docviser	Average duration with Docviser
Send treatment for preparation	1 h	0 min
Send medicine for administration	1 h	20 min
Time spent for explanations and observations	1 h 20 min	20 min
Total	3 h 25 min	48 min

Source: Interview

The data in the table clearly indicates the enormous influence that Docviser's implementation had on the clinic's operational efficiency. The time spent on document analysis was cut by 80%, from 15 minutes to 3 minutes. This is a vital part of the clinical workflow because it ensures that patient records are correct and up to date, allowing doctors to make educated decisions about patient care. Doctors may focus more on their patients and deliver better care since they spend less time analysing documentation.

The time spent on treatment allocation was also cut in half, from 10 minutes to just 5 minutes. This is an important phase in the patient care process because it ensures that patients are receiving the appropriate treatments for their unique problems. Doctors can utilize Docviser to quickly allocate treatment protocols, minimizing the time patients spend waiting for treatment, improving patient outcomes, and increasing overall satisfaction.

A key advantage of adopting Docviser is the removal of the time spent on delivering treatment forms for preparation. This step used to take an hour, but with the help of Docviser, it is now eliminated. This reduction in time allows doctors to provide faster and more efficient care, resulting in a better experience for patients and a more streamlined clinical workflow for healthcare providers.

Similarly, the time spent delivering medication to be administered was lowered from 1 hour to 20 minutes. This is significant because it guarantees that patients receive the medication they require on time. The time saved can be put to better use, allowing healthcare providers to provide more efficient care and improve overall patient outcomes.

Finally, the time spent on explanations and observations was decreased from one hour and twenty minutes to only twenty minutes. This time savings is advantageous to both doctors and patients. Doctors can explain treatments to patients promptly and precisely, allowing patients to better understand their care. This reduction in time is mostly due to the ability to leave comments and observations for every treatment sent for preparation. Furthermore, Docviser also facilitates a clinic chat, where

clinicians and personnel can promptly communicate regarding any issue they have. This also means that oncologists can devote more time to other parts of patient care, boosting overall patient outcomes and staff job satisfaction.

Overall, the data in the table clearly illustrates the enormous influence that Docviser's use had on the clinic's operations. Doctors may provide faster, more efficient care by minimizing the time spent on essential elements of the clinical workflow, resulting in greater patient outcomes and overall satisfaction. The clinic's workflow has been improved because of the adoption of Docviser, allowing healthcare providers to act more efficiently in the day-to-day operations, as well as patient satisfaction.

Impact on patient

According to statistics acquired from the doctor's clinic, the use of Docviser had a substantial impact on the amount of time patients spent in the clinic for treatment. Patients spent an average of 5 hours at the clinic without Docviser, but with Docviser, this time was decreased to just 3 hours. This means patients spend 2 hours less time in the clinic, which is a considerable reduction in waiting time and can improve the overall patient experience.

Furthermore, shorter wait times might lead to higher patient satisfaction and better patient results. Patients who are forced to wait for an extended period may become frustrated, nervous, or upset, significantly impacting their whole experience and even their health outcomes. Patients can benefit from speedier treatment allocation and medication delivery with Docviser, which can assist to mitigate these unwanted effects.

Furthermore, a reduction in waiting time might contribute to better clinic efficiency. Patients can be seen more rapidly with smaller wait times, allowing the clinic to handle more patients in a day. This can have a favourable impact on the clinic's overall performance, such as greater income and better resource allocation.

Dosage calculation

Docviser's ability to perform exact and safe dosage calculations for drug administration is one of its primary features. To calculate the right dosage for each patient, the app considers a variety of patient-specific characteristics such as height, weight, comorbidities, gender, and age. Docviser's dosage calculation algorithms are based on internationally accepted best practices, ensuring that patients receive the correct prescription dosage for their condition.

According to the doctor's interview, using Docviser for dosage computation resulted in 100% safer dose administration. This is a huge advance over the previous manual

dosage calculation method, which is prone to errors and can have negative consequences for patients.

Analysis of the results

In this section, we will go over the analysis of the findings from the empirical research on the use of Docviser in a clinical setting. We will explore how the data collected supports or rejects each research question proposed in the research methodology chapter.

Based on the results of the empirical research, it is possible to conclude that for the inquired hospital, all of the research questions proposed are justified and supported. However, there is a future research opportunity to be developed, as more and more hospitals around the country will adopt this platform. Furthermore, an economic analysis will also be possible, since all the implications from the operational benefits part of Docviser are to be translated into monetary terms.

RQ1:

The statistics given in Table 1 support this premise. Docviser greatly reduced the time spent on documentation analysis, treatment allocation, sending a treatment to be prepared, sending medicine to be administered, and explanations and observations. The overall amount of time spent on these activities was cut from 3 hours and 25 minutes to 48 minutes. As a result, using Docviser reduces the time spent by doctors, pharmacists, and nurses handling the full clinic flow by 80%.

RQ2:

The findings in the results presentation chapter also lend support to this hypothesis. The usage of Docviser reduced the time patients spent in the clinic for treatment from 5 hours to 3 hours. As a result, using this platform cuts waiting times for patients going to the clinic for treatment by 40%.

RQ3:

The findings in Table 1 also lend support to this notion. The usage of Docviser lowered the time spent on therapy allocation from 10 minutes to 5 minutes. As a result, it is possible to conclude that using Docviser allows for 50% faster treatment allocation.

RQ4:

This notion is reinforced by the fact that Docviser considers all aspects of the patient (such as height, weight, comorbidities, gender, age, and so on) and employs internationally accepted best practice calculation methods to calculate the dosage

automatically. This guarantees that the computed doses are correct and safe for the patient.

Finally, the empirical study data supports all of the assumptions that have been developed. The respondent claims that the usage of Docviser greatly saves the time spent by doctors, pharmacists, and nurses handling the complete clinic flow, minimizes patient wait times, enables faster treatment allocation, and provides 100% safer drug administration dose calculations:

"*Docviser helps me make better treatment decisions by leveraging the power of cutting-edge technology. I can now focus on what matters most – caring for my patients.*"

Discussion and Conclusions

This section discusses the advantages of using Docviser in the medical area, which has resulted in major improvements in efficiency, accuracy, and patient care. The findings suggest that Docviser has reduced the amount of time spent on documentation analysis, treatment allocation, and medication administration, increased the precision and safety of dosage estimates, and provided a platform for seamless communication between healthcare providers and patients. A doctor who has been using Docviser for over a year has stated that the app has streamlined the medical treatment process and made it more patient-centred. However, there are several limitations to the study, such as the sample size being limited to one doctor's experience with Docviser, the concentration on the application of Docviser in a single medical centre, and the lack of financial implications of using Docviser in medical treatment. Future research should include a larger sample size from multiple medical centres with different patient populations and medical practice methodologies and assess the economic implications of using Docviser in medical treatment.

Future research should include a larger sample size from multiple medical centres with different patient populations and medical practice methodologies and assess the economic implications of using Docviser in medical treatment. Overall, the use of Docviser in medical care has considerable benefits for both healthcare workers and patients, but additional research is needed to thoroughly assess the app's potential benefits and limitations.

References

1. Adler-Milstein, J. a. J. A., 2017. HITECH Act drove large gains in hospital electronic health record adoption. Health affairs, 36(8), pp. 1416-1422.

2. Ammenwerth, E., Schnell-Inderst, P., Hoerbst, A., & Mueller, G. (2012). The impact of electronic patient portals on patient care: a systematic review of controlled trials. Journal of Medical Internet Research, 14(6), e162.

3. Bâru, P. E. et al., 2019. STUDY ON DIGITAL SOLUTIONS USED IN PRIVATE MEDICAL INSTITUTIONS. Revista de Management şi Inginerie Economică, pp. 617-625.

4. Bates, D. W., Singh, H., & Nash, D. B. (2014). Improving diagnosis and reducing diagnostic error: the next frontier in patient safety. National Patient Safety Foundation, 14(1), 1-8.

5. Blumenthal, D., Tavenner, M., & Clancy, C. (2011). The meaningful use regulation for electronic health records. New England Journal of Medicine, 364(6), 501-504.

6. Docviser, 2021. An introduction to Docviser Oncology Digital Platform. [Online] Available at: https://docviser.io/blog/introduction-to-docviser-oncology-digital-platform/ [Accessed 2023].

7. Docviser, 2021. Docviser. [Online] Available at: https://docviser.io/blog/the-importance-of-docviser-in-doctor-collaboration/ [Accessed 18 October 2022].

8. Eurostat, 2019. [Online] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Healthcare_expenditure_statistics [Accessed 12 04 2023].

9. Hillestad, R., Bigelow, J., Bower, A., Girosi, F., & Lovejoy, S. (2005). Can electronic medical record systems transform health care? Potential health benefits, savings, and costs. Health Affairs, 24(5), 1103-1117.

10. Jha, A. K., DesRoches, C. M., Campbell, E. G., Donelan, K., Rao, S. R., Ferris, T. G., ... & Blumenthal, D. (2009). Use of electronic health records in US hospitals. New England Journal of Medicine, 360(16), 1628-1638.

11. Kabakus, A. T. & Kara, R., 2016. Anatolian Medicine History. Acta Medica Anatolia, pp. 124-125.

12. Kashyap, V., Kashyap, S., & Kashyap, R. (2018). The role of technology in healthcare delivery. International Journal of Research in Medical Sciences, 6(3), 905-909.

13. Kawamoto, K., Houlihan, C. A., Balas, E. A., & Lobach, D. F. (2005). Improving clinical practice using clinical decision support systems: a systematic review of trials to identify features critical to success. British Medical Journal, 330(7494), 765.

14. Lluch, M., 2011. Healthcare professionals' organisational barriers to health information technologies—A literature review.. International journal of medical informatics, 80(12), pp. 849-862.

15. Topol, E. J., 2012. The creative destruction of medicine: How the digital revolution will create better health care. s.l.:s.n.

THE CHARACTERISTICS OF THE MILITARY SUPPLY CHAIN MANAGEMENT OF MEDICAL ITEMS. THE CASE OF ISRAEL DEFENSE FORCES

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Abstract: *The paper discusses the characteristics of the management of medical military supply chain in the state of Israel, based on a mixed research method, quantitative and qualitative. The medical military supply chain has the mission to ensure the combat effectiveness and readiness of the military in times of peace and war. The paper approaches the management the supply chain of medical equipment for military hospitals using the modern management approach based on various multiple stakeholders goals and interests, such as the accuracy of inventory management and its influence on the end-user units of the field and operational competence of the operational units, how it can be used in the supply and centres and in the unit. The researchers formulate several recommendations about various ways how to cope with urgent and operational requests and to improve the management of the medical military supply chain.*
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Keywords: *supply chain management; medical; military; characteristics; Israel*

JEL Classification: *H56; H57; I18; L32*

1. Literature Review

A group of definitions of Supply Chain focuses on the main stages of a process such as Pienaar W. (2009b) defines Supply Chain as "a general description of the process integration involving organizations to transform raw materials into finished goods and to transport them to the end-user". According to the definition given by Little (1999) a supply chain is "the combined and coordinated flows of goods from origin to final destination, also the information flows that are linked with it". The definition of Chow and Heaver (2004) focuses on the entities which are involved in a value chain which "is the group of manufacturers, suppliers, distributors, retailers and

transportation, information and other logistics management service providers that are engaged in providing goods to consumers". Consequently, the researcher opinion is that a supply chain is adding value to a product by transporting it from one location to another, including the possible transformation of the product, too.

There are several supply chain models we have identified. First, there is the SCOM model (supply chain and operations management) (Ivanov et al., 2017), having as key components: sourcing, production, distribution and after sales. These key elements are kept aligned by the management at every planning level strategic, tactical planning level and operational and execution. The second model is the Supply Chain Operations Reference (SCOR model) which consists of the following processes: planning, acquisition, make, delivery and return (APICS, 2017). A different view is taken by the Global Supply Chain Forum model (GSCF). According to this model the supply chain consists of three essential parts: first, supply chain network structure; second, supply chain business processes; and third, supply chain management components.

The nine dimensions that make up the process performance requirements construct for any supply chain in the modern era are the following: "interoperability, collaboration, transparency, integration, flexibility, responsiveness, efficiency, making the supply chain leaner and performance measurement" (Frederico et al., 2020, p. 274).

The field of Supply Chain Management (SCM) while dealing with traditional logistics incorporates also additional business activities, like marketing, product development, customer service and the related finances, to ensure satisfactory fulfillment of customer requests. SCM "encompasses planning, integrating, and executing" all of the activities that are involved in getting materials or products to a final customer for use "to best meet the goals of a supply chain's stakeholders" (Peltz & Robbins, 2012). SCM includes the management of finances and the flow of material and information across the entire supply chain. "SCM views the supply chain and the organizations therein as a single entity" (Zanjirani et al., 2009). The study of Supply Chain Management (SCM) has been considered as an "applied field of research" (Näslund et al., 2010).

Supply Chain Management (SCM) is "the management of a network of relationships within a firm and between interdependent organizations and business units consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of

materials, services, finances and information from the original producer to final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction" (Toorajipour et al., 2021, p.503).

However, there are special characteristics of military SCM for medical items mainly because the external factors influencing military supply chain are specific, such as the fact that the soldier's needs represent the number one factor. Soldiers who are fighting a war are dependent on continuous support to accomplish their specific war mission. The smallest failure to do so is putting their lives, their health, and their fighting mission at high risk. Combat operations have a greater degree of uncertainty for all variables impacting its effectiveness, including the fact that during war there are several major difficulties such as: the presence of many injured and traumatized soldiers and civilians in the operational military space, there are various degrees of destruction of the physical infrastructure (damaged roads, bridges, airports, the railway system, fluvial and sea ports, etc.) and of the communications infrastructure (Kovacs and Tatham, 2009). The environment in which military operations are happening under various situations (war, disaster relief) is much more uncertain regarding all the most important variables when we are comparing it with logistical operations in the civilian commercial sector. Another characteristic is about the demand for needed resources for supporting defense operations, such as war or disaster response are characterized by large, sudden, and often irregular increases, due to the higher incertitude of military actions.

In addition, war operations and even major disasters have highly negative consequences on various infrastructure components such as physical, medical, transport and communications infrastructure, reduction, and even total loss of some public services (energy supply, water and sanitary supply, healthcare services, educational services at every level). Another major characteristic of military SCM is represented by the direct threat of physical violence in many forms for the civilian population, and military personnel, and also the presence of large numbers of military personnel and civilian population which are injured and psychological traumatized in the operational war area or disaster area (Kovacs and Tatham, 2009). At the same time, the most important characteristics are that the military supply chains are highly complex, they deal with heterogeneous supplier capabilities, are heavily regulated and required to follow strictly multiple and fixed rules, they deal with quite diverse military customer requirements, and with long life cycles of the products they move along the supply chain. Military specialist in logistics must find and apply" innovative solutions for deploying tens of thousands of people, their equipment, and their support staff into an austere, hostile environment in a matter of

days", "to securely sustain deployed forces, including secure transportation pipelines, communications infrastructure, and support services (food, shelter, medical, etc.)" (Zsidin et al., 2020, page 7).

2.The Research Methodology

We used a mixed research approach, "qual-quan" type. For the qualitative research, twenty-two participants responded to the open-ended questionnaire during their interviews. Two additional in-depth interviews using a specific qualitative questionnaire were conducted with high-ranking commissioned officers in the military.

The research questions were the following: How to improve the supply chain system for medical products and equipment in the Israeli military? Which are the ways to improve the management of the supply chain system for medical products and equipment in the Israeli military? Which is the relation between the efficiency of the management of the supply networks for medical products and the way medical equipment is distributed to military clinics? Which is the relation between the changes that have taken place in the supply chains for medical products and the way medical equipment is distributed to military clinics in IDF?

For the quantitative research, 100 participants representing several groups of stakeholders answered to a structured questionnaire which provided data used for the validation or rejection of the formulated hypothesis. The questionnaire consists of 17 statements, assessed based on a Likert scale from 1 to 5. Of the 17 statements included in the questionnaire, 3 statements examine the distribution of medical equipment to the clinics, 4 statements relate to actions for improving the supply chain system, 3 statements relate to the management of supply chains for medical products, and 7 statements relate to changes occurring in the supply chains for medical products. The responses to the questionnaires underwent quantitative analysis, such as statistical tests for validation of the questionnaire, Pearson correlation analysis, T test and ANOVA test.

3.Findings and Recommendations for Improving the Medical Military Supply hain in Israel

The results of the research related to the identified characteristics of the military SCM for medical items in the Israel Defense Forces (IDF) have indicated that there is a strong need for continuously improve the management of the military medical supply chain. The interviewed respondents and the questionnaire respondents have formulated a large number of recommendations. Many of them referred to the

technicalities of the new software management (SAP) system which indicate the high interest from participants to contribute to the improvement of the new system. The results show that they were using it in their daily work, became aware of the advantages of the SAP system for the medical supply chain, and found that the system is not perfect and needs several improvements, situation that is very positive since it indicated their adherence to the new system.

In addition to this, it is quite remarkable that massive changes about improving the medical supply chain itself were suggested, too. For example, it was recommended to change the type of the supply chain entirely, from a multiple (three) tier supply system to a direct model of supply chain, without the need for intermediaries, such as a central warehouse or storage units, with direct delivery of medical items from the supplier to the medical clinics. In the authors' opinion, this suggestion is very hard to implement, since the medical supply chain for the military needs to function not only in time of peace, but also in time of war or military conflicts. In such case the duration of the period between moment when the request from an army hospital for various medical items and the moment of delivery from the supplier needs to be very short to ensure that the treatment of wounded warriors and their full or partial recovery to be ready for combat is very important. This represents their mission, both in time of peace and time of war, too. This mission is reflected also by the recommendations related to align the medical supply chain, to the customers' needs which are the army clinics represented by clinic staff: doctors, nurses while the people need of medical treatment are the beneficiaries of their health services.

The researchers have formulated 8 main hypotheses and 22 sub hypotheses. The results of the research validated one main hypothesis (H1), partially validated two main hypothesis (H2 and H5) and rejected five main hypotheses (H3, H4, H6, H7 and H8). For the sub hypotheses, 5 were validated, 5 partially validated and 12 rejected.

Based on these results, we have formulated several additional recommendations such as: to develop specialized trainings for various types of activities and functions related to medical military supply chain for all individuals involved in its operations, to revise the reward system for members of the military supply chain, both military personnel and civilian personnel, and provide various incentives related to stimulate their acceptance of the changes induced by the implementations of various solutions for improvement of their activities, and also make them equitable for all those involved in the whole medical military supply chains; the introduction of independent delivery methods, where the medical units work directly with the

manufacturer of the medical supplies to manage and monitor their supplies. An important recommendation is that the Israel Defense Force (IDF) and its logistics units should increase the number of suppliers for medical items, medical equipment, and medicines. The goal is to ensure the availability of medical items and medicines at any given moment, being independent from one single supplier who might become unavailable for various reasons, and thus creating possible rupture of stocks. This recommendation is derived from the mission of the military medical supply chain that is to ensure combat readiness and maintenance of the combat capability of each soldier and of each military unit. This is because the effectiveness of supply chain management and distribution of military equipment in IDF will be influenced by improvements in relationships with suppliers, increasing the number of suppliers, and reducing the amount of inventory items.

The researcher recommends developing, integrating, and continuously analyzing their medical supply strategy. The efficient performance of medical therapy in the IDF military clinics depends on the accessibility to adequate medical supplies in army clinics, and adequate supply of medical supplies to the forces in the field and the need for them to be in a constant state of battle readiness. The military has developed a strategy and created a path to enhance its supply chain but has done little to communicate it to all leaders within the supply chain system. Each level of the supply chain is conducting business practices in a compartmentalized stage of the chain and do not understand how their areas of responsibility affect the other layers.

Therefore, the researcher recommends implementing strategic management and strategic leadership of the whole medical supply chain, managing suppliers, sharing of information and technology across the medical supply chain participants, and implement customer relationship management approach and practices.

A very important recommendation is to continue to add new technological instruments based on using specialized supply chain management software to improve the efficiency, the speed and the in-time delivery of the medical supply chain management. This is crucial to executing the mission of the medical military supply chain management that is to care for the health of military personnel and soldiers to maintain the combat readiness. Another recommendation is to continue to implement the suggestions about making the changes to the SAP system to simplify its functioning and ensure a smooth operability of the medical supply chain. The SAP system ensures the management of all medical inventory and synchronize it within the system that will allow easy access to manage the updated inventory.

The next recommendation is to intensify the training into using the new SAP system and additional systems functioning on the medical supply chain. Despite the

implementation of SAP for supply chain management to replace some of the old systems, several of the personnel faced challenges with learning how to use the new system. Another recommendation is to organize and deliver effective training of all the personnel involved to use the new and existing systems when considering the implementation of new technologies in a setting where the personnel are of different ages and with different levels of education. Appropriate training must be carried out for the professionals who will oversee the management of the medical inventory, in dispensing and managing medical drugs and medical equipment The recommended courses are first, a management course in using the SAP system for medical inventory. The second course which is recommended is about qualification for inventory management and tracking equipment validity.

While the system was improving the management of the supply chain, it seemed likely that there remained a need to shorten the time it takes to distribute medical supplies from the suppliers to the end units. Therefore, the researcher recommends to giving a greater independence for the military clinics to manage their inventory and to be able to withdraw medical supplies directly from the suppliers would likely improve the management of medical supplies in the military clinics.

Another recommendation is to implement the lessons from the private sector in managing the medical supply chain. For example, Khorasani et al., (2020) studied which are the most important problems faced by healthcare organizations intending to apply the lean supply chain management (LSCM) and recommended some important techniques for implementing LSCM in healthcare. Healthcare organizations have operational goals to reduce costs while providing better quality healthcare services to their customers. According to Khorasani et al. (2020), the Lean Supply Chain Management method has the potential to allow for better cost management of the hospital supply chain, increased patient safety, and more effective systems for distribution of medication.

Duque-Uribe et al., (2019) have identified 12 categories of management practices, to address the deficiencies of the medical supply chains, such as high costs, negative impacts on the natural environment and high social problems. These very diverse practices are the following: the strategic management and leadership of the medical supply chain, managing suppliers, improved purchasing, warehousing and management of inventory, optimized transportation and distribution, sharing of information and technology, management of energy, water and food management, better hospital design, management of medical waste, and customer relationship

management. Bozic et al. (2022) found that the costs of a civil hospital can be reduced while maintaining the quality of medical services " through knowledge and technology transfer, proper decision making process using simulation and modelling, implementation of lean tools, optimized inventory management, timely and accurate procurement, adequate storage space, collaboration in the hospital network, information technologies, automation of physical and information flow, proper waste segregation and management, collaboration with suppliers and outsourcing of some areas of hospital logistics" (Bozic et al., 2022, page 296).

Another recommendation is for managers of the medical supply chain to implement performance management and continuously update set key performance indicators related to the functionality, effectiveness, and efficiency of the medical supply chain. Each supply chain manager should be clear about the outputs, which should also be measurable and specific. The key performance indicators allow managers and their collaborators to measure the performance of the supply system or of the component for which they are responsible to make sure that expectations will be met accordingly. It is very important to develop an adequate system and instruments that provide the needed information to managers and all the other stakeholders. The managers of the supply chain should be trained in the nature and content of the key performance indicators and about the actions recommended to understand and act upon them.
The supply chain management should conduct proactive audits on the performance of the suppliers and about their punctuality in meeting delivery times, to provide financial independence for Special Forces units in purchasing of medical equipment needed.

4.Conclusions

The management of the medical military supply chain has several characteristics making it highly complex, The major characteristics identified are the following: its managers deal with heterogeneous supplier capabilities, work in a heavily regulated environment, are required to obey orders from their superiors, must follow strictly all the multiple and fixed rules and military procedures based on the military discipline, must deal constantly with quite diverse military customers' requirements, and also with long life cycles of the multiple and heterogeneous medical items they move along the supply chain. Their main mission is to keep the fighting capabilities of each unit of the military at every moment by providing health care to military personnel both in times of peace and war. Therefore, there is a strong need to innovate and change according to the new situation under the impact of the

digitalization process of supply process, while considering the requirements and the needs of the military and of its stakeholders. The paper lists multiple recommendations aiming to contribute to the increase of the effectiveness and the efficiency of the medical military supply chain of IDF.

References

1. Bozic, D., Sego, D., Stankovic, R., Safran, M. (2022). Logistics in health care: a selected review of literature from 2010 to 2022, *Transportation research Proceedia,* Vol 64, pp 288-298.

2. Chow, D. and Heaver, T. (2003). *Logistics strategies for North America. in Global Logistics and Distribution Planning Strategies for Management*, 4th edition, Edited by Donald Waters, Kogan Page.

3. Duque-Uribe, Sarache, and Gutiérrez. (2019). Sustainable Supply Chain Management Practices and Sustainable Performance in Hospitals: A Systematic Review and Integrative Framework. *Sustainability,* Vol 11, No. 21, 5949. MDPI http://dx.doi.org/10.3390/su11215949 .

4. Frederico, G.F., Garza-Reyes, J.A., Anosike, A. and Kumar, V. (2020), "Supply Chain 4.0: concepts, maturity and research agenda", *Supply Chain Management,* Vol. 25, No. 2, pp 262-282. https://doi.org/10.1108/SCM-09-2018-0339 .

5. Ivanov, D., Tsipoulanidis, A. and Schonberger, J. (2017), *Global Supply Chain and Operations Management: A Decision Oriented Introduction to the Creation of Value,* Springer.

Khorasani, S.T., Cross, J. and Maghazei, O. (2020), "Lean supply chain management in healthcare: a systematic review and meta-study", *International Journal of Lean Six Sigma*, Vol 11, No. 1, pp 1-34. https://doi.org/10.1108/IJLSS-07-2018-0069 .

6. Kovacs, G. and Tatham, P. (2009). Responding to disruptions in the supply network-from dormant to action, *Journal of Business Logistics*, Vol. 30, Issue 2, Pp 215-229.

7. Little, A. (1999). A European Supply Chain (SC) Survey.

8. Näslund, D., Kale, R., and Paulraj, A. (2010). Action Research in Supply Chain Management – A framework for relevant and rigorous research. *Journal of Business Logistics,* Vol 31 No. 2.

9. Peltz, E., & Robbins, M. (2012). *Integrating the Department of Defense supply chain* (RAND Technical Report 1274-OSD). Retrieved from http://www.rand.org/content/dam/rand/pubs/technical_reports/2012/RAND_TR1274.pdf

10. Pienaar, W. (2009). *Introduction to Business Logistics*. Southern Africa: Oxford University.

11. Toorajipour, R., Sohrabpour,V., Nazarpour,A., Oghazi,P. and Fischl, M. (2021). Artificial intelligence in supply chain management: A systematic literature review, *Journal of Business Research,* Vol 122, Pp 502-517, https://doi.org/10.1016/j.jbusres.2020.09.009 .

12. Zanjirani Farahani, R., Asgari, N., and Davarzani, H. (2009). *Supply Chain and Logistics in National, International and Governmental Environment: Concepts and Models*. https://doi.org/10.1007/978-3-7908-2156-7 . Springer-Verlag, Berlin Heidelberg.

13. Zsidisin, G.A. Bresler,A, Hazen,B, Snider,K.F. and Wilkerson, T.H. (2020). Research in defense logistics: where are we and where are we going? *Journal of Defense Analytics and Logistics*, vol. 4 no. 1, pages 3-17, DOI: https://doi.org/10.1108/JDAL-07-2019-0012

14. XXX – Association for Supply Chain Management (APICS) (2017), *“Supply chain operations reference model”,* APICS Supply Chain Council, available at: Supply Chain Business Solutions | APICS for Business

TRACKING SALES, INSTALLATION, AND AFTER-SALES SERVICE ACTIVITIES THROUGH PROJECTS.

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Abstract: *Companies that sell, install and service equipment need a plan for the activities they undertake. Since these activities are carried out in a certain order and are undertaken by different people, it is necessary to improve the information flows within the company and achieve the most effective management of the relationship with the client. This paper is a case study on the need to use planning in activity of a company that sells products that need to be assembled and installed at clients also needs to carry out their maintenance during the warranty and post-warranty period.*

Keywords: *planning; products; management of services*

JEL Classification: L86

1. Introduction

Companies that sell, install and service equipment need a plan for the activities they undertake. Since these activities are carried out in a certain order and are undertaken by different people, it is necessary to improve the information flows within the company and achieve the most effective management of the relationship with the client.

A **project** is any undertaking, carried out individually or collaboratively and possibly involving research or design, that is carefully planned to achieve a particular goal. (Dictionary, 2023)

In project management, a **task** is an activity that needs to be accomplished within a defined period of time or by a deadline to work towards work-related goals. It is a small essential piece of a job that serves as a means to differentiate various components of a project. (Task (project management), 2023)

2. Purposes of the Study and Research Methods

This paper will present a case study. During this research we analyzed the practical situation within a company regarding the need to use planning for its activities.
The following objectives have been defined for the IT solution:
- creation of offers with the help of the computer system
- the realization of the contract
- planning installation activities and their follow-up
- planning maintenance activities and their follow-up

Discussions were also held with the users of the IT solution, which led to the appearance of some concept changes during the implementation.

3. Requirements analysis and concept realization

At the company level, all the products we sell are defined in the product catalog. Some of these are goods, others are consumables that are used in the assembly process, others are services that are provided for the different clients.
For each product you can define an internal code, a name, an interpretation from an accounting point of view as well as a unit of measurement.

3.1. Stock management units of the company

These products will be used in the management of the company. Since we are interested in a strict record of these products, the decision was to create several stock management units with precise goals, as can be seen in the following figure.
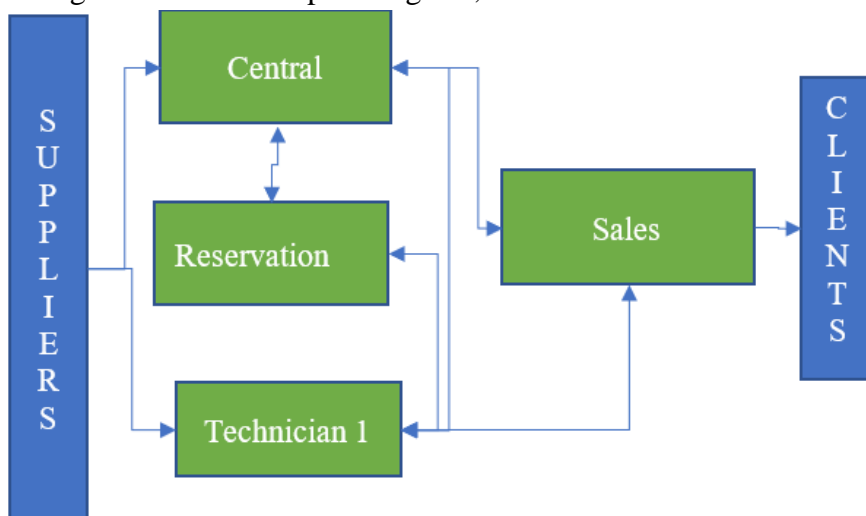
Fig.1 Stock management units of the company

Thus, **Central** management unit was created with the role of highlighting all the storable products of the company from the central warehouse. Entries in this management are made on the basis of purchases from suppliers, on the basis of receipts made as a result of transfers from other management units to this one, by recording surplus inventory or by recording some transformations. The exits from this management are recorded through transfers to other stock management units, through consumption vouchers, through transformations or inventory. A direct sale to the customer is not made from the warehouse management. From the warehouse management, the products will be transferred to the Reservation, Technicians and Sales stock management units.

Another necessary stock management unit is **Reservation** which helps us to reserve some products for various clients. The products will arrive here by making a transfer from the Central stock management unit to the Reservation. The products will leave here also by making a transfer to others stock management units.

Another necessary stock management unit is Technician. For each technician, an individual stock management unit will be created, so the stock of existing products can be seen at any time. This management will also help the technician to see what products he has in stock as well as the management to see the exact location of a product. Entries in this management are made by transfer from other stock management units or based on the Invoice from the Supplier and Reception in the Invoice Base. Removal from management is done by drawing up the Technical Data Sheet or by operating supplier cancellation and receipt invoices. From the Technician, the sale will not be made. The products left in stock after a job can be used for future jobs.

Sales stock management unit is used to prepare sales to customers. The supply in the Sales management is carried out on the basis of transfer from the Central or from the Technicians' stock management units. The realization of the sale when it refers to a technical sheet requires the realization of the supply first, and then the drawing up of the invoice. In certain situations, the invoice will have to be drawn up on the basis of the contract and close by downloading the technical sheet of a technician. Invoicing in other situations can only be done for existing products on the technical sheet that are not specified in the contract. The realization of the sale of consumables, accessories requires the drawing up of a direct invoice, based on a supply made in advance by the Central management.

3.2. Documents used in relation with clients

The client's offer is the stage preceding contracting. By making an offer to the customer, the product stock will not be affected in any way. Offer can be or not accepted by the client. The client's non-acceptance of the offer may be followed by a stage of negotiation or termination of the relationship with him.

Based on the accepted offers, contracts will be drawn up with the clients. These contracts may contain one or more contractual stages that can be classified into sales, purchase or maintenance stages. A contractual stage can contain several products.

Based on the contract, the jobs that need to be performed will be defined. For a job we need to know some elements such as: The company to which belongs, the contact person, the equipment that goes into this work, the address where this job will be carried out. Job will have a status such as started, in progress, suspended or completed.

Following the comparative analysis between the work, contract and tender, the following arguments were brought forward that are the basis of the differentiation between them for the case studied, namely:
- The offer can be partially accepted and the contract covers only what is accepted by the client
- Between the contract and the work there is a many-to-many relationship because a work can cover several contracts, or for the fulfillment of a contract several works are needed, therefore the work cannot be a contract either
- A product on the offer can be modified at the level of the contract into another product. There may be differences between the contract and the offer, therefore the contract is not the offer.

The invoice is the document through which the effective sale of the system or the services provided under the contract is carried out. An invoice can cover a contractual stage. Also, an invoice can be drawn up with existing products in different contractual stages. There is also a many-to-many dependency between the invoice and the contract.
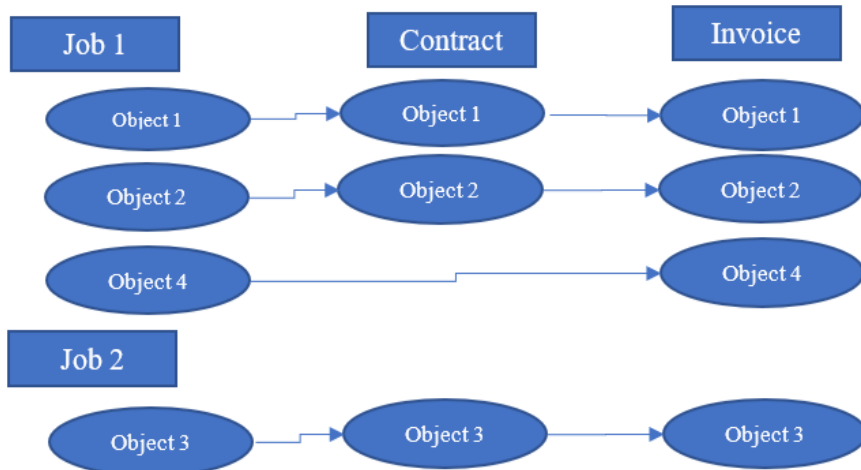
Fig.2 Evidence of links between work, contract and invoicing

3.3. Planning

Planning of installation, assembly or overhaul activities, aims to track their completion, records of personnel who participated, participates or will participate in the completion of a work, as well as tracking the degree of workload on the existing technicians within the company.

The decision was made to open a new project for each client. We can say that the connection between the client and the project will be one to one. Since a client can have several locations, within the project one location will be created for each location where a customer is intervened. Each location has its associated physical address. Within a location there may be several systems installed, so each system will be defined as belonging to a location. For each system, several types of work will be carried out over time, such as installation, maintenance, repair, dismantling, relocation or other types of work.

In order to define and classify the activities more easily, it was decided to create a prototype according to which each activity of a project will be classified. This model can be seen in figure 3. In figure 4 the actual project can be seen.
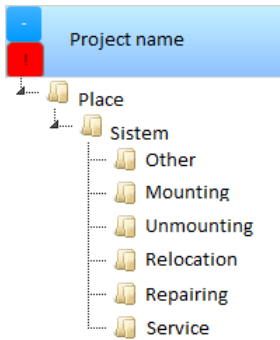
Fig.3 Project model structure
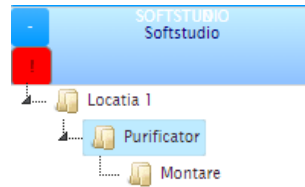
Fig. 4 Project definition

Having these informational attributes related to an activity, an interface was created used to define or modify them, as can be seen in fig. 5. For each job we can define a deadline for start and end. We can also see actual starting date and actual final date for this activity.

Fig. 5 Defining a job

For each job we will define one or more tasks. Each task will have one or more people involved in that, and will have a time period defined. Every task has to be allocated to one job. The total amount of time spent for tasks associated to one job

will give us the total time spent for that particular job. Also based on these tasks different reports can be defined. The interface which was created based on client requirements can be seend in fig. 6.
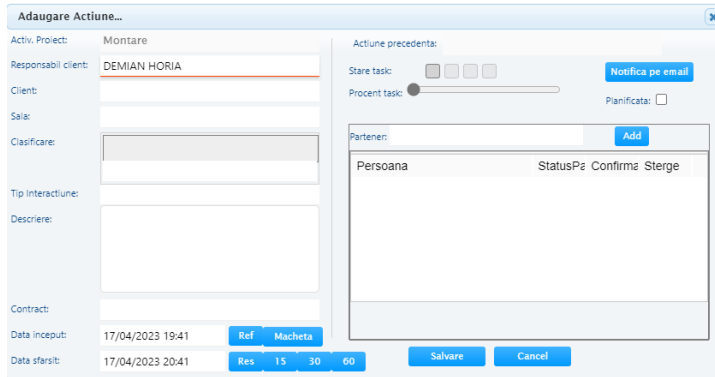
Fig. 6 – Definning task

Tasks can be **planned tasks** which actions will be made in the future, or can be **normal tasks** that was made. Based on these type of task we can see which tasks are planned in a specific period of time, for a particular client and which technician has to do that task.

Fig 7 – reporting of jobs and tasks which has to be done during a period of time

Conclusion

A change of the information flow between each department of the company was necessary to be done.

A relation has to be made between offers and contracts, between contracts and activities planning and between contracts and invoicing. So we can say that the contract is the central point of these types of activities.

Evidence with the help of projects, activities and actions is the basis of resource planning.

Bibliography:

Dictionary, O. (2023, 04 17). Project. Retrieved from wikipedia: https://en.wikipedia.org/wiki/Project#cite_note-1

Task (project management). (2023, 04 17). Preluat de pe wikipedia: https://en.wikipedia.org/wiki/Task_(project_management)

EDUCATIONAL EXPERIENCES IN THE RAILWAY INDUSTRY

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Abstract: *The safety of railway users depends to a large extent on the preparedness of the workers, which means that the human factor plays an important role. In the evaluation system of human reliability, the quality of training and preparation for tasks appears as a critical element. In order to strengthen this key factor, we aimed to examine the educational characteristics in the railway industry. Among our sub-goals was mapping teaching methods, learning aids and skills required for teaching. We carried out primary research and used analysis of variance to examine the differences between the groups. Based on the results, the instructors pay attention to creating a supportive atmosphere, are committed, have a dialogue with the students and strive to transfer the expertise necessary to perform practical tasks. On the other hand, there can be significant differences in sharing the knowledge material since they do not have a common note, and the technical books are also relatively old. In order to transfer uniform and up-to-date knowledge, they feel a great need for a common note. We recommend coordinating and developing the body of knowledge to which attention is drawn in domestic primary research and international literature. Respondents primarily use professional materials for self-improvement, and we also recommend participating in skills-developing training that supports the creation of an adaptive atmosphere.*

Keywords: *teaching methods; learning aids; teaching skills*

JEL Classification: O15

1. Introduction

Education plays a particularly important role in industries such as railway transport, where the safety of people every day depends on the preparedness of the workers. Cao et al. (2022) draw attention to the fact that railway transport is developing faster

and faster, so safety must be given special attention, railway safety and accident prevention are extremely important. In this, the human factor has a prominent role since planning, installation, and maintenance are still tasks subject to the human factor (Ciani et al., 2022). Human reliability is critical in the security assessment of most complex systems. Many international standards and technical reports agree that human reliability is a central consideration in making rail-related systems safe. An essential part is the safety culture, communication, attentiveness within the organization, training, experience and knowledge of the task. The latter three factors also play a critical role in the human reliability evaluation system developed specifically for the railway industry (Rangra et al., 2017).

Therefore, training and teacher preparation play a key role in the tasks. Despite the fact that many studies focus on the issue of the added value of teachers, even today, we only have limited knowledge about why some teachers are more effective in promoting human capital than others (Thijssen et al., 2022). The transfer/mastery of the course material can be achieved with innovative solutions and experience-based education efficiently and effectively. According to Benedek (2021), school processes, content development, development of learning resources, teacher preparation, teacher training and continuing education have determined the quality and dynamics of this innovation.

The research aims to support the work of railway instructors in order to improve teaching efficiency. We are looking for the answer to what teaching methods, learning aids, and methods used to develop instructors can help them. We review the current research results with a literature analysis and explore the current teaching practice by conducting primary research. After that, based on the knowledge of the literature and empirical experience, we propose to improve efficiency.

2. Research design and Methods

Regarding education development, the literature sets a double goal for educators. On the one hand, it focuses on creating a positive atmosphere in the training room, and we will present this research first. On the other hand, it calls attention to the actualization and international coordination of the knowledge material in the railway industry, illustrated after the works emphasizing creating a supportive atmosphere.

2.1. Creating an atmosphere that supports learning

Coe et al., (2020) aim to help teachers make better decisions to improve their effectiveness. It sets four priorities to encourage learning. These four overarching

dimensions contain a total of seventeen 'items'. Each 'element' represents an activity in which it may be worth investing time and effort to develop a specific skill, competence or improve the learning environment. He emphasizes that teaching cannot be reduced to various techniques. However, empirical experience confirms that, ultimately, the effort to develop competencies and a supportive environment led to the development of expertise.

We present a brief description of the four dimensions (Figure 1) based on the work of Coe et al. (2020):

■ First dimension: Understanding and mastering the taught content.

It is crucial to have a deep knowledge of the content, that is, the instructor should be aware of the connections, misconceptions and obstacles. Give students relevant tasks that help them understand the theory better by generating multiple analogies and practical examples.

■ Second dimension: Creating an environment that supports learning.

The instructor should strive for a mutual relationship with the students based on mutual respect, avoiding negative emotions. Promoting student motivation should also take place through the experience of competence, autonomy and connection. The feeling of 'it is okay if I try' should be encouraged, and the students should believe they can change what causes success or failure. The instructor should foster a positive atmosphere of student-student relationships in order to promote cooperation.

■ Third dimension: Maximizing the opportunity to learn.

It means efficient management of time and resources in the training room. Have the instructor give clear instructions, so students know exactly what to do. Set clear expectations for expected behaviour for everyone and apply them consistently. It draws attention to the reinforcement of positive student behaviour and the use of routines to ensure that the transition from one task to another is carried out smoothly so that they know what to do even if disturbing events occur.

■ Fourth dimension: Carrying out activities that activate student thinking.

In order to be structured during the teaching process, the learning goals and reasons should be clarified, and the essential ideas and main milestones should be indicated. Connecting new ideas with what was previously learned and asking questions are important to stimulate student thinking. Encourage continuous practice to gain more solid knowledge and avoid forgetting. It should also stimulate the development and application of independent learning.
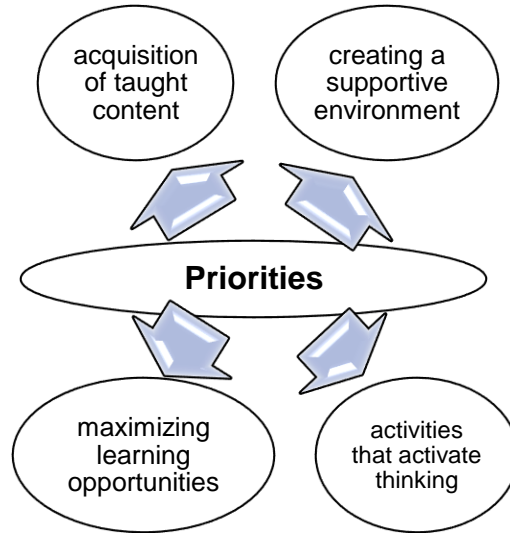
Figure 1: Priorities for encouraging learning
Source: Own editing

Coe et al., (2020) created a five-part framework for understanding which factors help educators design training, similar to the four dimensions of Hart (2022). Organizational climate, autonomy, trust, clear goals and instructions, and psychological safety also play an important role in this system. Pusztai et al. (2022) also draws attention to the importance of a sense of belonging. Extensive relationships with instructors and fellow students reduce the risk of dropping out and increase the chances of persistence. According to the formulation of the theory of student integration, it serves as a significant protective factor if the student has a partner with whom he can share his problems, ask for help with his studies, and rely on in other areas of life, i.e. he has integrated well. He also emphasizes the importance of a supportive atmosphere (Konstantinidou and Kyriakides, 2022). There is a need for instructors to listen to students' ideas and respond appropriately, provide extra help and be empathetic. To improve self-assessment errors, for example Kun et al. (2022) recommends increasing the frequency of test writing. In addition to practice tests and more thorough preparation, this solution can primarily reduce the errors caused by underestimating students' performance. According to Caldarella et al. (2020), students think of a great instructor who has eyes in the back of his head and can see even when standing with his back. A vital role is if the teacher gives praise and positive reinforcement to support the desired behaviour, even with a look or gesture, so the students feel they are being watched. Konstantinidou and Kyriakides (2022) also, clarity of the instructions is essential, as it positively affects

the student's active learning activities in the classroom. This can also be helped by reorganizing the instructor's preliminary thinking. In terms of learning aids, based on teacher reports (Hsu and Halpin, 2022), although the teachers initially rely predominantly on textbooks and the previous teaching materials of their courses when organizing the courses, during subsequent consultations, several teachers report that they reorganize or reduce the content of the course material covered, to leave more time for critical thinking and active learning. To confirm this, (Zólyomi, 2020) states that implicit learning (which happens outside of consciousness and is inaccessible to consciousness) sometimes proves to be more effective than explicit (conscious) learning. Looking at the example of university students (Csók, 2020) , based on the research results, those who graduated from theory-oriented training highlighted their employment difficulties, so it may be worth putting more emphasis on curriculum development, including the synthesis of theory and practice, which can also help self-employment. In addition to incorporating practice, online learning opportunities can also support the activation of students. (Benedek, 2021) studies these methods, it aims to make learning more enjoyable in addition to imparting knowledge. He proposes open-source content development as a solution. During the pandemic, the need for mass access to educational content via the Internet increased, triggering the need for innovation. Thus, they aimed to involve interested students/teachers in compiling open-access teaching materials. Another innovation opportunity appeared in the form of cloud services, providing the back-end storage capacity necessary for the success of the process.

The creation of a supportive atmosphere, therefore, plays an important role. However, it is essential that the 'other leg' of education, i.e. the professional content, also serves the students' interests.

2.2. Updating railway professional knowledge material

Coe et al. (2020) presented in the previous subsection is interwoven with the need for the instructor to be professionally impeccable, for which it is essential that he has not only extensive but also fresh, current knowledge. With up-to-date knowledge, he can provide a clear picture of opportunities and threats. Profound professional knowledge also positively affects the instructor-student relationship, increasing trust in the instructor through expert power (Kay and Saucier, 2020). They help effectively manage time and resources in the classroom and structure teaching processes. According to Sweller et al. (2019), the structuring of the content, the solution of partial tasks and the presentation of practical examples greatly help 'newbies'. In other words, students who do not yet have routines benefit from it. Those who have

been in the field for a more extended period of time can learn more from solving one complete problem without breaking it down into subtasks, in which the transfer of the instructor's practical experience can be helpful. The teacher must therefore adapt the tasks to the students' needs.

There is a great need for current sources, but according to (Andersen, 2020), in recent years, instead of the development of specialist books, more attention has been paid to the professional training of teachers. Of course, this is also very important, but in the old technical books, for example, task orientation is less present than in the new ones, even though this would be extremely important for competence development. However, the fact that a book has a new edition but almost unchanged content is not a solution. An actual update is needed. Bakken et al. (2021) draws attention to the fact that the textbook tasks do not change over time, the new edition books are very similar to their previous versions. Unfortunately, it is ignored that students should be prepared for a resilient attitude since we live in a rapidly changing world. On the one hand, they conclude that there may be differences in updates by discipline as each professional community develops its own 'genre' norms. On the other hand, the curriculum design is also influenced by the assessment practices, i.e. what kind of test the students have to take to determine their mastery of the content. If the assessment requirements do not change, they do not feel the need to change the textbook either, which, unfortunately, can preserve the fact that outdated knowledge is being taught. This has harmful effects, as students may have limited opportunities for development.

Häußler and Borrmann (2021) draws attention to the fact that there is limited industry-specific knowledge regarding railway infrastructure planning. Khabarov and Volegzhanina (2022) emphasizes the importance of standardizing the educational content of the railway profession. The common problem is that people (employees and partners) misunderstand industry documents, which hinders effective communication between interacting parties. Equally urgent is the issue of harmonization of multilingual industry documentation. According to Hughes et al. (2019), the main problem is that multilingualism makes it challenging to coordinate the content of hazard and accident reports from all over the world this information could improve safety. Khabarov and Volegzhanina (2022) Developing web applications such as intelligent educational agents is proposed to eliminate this problem. The basic condition for this is the standardization of educational content. This kind of coordination can be achieved by synthesizing person-centered and digital solutions.

The positive atmosphere, combined with the current professional content, can support the students in acquiring the necessary knowledge and possessing the competencies essential for safely completing tasks.

3. Material and method

The survey took place online (on the Google questionnaire platform) and consisted of a questionnaire that took about half an hour to answer and related to educational experiences.

The questionnaire contained Likert scale questions; multiple-choice questions, i.e. questions with predetermined answer options; and so-called open-ended questions that can be answered freely.

We placed a control question in the questionnaire, which measured the automaticity of answering the questionnaire. After the middle of the education questionnaire, 20% of the respondents did not pay attention. During the data analysis, we did not consider the numerical answers of the inattentive respondents but only the textual answers, where their adequacy could be checked.

The questionnaire was filled out among the railway's professional trainers and those designated by the company groups involved in the investigation.

174 people filled out the questionnaire in total, of which 4 are employees of MÁV-HÉV, 19 of MÁV, 50 of MÁV-Start and 101 of Rail Cargo Hungária company groups. The gender distribution was 148 men and 26 women. The average age was 49 years (standard deviation=8.4 years), the youngest respondent was 25, and the oldest 72.

As we have already written, we placed a control question between the numerical answers in the middle of the questionnaire to check whether it was filled out automatically. The question was, 'Would you mind writing 32?' This answer was given in 135 cases; in one case, the person entered 33. In the other 38 cases, there was not nearly this number, so the answer can be considered automatic, in these cases, the numerical answers of the respondents were not taken into account during the analysis, only the text answers, where the conscious answer can be checked.

The final sample includes the data of 136 people, 114 men and 22 women, of whom 4 are employees of HÉV, 15 of MÁV, 35 of MÁV-Start and 82 of Rail Cargo Hungária. In the case of comparisons between companies, this suggests caution because, in the case of a smaller sample, a more significant measurement error is possible if they do not represent the population well. The average age was 48 years (standard deviation=8.5 years), the youngest respondent was 25, and the oldest 72. Looking at the company groups, it seems that the respondents are younger in the case

of Rail Cargo Hungaria and somewhat younger in the case of MÁV (on average 45.8 years and 47 years respectively) than the respondents of HÉV (52 years) or MÁV-Start (50.1 years).

Typically (median), they had 7 years of teaching experience, there were 0 and 48 years between the answers. In the case of Rail Cargo Hungária, the respondents typically have less teaching experience (median=5 years), the respondents of MÁV (10 years) and MÁV-Start (14 years), while the respondents of the HÉV company group typically have the most teaching experience (19 years). Regarding education, 59 are practical, 9 are theoretical instructors, and 68 are both.

4. Results

Regarding questions about teaching methods, we asked them to indicate how often the listed teaching methods are used on a five-point scale. Based on the answers, the generally most commonly used teaching methods are conversation (4.28), material illustration (4.07) and practical teaching (4.26). The lecture (3.69), individual task (3.12), situational exercise (3.41) and, slide show, series of pictures, video (3.33) are also typical. The conversation, therefore, appears with the highest average value, which can also be beneficial in terms of employee satisfaction since, according to Kotsis and Darnai (2022), it can be increased mainly by a direct, good relationship with colleagues. The increased focus is on the retention of skilled labour (Gergely and Pierog 2016).

Based on the data in Figure 2, there are significant differences between the company groups in the frequency of some teaching methods used by instructors. Group projects, situation exercises and simulations are also more common in the case of HÉV. The video illustration is HÉV and MÁV Start during the presentation and slide show. These differences are not statistical (with the help of analysis of variance and Bonferroni test) in the case of HÉV (limited interpretation due to only 4 respondents) but can be verified in the case of MÁV Start and Rail Cargo Hungaria. The fact that presentations and visualizations are less common in the case of Rail Cargo Hungaria is justified by the fact that there are proportionally more instructors who are exclusively practical (65%). Among other answers, feedback and error analysis appeared several times.
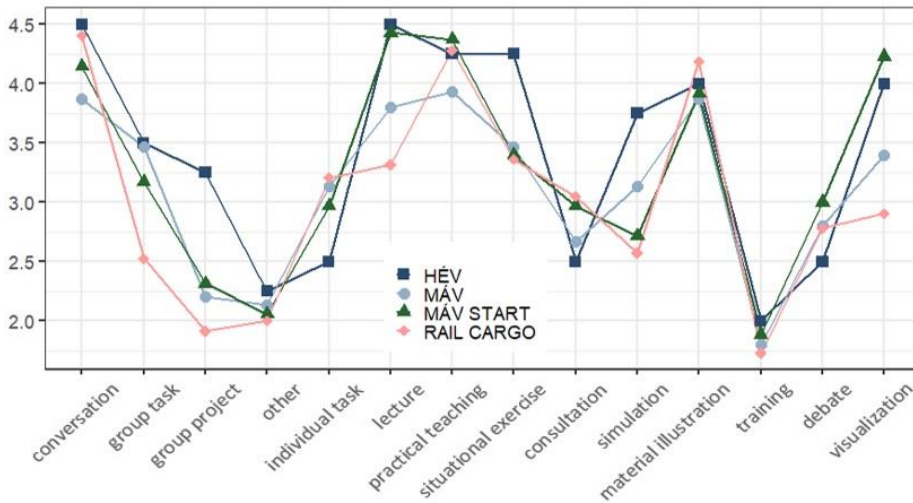
Figure 2: Average values of the application of educational methods per company
group
Source: Own study, n=174

Instructors often use auxiliary materials found on electronic interfaces (3.84) and extracts and notes of the training material (3.83) as learning support tools (Figure 3). Among the other answers, technical books appear (often it appears that they are old technical books), case studies, the experience of other colleagues, videos, and self-made diagrams. Applying all these is significantly more typical for MÁV Start instructors ($p<0.05$). They would find it helpful to have a uniformly designed note (4.3). According to (Häußler and Borrmann, 2021), creating industry-specific knowledge would also greatly help on an international level, meaning that Hungarian employees' demand for this is not unique. (Khabarov – Volegzhanina, 2022) goes even further and urges the international standardization of the literature. In addition to the technical books, the solutions used by the respondents (case studies, experiences, videos and diagrams) can also be extremely useful, the empirical results of (Hsu - Halpin, 2022) also show that during the initial consultations, the technical books are more the basis, and later on the promotion of critical thinking is given more space. According to the first dimension of (Coe et al., 2020), it is also essential to supplement the theoretical material with these experiences. If the provision of electronic aids is not the result of the scarcity of written literature, according to (Benedek, 2021), it can make learning more enjoyable. Involving students in curriculum development can be of further help.
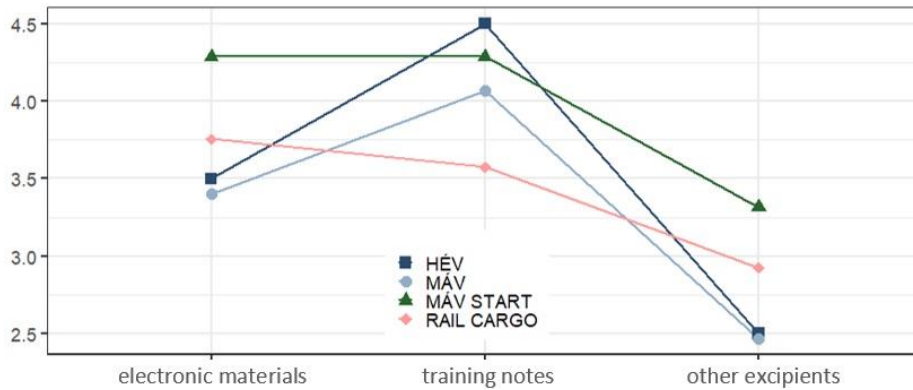
Figure 3: Average values of the use of different learning aids per company group
Source: Own study, n=174

In the assessment of skills important for education (Figure 4), on average, considering all instructors, the highest scores are professional knowledge (4.91), professional experience (4.82), communication skills (4.7), problem-solving thinking (4.68), commitment, responsibility (4.57), conflict management (4.57), flexibility (4.49) and creativity (4.37). Knowledge of pedagogical, teaching and learning methods is also considered necessary (all average=4.2). The professional experience emphasized by (Coe et al., 2020) in the first dimension is therefore felt to be the most important. In addition to deep professional knowledge, the communication and problem-solving necessary to create a supportive atmosphere appear in several dimensions as essential features. In the second dimension, it appears as a facilitator of encouragement, in the third dimension, it appears in the formulation of precise instructions, and in the fourth dimension, it appears in the clarification of learning goals.
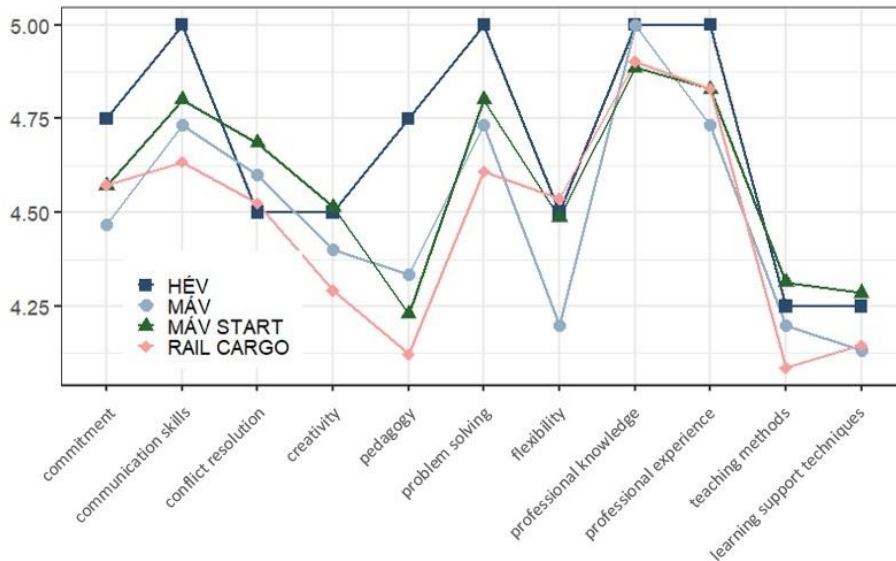
Figure 4: Average ratings of characteristics considered important during education by company group.
Source: Own study, n=174

Regarding the factors considered important during education, the opinion of HÉV employees seems to be different (it can be interpreted in a limited way due to only 4 respondents), but there are no statistically verifiable differences in this question between the company groups $F(3, 132) < 1.69$, $p < 0.18$.

For self-development (Figure 5), instructors mostly use specialist books (3.88) and professional Internet portals (3.73), and professional training and lectures are also typical (3.65). There is a significant difference between the company groups only in the case of Internet portals presenting pedagogical methods ($F(3, 132) < 2.66$, $p < 0.05$).
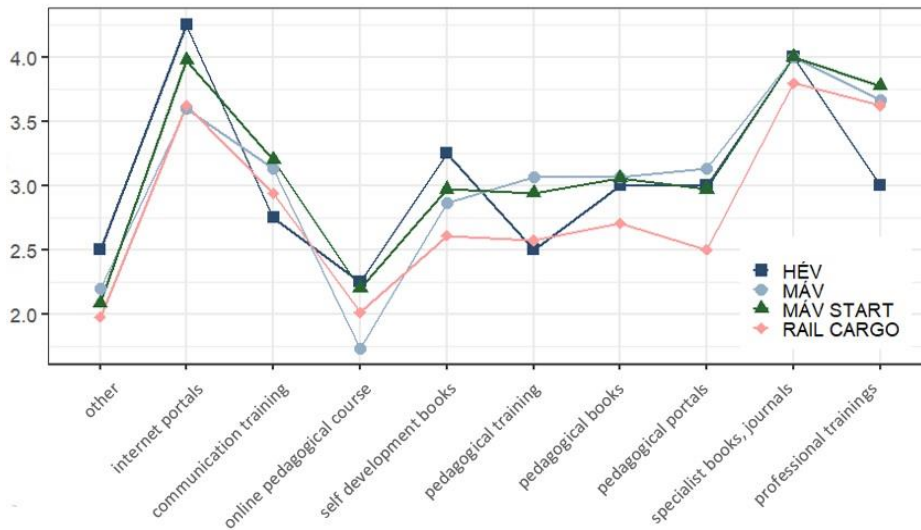
Figure 5: The average values of the various methods used for self-improvement per company group
Source: Own study, n=174

The need for background support is also felt for these results, as they mainly rely on internet portals for self-development. According to (Hart, 2022) and (Konstantinidou – Kyriakides, 2022) it is crucial to ensure the appropriate organizational climate, so it is worthwhile to put further emphasis on the development of the helping areas by organizing skills training in addition to professional training.

5. Conclusions

The railway trainers form a part of all the trainers. Inserted into the global picture, it is therefore equally important to pay attention to creating a supportive atmosphere and the availability of up-to-date technical literature.

In our submitted but not yet published manuscript on teacher personality, we suggested that the importance of self-knowledge should be drawn to the attention of railway teachers, as many teachers are unaware of their self-image. This question is vital since the image of a person can influence the teacher-student relationship and interactions. As a further research direction, let us formulate whether they know exactly what needs to be developed within the communication skills considered necessary by the respondents.

There is very limited industry-specific knowledge regarding the railway industry. Our research results also confirmed the importance of updating the content.

Moreover, industry documents are often incomprehensible even to professionals, which hinders effective communication. It is no coincidence that the researchers in

this work emphasize the importance of international standardization of multilingual railway vocational education content. This could help harmonize the content of hazard and accident reports, improving safety.

References

1. Andersen, K. N. (2020) 'Assessing task-orientation potential in primary science textbooks: Toward a new approach', *Journal of Research in Science Teaching*, 57(4), pp. 481–509. doi: 10.1002/tea.21599.
2. Bakken, J. and Andersson-Bakken, E. (2021) 'The textbook task as a genre', *Journal of Curriculum Studies*. Routledge, 53(6), pp. 729–748. doi: 10.1080/00220272.2021.1929499.
3. Benedek, A. (2021) 'New Paths to Online Teaching – How Can We Manage Knowledge Transfer and Make the Learning More Enjoyable?', *Central European Journal of Educational Research*, 3(3), pp. 55–62. doi: 10.37441/cejer/2021/3/3/10015.
4. Caldarella, P., Larsen, R. A. A., Williams, L., Downs, K. R., Wills, H. P., and Wehby, J. H. (2020) 'Effects of teachers' praise-to-reprimand ratios on elementary students' on-task behaviour', *Educational Psychology*. Routledge, 40(10), pp. 1306–1322. doi: 10.1080/01443410.2020.1711872.
5. Cao, Y., An, Y., Su, S., Xie, G., and Sun, Y. (2022) 'A statistical study of railway safety in China and Japan 1990–2020', *Accident Analysis and Prevention*. Elsevier Ltd, 175(July), p. 106764. doi: 10.1016/j.aap.2022.106764.
6. Ciani, L., Guidi, G. and Patrizi, G. (2022) 'Human reliability in railway engineering: Literature review and bibliometric analysis of the last two decades', *Safety Science*. Elsevier Ltd, 151(January), p. 105755. doi: 10.1016/j.ssci.2022.105755.
7. Coe, R., Rauch, C. J., Kime, S., and Singleton, D. (2020) *Great Teaching Toolkit - Evidence Review*. Cambridge: Evidence Based Education in partnership with Cambridge Assessment International Education.
8. Csók, C. (2020) 'Labour Market Characteristics of Helping Professionals', *Central European Journal of Educational Research*, 2(1), pp. 66–75. doi: 10.37441/cejer/2020/2/1/5759.
9. Gergely, É. and Pierog, A. (2016) 'Motivációs tényezők feltárása civil és profitorientált szervezeteknél', *Gradus*, 3(1), pp. 368–373.
10. Hart, N. (2022) *Impact : a five-part framework for making a difference in schools*.
11. Häußler, M. and Borrmann, A. (2021) 'Knowledge-based engineering in the context of railway design by integrating BIM, BPMN, DMN and the methodology for knowledge-based engineering applications (MOKA)', *Journal of Information Technology in Construction*, 26, pp. 193–226. doi: 10.36680/J.ITCON.2021.012.
12. Hsu, J. L. and Halpin, P. A. (2022) 'Exploring physiology instructors' use of core concepts: pedagogical factors that influence choice of course topics', *Advances in physiology education*, 46(4), pp. 667–676. doi: 10.1152/advan.00114.2022.

13. Hughes, P., Robinson, R., Figueres-Esteban, M., and van Gulijk, C. (2019) 'Extracting safety information from multi-lingual accident reports using an ontology-based approach', *Safety Science*. Elsevier, 118, pp. 288–297. doi: 10.1016/J.SSCI.2019.05.029.

14. Khabarov, V. and Volegzhanina, I. (2022) 'An impact of ontology-based service-oriented ecosystems on digital transformation of railway transport and engineering education', *Transportation Research Procedia*. Elsevier B.V., 63, pp. 1899–1908. doi: 10.1016/j.trpro.2022.06.210.

15. Konstantinidou, E. and Kyriakides, L. (2022) 'Instructional engagement and student learning outcomes: Direct and indirect effects based on country-specific contingencies', *Studies in Educational Evaluation*. Elsevier Ltd, 73(November 2021), p. 101144. doi: 10.1016/j.stueduc.2022.101144.

16. Kotsis, Á. and Darnai, B. (2022) 'A felsőoktatási hallgatók munkával szembeni elvárásainak elemzése Kano-modell segítségével', *Marketing & Menedzsment*, 56(3), pp. 43–53. doi: 10.15170/mm.2022.56.03.04.

17. Kun, A. I., Boros, J. and Kotsis, Á. (2022) 'Tudják-e a hallgatók, hogy mennyit (nem) tudnak? – A Dunning–Kruger-hatás vizsgálata üzleti szakokon tanuló felsőoktatási szakképzéses hallgatók körében', *Marketing & Menedzsment*, 56(3), pp. 7–20. doi: 10.15170/mm.2022.56.03.01.

18. Pusztai, G., Fényes, H. and Kovács, K. (2022) 'Factors Influencing the Chance of Dropout or Being at Risk of Dropout in Higher Education', *Education Sciences*, 12(11), p. 804. doi: 10.3390/educsci12110804.

19. Rangra, S., Sallak, M., Schön, W., and Vanderhaegen, F. (2017) 'A graphical model based on performance shaping factors for assessing human reliability', *IEEE Transactions on Reliability*. Institute of Electrical and Electronics Engineers Inc., 66(4), pp. 1120–1143. doi: 10.1109/TR.2017.2755543.

20. Sweller, J., van Merriënboer, J. J. G. and Paas, F. (2019) 'Cognitive Architecture and Instructional Design: 20 Years Later', *Educational Psychology Review*. Educational Psychology Review, 31(2), pp. 261–292. doi: 10.1007/s10648-019-09465-5.

21. Thijssen, M. W. P., Rege, M. and Solheim, O. J. (2022) 'Teacher relationship skills and student learning', *Economics of Education Review*. Elsevier Ltd, 89(April 2021), p. 102251. doi: 10.1016/j.econedurev.2022.102251.

22. Zólyomi, A. (2020) 'Designing an Instrument to Measure Explicit and Implicit Learning Processes', *Central European Journal of Educational Research*, 2(1), pp. 92–102. doi: 10.37441/cejer/2020/2/1/5762.

THE MANAGEMENT AND IMPLEMENTATION OF AI IN THE SCHOOL CURRICULUM IN ISRAEL

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Abstract: *This article reviews how Artificial Intelligence (AI) tools are implemented and reshaping the education system in Israel. In many ways Education and AI are intertwined. Education is used as a means to develop minds capable of expanding and leveraging the pool of knowledge, while AI provides tools to develop a more accurate and detailed picture of how the human brain works. By leveraging the best features of machines and teachers, the vision for AI in education is one where AI and teachers work together to achieve the best outcome for students. Since today's students will have to work in a future where AI is a reality, it is important that our educational institutions expose students to the technology and train them how to use it. The idea behind managing and implementing AI is to strengthen student-centred and self-regulated learning and promote the development of students' information management and problem-solving skills. The study investigates how teachers, school ICT coordinators, principals, and parents deal with the implantation of AI in education, how they use innovative technological tools, and how do they cope with the challenges facing students. In order to be able to integrate AI elements, teachers from the school receive a training course in a coordinated manner. In addition, implementing AI requires schools to assign instructors, who as teachers, hold weekly meetings on digital skills, and each school has a school ICT coordinator and leading teachers on the subject. The role of the principal in this project is to coordinate between the schools and Ministry of Education that supervises how schools implement the project.*

Keywords: AI technology; Israeli schools; AI, ICT coordinators; Qualified teachers; Transformative principals.

JEL Classification: *O32; O33; O35.*

1. Introduction

The information technology revolution affects the way people communicate, their daily language, the assimilation of knowledge, modes of thinking, the culture of

leisure, the world of work and more. Some of the traditional tools that made it possible to function in the world of knowledge are degenerating and disappearing, and other tools are being created that redefine the way we read, conduct research, express ourselves, organize our knowledge and share it with others (Center_for_Educational_Technology, 2010). Among the tools we can mention include social networks, video images, digital cameras, mobile phones and computer games (Bigdeli & Kaufman, 2017). The variety of tools that information technology makes available to us encompasses all areas of life. The tools allow, among other things, to extract information from the vast amounts of information available to every person, to play games that activate several senses (modern GPS), get from place to place with the help of a navigator, to have social communication anywhere and at any time (Wargan, 2010), and to send messages through our cell-phone (Voogt, Erstad, Dede, & Mishra, 2013) and on the Internet, including sound files, images and music. However, technological development also entails risks and threats, including excess information, violation of privacy, anonymity and impersonation, viruses, legal and financial liability, fraud, theft, deviation, terrorist threats and addiction. This article deals with the challenges of implementing AI technology in Israel schools in recent years.

2. Implementing AI Technology

2.1. Changes in the world of work
The analysis of the skills required to perform the roles of workers today indicates an increase in the demand for complex thinking and teamwork (Keane, Keane, & Blicblau, 2016), and a decrease in routine skills and manual work. Likewise, emphasis is currently placed on the need for creativity, problem solving (Waks, 2015). Further, interpersonal communication, flexibility and adaptability that are required are a consequence of changes that took place in the world of work between the 20th and 21st centuries.

The technology that was based on routine manual work has become interactive, creative and less routine. The job requirements have expanded from mastering one field to simultaneously mastering a variety of fields. There is also an increase in the requirements for complex communication and team thinking.

AI that can read student's facial expression: These days there is the development of intelligent teaching and the development of digital platforms that use AI to provide learning, tests and feedback to students from elementary school to high school levels. AI exposes students new challenges, where AI identifies gaps in knowledge and

redirects them to new topics if necessary. As technology becomes more sophisticated, the AI may be able to read a student's facial expression indicating whether s/he is struggling to grasp a topic and reexplain the topic to help the student understand the topic.

AI that points out where courses and lessons can be improved: Teachers are not always aware of gaps in their lessons and educational materials that can leave students confused about certain concepts. Artificial intelligence offers a way to solve the problem. An example of this is the website coursera.org, a huge provider of online courses, already applying AI technology to answer this problem. When it is found that a large number of students submit an incorrect answer to a homework assignment, the system sends an alert to the teacher and sends prospective students a customized message offering clues to the correct answer. This system helps fill in the gaps in explanations that can appear in courses, and helps ensure that all students build the same conceptual foundation. Instead of waiting to hear from the teacher or being embarrassed to ask, students get immediate feedback that helps them understand the concept and how to do it correctly next time.

Additional support from artificial guides: already today there are programs based on artificial intelligence that can help students with basic math, writing and other subjects. These programs can teach the basics, but so far they are not ideal for students to learn thinking and creativity, something that teachers in the real world are still required to do. However, this should not rule out the possibility that artificial teachers could do these things in the future. Also, AI systems can give the teacher tools to check tasks in a faster and more efficient way, so that he can devote more time to each student and help him where he has difficulty.

2.2. The consequences of the changes on the education system

In the past, most of the learning took place at school, while today it is known that learning takes place everywhere and in all areas of life. In the past, access to information was limited, and often required a fee, whereas today the information is mostly available, accessible and free. In the past there was a demand for uniformity and compliance with conventions, while today people strive for inventiveness and personalization of the learning experience. In the past, cultural diversity was seen as a problem to be faced, whereas today it is seen as an asset and not an obstacle. In the past, a significant part of learning was based on reproducing what was learned, whereas today there is a decrease in the need to reproduce what was learned and there is a need for non-routine analysis skills, filtering and combining knowledge, complex thinking, and the ability to generalize and transfer information.

ICT programs of the Ministry of Education (2010) list the skills required of school graduates and the school as a training agency. The Education Ministry has redefined the skills that student should acquire from their school (Ministry of Education, 2015): Articulating information literacy-skills such as organizing information from different sources, evaluating and analysing it, raising questions based on information needs, identifying the sources of information, using critical thinking for solving problems; drawing conclusions and creating new knowledge, high thinking, and problem solving, choosing the appropriate aggregation of information in different situations and its application; developing critical, analytical and evaluative thinking; stimulating creativity, entrepreneurship and ingenuity, communication and sharing skills, cooperation, building relationships with others for a solving problems in a collaborative and intercultural way, working in a team and integrating into the community online; seeking cooperative learning for the purpose of creating a joint product, acquiring skills on how to use ICT tools, developing self-learning and cooperative learning skills, quickly adapting to changes and innovations, adapting to dealing with a lot of information, goals and communities, developing agility, flexibility, self-esteem, self-management, self-discipline, curiosity.

Moreover, mastery of the language is also necessary in today's age, not only to understand and be able to express oneself, but also to communicate, participate in discussions, formulate queries, read texts and write effectively. Students are also required to develop academic work skills, presentation skills, documentation skills, ethics and online safety, ethical conduct, knowledge of copyright laws, maintaining privacy and the like and awareness of online dangers, acquiring skills for life and career.

Further, DeMonte describes some abilities that we already wish for in high school graduates today including the transformation of the learned knowledge into realization. For example, translating knowledge, presenting relevant questions, the application of solutions derived from it in new problems, ability to deal intelligently with new and complex life problems, which are presented vaguely, while dividing them into specific sub-questions, in a way that allows addressing a broad problem, ability to generalize and assimilate knowledge from different sources and merge it into an integrative whole; ability to deal with a new and complex life problem within the framework of cooperative learning at work.

Andersen Koenig, from the National Institute of Sciences in the United States, refers to the evaluation of the skills required in the 21st century from high school students, that were classified into three categories (Koenig, 2011): 1).

Formally in preparation for acquiring a high school certificate, the model has been changed to put the learner in the centre and provide him with tools for learning.

Milestones for achieving the change that will last a lifetime that are required for this in educational systems include (Shapiro, 2019):

1) There is a need to bring teachers, students and parents to the understanding that the demands of the labour market are changing very quickly and that the school is having difficulty to quickly integrating the required changes in the curriculum.

2) Students must understand the connection between what they learn in school and their professional future. Teachers must receive opportunities and incentives to study the changes in the labour market, and they should change their teaching methods accordingly.

3) Professional development for teachers in this regard must be thorough and continuous and be planned together with teachers at the field level.

4) Measuring student achievement must change. One should engage less in measuring memory and facts and more in mastering required current skills such as problem solving, expressive ability, and teamwork.

3. Implementation of ICT tools in the education system

For the purposes of teaching, learning and assessment, the new tools that information technology makes available to us are partially suitable for the education system. Factors of human engineering and the way of learning are involved in examining the contribution of technology and the feasibility of its implementation in schools. Some of the current tools for online learning and teaching are general tools and some are unique to education (Levin, 2016). Among them are 1) blogs, chat, e-mail and social networks, which enable the transfer of information between people and also the exchange of information between professionals and organizations. 2) forums for exchanging information around areas of common interest. 3) search engines, which allow immediate access to vast amounts of information. 4) Wikipedia and similar online sites, whose purpose is to provide information to everyone and to expand the possibilities and opportunities to acquire free knowledge even for populations with little means and far from academic centres. 5) Use of "learning" that allows each student to learn at his own pace and at the level that suits him and to receive immediate feedback for the purpose of correcting and improving his achievements. 6) Integration Computerized learning with remote instruction from a teacher who is an expert in his field, a teacher who can receive data in real time from every student and use them to improve his progress in the study material (Harasim, 2017).

The students spend a significant part of the day in the Internet environment, and therefore expect that technology will also be part of the learning environment in the

school in Israel (Pape, 2009). Yet, the assimilation of the new technologies in the education system does not catch up with the pace of developments. From the Ministry of Education document it appears that the digital gap between Israel and the developed countries in the computer-student ratio is growing. The current gap between the possibilities offered by information technology and its actual use is large, and the state of the infrastructure and students' access to computers and the Internet are still very limited (Wargan, 2010). In 2000 Israel was ranked high on the scale of the proportion of students who have a computer at home, and in 2009 the percentage of such students remained high in comparison to other OECD countries. On the other hand, when computers were tested in schools, it became clear that in 2000 and 2009 Israel was more or less in the same place on the ranking scale (Hall, Lundin, & Sibbmark, 2019).

According to a Ministry of Education document (Israeli-Ministry-of-Education, 2021), the school today is far removed from the student's world. Outside of school, the student is exposed to advanced technologies, while most schools in Israel use traditional pedagogy, without using the same technological means to which the student is accustomed (Israeli-Ministry-of-Education, 2021). A survey conducted by the Centre for Educational Technology among a representative sample of Students in grades 11-12 revealed that students use the computer at home mainly for games and communication with friends, but the use for educational needs is mainly limited to searching and writing papers. About half of the respondents in the survey think that the school does not prepare them for the acquisition of ICT literacy and does not provide them with the skills of the 21st century (Center_for_Educational_Technology, 2010). The parents' attitudes are not very different from the students' perceptions: a survey among parents of school-aged students shows that about half of the parents believe that the school does not prepare the students for the job market in the 21st century, and that students do not study enough hours using a computer at school (Center_for_Educational_Technology, 2010).

Furthermore, the teacher in a computerized environment should change the teaching methods, focus on changing the way a student understands concepts and processes, diversify his work methods (and allow students to perform challenging assignments and experience working as a teamwork (DeMonte, 2013). Such an environment makes the system data available to the teacher in real time for providing feedback to students and improvement of his achievements. In a computerized environment, the teacher must be able to help the student evaluate himself and guide him to learn lessons to improve his abilities (Nir & Hameiri, 2014).

According to the Ministry of Education (Center_for_Educational_Technology, 2010), technology is a necessary but not sufficient condition for utilizing the rich computerized learning environments that have been developed and exist today. Many teachers still do not use it for teaching and learning purposes. Teachers also do not make sufficient use of sophisticated management systems to administer students attendance, grades, disciplinary matters and lesson preparation (Center_for_Educational_Technology, 2010). Following the above, one should expect at least a change in instructions and guidance from the principal to teachers as subordinates and a transition to sharing work, and interaction between the principal and teacher as an individual and with the team of teachers and the entire staff (Nir & Hameiri, 2014). The principal will work to integrate the school into the society in which it operates, while involving parents and various local factors. In addition to this, the principal will be guided in his work to bring administrative transparency and make available to the public information about how the school operates (Hall et al., 2019).

In short, there is thus a gap between what is expected of the school today, in the age of information technology, in terms of training the student and preparing him for the future labour market on the one hand, and the performances of schools on the other hand. This gap means that the functioning of the school is perceived as unsatisfactory, the curricula are perceived as inappropriate and not up-to-date, and the professional authority of the teacher as the transmitter of knowledge is perceived as weaker than before.

3.1. The Professional Quality of Teachers

The professional quality of the teachers relates to each of the five problems reviewed above. Prominent among these professional quality is its impact on students' achievements. A review of research material shows that the teachers' contribution to the students' achievements is large and clear. One study found that the differences between teachers explain about 30% of the variation in a student's achievement (Kim, Raza, & Seidman, 2019). DeMonte reviewed studies examining differences in the achievements of student groups as a function of teaching and teacher characteristics, and found that the identity of a the teacher has great, and undisputed, importance in explaining the variation in student's achievement (DeMonte, 2013).

The teachers' characteristics relate to 1) their personal qualities 2) their professional background and training 3) their knowledge and skills 4) and their teaching practices. The empirical attempts to establish clear relationships of cause and effect between the achievements of students and between the personal characteristics of the teacher,

his training, his knowledge and his skills. These characteristics came up well in only a few of studies.

Personal characteristics, professional background, knowledge and skills: a review of several studies show that no relationship was found between many administrative characteristics of the teachers and the students' achievements, that the relationships found were not consistent between the various studies, or that the relationships were not significant (Drovnikov et al., 2016; Kim et al., 2019). The characteristics of the teachers tested were seniority, education, certification, identity of the entity that awarded the degree and academic status, scores in licensing tests (Drovnikov et al., 2016). In recent reviews, however, some relationships have been found to be significant, where the most prominent of which is a positive relationship between the teacher's gender and the students' achievements: female teachers are more successful than male teachers in improving the measured achievements of their students (Kim et al., 2019).

In mathematics, unlike in other subjects, connections were found between the student's achievements and the teacher's degree, his academic certification, his grades from his college and the training he received in teaching general mathematics (Kim et al., 2019). The influence of these factors was greater in post-primary schools, the researchers even pointed out a relationship between math teachers' well-versed knowledge of the material and the achievements of their students. Even if it is not found that education and cognitive ability tests are beneficial in predicting the effectiveness of teachers, setting a high bar may improve the image of the teaching profession and thus attract new teachers to the world of teaching with high general abilities and even allow screening of candidates while observing their work (Drovnikov et al., 2016). Here it is worth noting that in recent years the Ministry of Education has been promoting a variety of projects for "alternative training," such as the program for training engineers to teach mathematics. These programs are supposed to promote the changes presented above and their degree of success in achieving the goals of the school.

The teaching practices: the characteristics of the teaching practices are the ones that influence the learning patterns (Harasim, 2017), which indicate the student's personality more than any other factor.

The teacher's perception of the student's role in acquiring tools for self-study: from research findings, it turns out that the most significant effect on the student's learning is evident when the teacher checks if his actions as a teacher are effective and the teacher updates them accordingly. In addition, the teacher should allow the student to expand his "classical" status, the status of a student who is content with receiving knowledge from the teacher, and to adopt for himself teaching roles such as self-

monitoring, self-evaluation and self-study. In this way, the teacher would allow the student to acquire learning tools on his own.

Teaching for Understanding: Success in teaching-for-understanding is largely a function of learning the material in a way that is perceived by the student as clear. The two-way feedback, from the teacher to the student and vice versa, makes it possible to verify the understanding of the material and the achievement of the educational goals.

Monitoring the success of learning and producing lessons: A teacher must know how to identify correct or incorrect learning, know how to evaluate the success of learning and decide if and when to switch to an alternative strategy. Personal skills and abilities, impressive presence of the teacher, control of the classroom climate, ability to challenge the students, ability to discuss issues in depth, ability to improvise, and ability to develop new skills on integrating information in his daily studies, and the ability to abstract.

Prominent characteristics of effective practice found in empirical research include: 1) the teacher's perception of the importance and centrality of the student's acquisition of tools for self-study. 2) the teacher's willingness to continuously check whether his actions as a teacher are effective and correct them accordingly. 3) teaching-for-understanding: the teacher should help students to perceive learning as two-way feedback between the teacher and the student, a pattern of action that makes it possible to verify the understanding of the material and the achievement of the educational goals. 4) The teacher should monitor the success of learning process.

3.2 Lessons Learned

Recruiting qualified personnel: Improving the status of teachers is key to recruiting talented, qualified personnel, and it can be achieved with the help of attractive financing measures and licensing tests that will help filter unsuitable candidates and convey a message to the public that engaging in the teaching profession requires special and not obvious skills. To these should be added the improvement of the working conditions of the teachers, the improvement of their promotion possibilities, the financing of their studies during the training period and the provision of subsistence scholarships, which will also contribute to the realization of the goal of recruiting high-quality personnel.

Another contribution to the recruitment of high quality personnel can come from retaining these quality personnel in the system, where prominent factors that may contribute in this goal are salary, professional promotion scales, professional development, support in reducing disciplinary problems, professional accompaniment and feedback, teaching in small classes, providing work time in the

framework of work planning. Empirical studies have revealed that effective professional development is characterized by 1) joint training of the entire teaching team at the school at the same time (in general pedagogical issues that are not specific to a certain profession or a certain age group). 2) Intensity: The training must be intensive, that is, one that requires an investment from the participants, persistency over time in getting UpToDate training. 3) Relevance: The training must be relevant to the teacher's day-to-day practice and should focus on teaching and learning specific academic contents. 4) Long-term commitment of the teachers to the application of what is learned. 5) Integrating the results of the training into the teacher's day-to-day work by using tools such as joint planning of lessons by all the teachers, making joint decisions about the operation of the school and the curricula, and supporting the mutual learning of each other's teachers. Strategies with potential in this context are, for example, joint discussions, peer observation and mutual feedback, use of video tape, viewing and analysis after the lesson. 6) Compatibility between the development programs and other programs of the school: it is desirable that the training be part of a comprehensive system of change in the school and not an isolated component that is not Integrates into the broader picture of the planned changes. 7) Providing constant and continuous feedback to the teacher with the aim of allowing him to constantly improve the quality of his professional work.

3.3. The Principal's Contribution as a Transformative Leader
The influence of the principal on the school climate: The findings reviewed the issue of the school principal deal but little with the classical administrative functions that include: supervision, coordination, planning, control, etc. and emphasize the influence of the principal as a leader of the staff, the students and the characteristics of the school climate (Keane et al., 2016). Nir and Hameiri found that one of the main factors influencing the variance in student achievement is the school climate (Nir & Hameiri, 2014). The principal of the school has a great influence on the formation of such a climate, through effective leadership that has various components and in particular:

- Forming a common vision for all team members
- Setting clear goals
- Engaging in resource mobilization
- Consolidating a sense of teamwork among teachers
- Analysis of the school activity and learning lessons
- Participation of teachers in school discussions and aspiration to achieving unanimity among the team of teachers on the question of how to realize the school's goals (Tubbs & Garner, 2008).

Another study notes that the atmosphere of trust between the administration, teachers, students and parents contributed to the students' sense of personal security and their feeling at the same time these factors contributed to the teachers' feeling that the administration is attentive and helpful (Benbenishty, Astor, Roziner, & Wrabel, 2016).

4. Conclusion

This article deals with notable transformations that took place since the late 20ᵗʰ century, their implications for certain goals of the education system and the need to place them in a high order of priority, to update and implement them according to the current knowledge structure, based on recent empirical findings. A significant part of the disagreements regarding the goals of education stems from different opinions and perspectives regarding the definition of knowledge and its value. According to some, the purpose of education is to enable students, as members of society, to realize their full potential, while providing appropriate knowledge and tools that will allow them to integrate into the labour market, society and community.

The 21st century is accompanied by a dramatic technological revolution. The society we live in is becoming more diverse, more global and saturated with media, and this process is accelerating all the time. It is difficult to predict what the world will look like in a few years, but the education system has the duty to prepare students, if possible, for life in this changing world. The students encounter new issues that emerge all the time: global warming, lack of natural resources, hunger, health issues, population explosion and other social and environmental issues. These transformations require students to know how to communicate, function and create personal, social, economic and political change at the local, national and global level. All of these changes altered the role of the teacher, students-teacher relationships and requires principals to adopt new methods of administering the school.

References

1. Benbenishty, R., Astor, R. A., Roziner, I., & Wrabel, S. L. (2016). Testing the causal links between school climate, school violence, and school academic performance: A cross-lagged panel autoregressive model. Educational Researcher, 45(3), 197-206.

2. Bigdeli, S., & Kaufman, D. (2017). Digital games in health professions education: Advantages, disadvantages, and game engagement factors. Medical journal of the Islamic Republic of Iran, 31, 117.

3. Center_for_Educational_Technology. (2010). Education in the 21st century: the growth engine of the State of Israel. Tel Aviv:. Retrieved from

4. DeMonte, J. (2013). High-quality professional development for teachers: Supporting teacher training to improve student learning. Center for American Progress. Retrieved from https://files.eric.ed.gov/fulltext/ED561095.pdf

5. Drovnikov, A. S., Nikolaev, E. L., Afanasev, A. S., Ivanov, V. N., Petrova, T. N., Tenyukova, G. G., . . . Povshednaya, F. V. (2016). Teachers professional competence assessment technology in qualification improvement process. International Review of Management and Marketing, 6(1), 111-115.

6. Hall, C., Lundin, M., & Sibbmark, K. (2019). A laptop for every child? The impact of ICT on educational outcomes. Retrieved from

7. Harasim, L. (2017). Learning theory and online technologies: Taylor & Francis.

8. Israeli-Ministry-of-Education. (2021). Trends and Opportunities in Education following the Corona Crisis. Retrieved from https://meyda.education.gov.il/files/Planning/megamotcoronamismach.pdf

9. Keane, T., Keane, W. F., & Blicblau, A. S. (2016). Beyond traditional literacy: Learning and transformative practices using ICT. Education and Information Technologies, 21(4), 769-781.

10. Kim, S., Raza, M., & Seidman, E. (2019). Improving 21st-century teaching skills: The key to effective 21st-century learners. Research in Comparative and International Education, 14(1), 99-117.

11. Koenig, A. (2011). Assessing 21st century skills: Summary of a workshop. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK32690/

12. Levin, D. (2016). Building a Trusted Environment for Education Technology Products. Foundation for Excellence in Education (ExcelinEd). Retrieved from https://files.eric.ed.gov/fulltext/ED576767.pdf

13. Manning, M., Garvis, S., Fleming, C., & Wong, G. T. (2017). The relationship between teacher qualification and the quality of the early childhood education and care environment. Campbell Systematic Reviews, 13(1), 1-82.

14. Ministry of Education, I. (2015). Second Assistant Reform in Kindergartens.

16. Nir, A. E., & Hameiri, L. (2014). School principals' leadership style and school outcomes. Journal of Educational Administration, 52(2), 210-227.

17. Shapiro, J. (2019). The New Childhood: Raising kids to thrive in a digitally connected world: Hachette UK.

18. Tubbs, J. E., & Garner, M. (2008). The impact of school climate on school outcomes. Journal of College Teaching & Learning (TLC), 5(9).

19. Voogt, J., Erstad, O., Dede, C., & Mishra, P. (2013). Challenges to learning and schooling in the digital networked world of the 21st century. Journal of computer assisted learning, 29(5), 403-413.

20. Waks, L. J. (2015). Education 2.0: The learningweb revolution and the transformation of the school: Routledge.

21. Wargan, Y. (2010). Computerization of schools - a snapshot, an update document, was submitted to the Education, Culture and Sports Committee of the Knesset. Retrieved from https://fs.knesset.gov.il/globaldocs/MMM/dd5b6b58-e9f7-e411-80c8-00155d010977/2_dd5b6b58-e9f7-e411-80c8-00155d010977_11_9874.pdf

DO THEY HAVE REALLY NO OPINION? – THE EVALUATION OF STUDENT PARTNERSHIP USING KANO-MODEL

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Abstract: *To improve the quality of higher education, it is essential to understand students' expectations. In this research, we will analyse the specific requirements for the elements of the student partnership using the Kano model. Our questionnaire (N=320) was filled in by students of the Faculty of Economics at the University of Debrecen. Using cluster analysis we distinguished 3 groups of students, with different expectations. The most important features of the education are clear rules and requirements, fair assessment and mutual respect as the lack of these cause dissatisfaction in those 2 clusters that cover 91% of the students. For one cluster, covers 43% of students, helpful lecturer also have the same effect. This latter cluster consists of mostly elder and part-time students, who are enthusiastic and evaluate, if they are treated as colleagues, or involve in common research, problem solving, have bidirectional communication with lecturers and can give feedback on education. However one-fifth of the students doesn't like to participate in lectures, and 15% hate groupwork. Finally we found that there is a cluster of students, which give 9% of sample, who are totally uninterested, as they have no needs, only want to get a certificate.*

Keywords: *Kano-model; tertiary education; partnership with students*

JEL Classification: *I23; J24*

1. Partnership with students

The involvement of students as partners in higher education is reflected in a wide range of literature, much of which cites its role in the acquisition and deepening of knowledge as a major benefit and positive factor. Cook-Sather et al. (2014) argue that involving students as partners in the learning and teaching process improves the quality and effectiveness of teaching and increases student engagement and motivation. In their opinion, it can be beneficial not only for the educational process

but also for the student experience and social responsibility. Healey and Healey (2019) go further, arguing that the active involvement of university students as partners in the teaching and learning process can not only improve students' motivation but also contribute to the development of their creative and critical thinking, increase their satisfaction with the quality of education and support their long-term career development. Healey et al. (2014), argue that partnership increases interest in learning, improves the quality of education, strengthens student-teacher relationships, and develops students' critical thinking and problem-solving skills. Bovill (2014), who argues that in addition to critical thinking, the method develops student reflection and promotes mutual communication between the two parties, makes a similar finding. The use of this approach or method can improve their learning outcomes in the short term and support their career development and active participation in life in the long term (Cook-Sather et al., 2017). In addition to the above, involving students in the educational process can create new opportunities for communication between teachers and students and, thus also can improve the quality of education. The learning experience becomes more personalized, instruction becomes more responsive and dynamic, and the role of students in the educational process becomes more validated (Werder and Otis, 2009). For students, partnership forms of collaboration that include power-sharing between students and teachers and the development of sales skills can have a positive impact. In students' experience, such partnerships help to increase their self-confidence and improve student-faculty relationships (Mihans et al., 2008). According to Dvorakova and Matthews (2016), the development of partnerships between students and lecturers also facilitate students' successful integration into higher education institutions. They also point out that the beneficial effects of partnerships can extend to improving the lives of students, teachers, and institution as a whole. In doing so, they can contribute to the democratization of higher education institutions and more active participation of students in the educational process (Werder and Otis, 2009). However, in contrast to the above, it is important to stress that students and teachers have different understandings of partnerships in higher education. Clarifying roles in the student-teacher partnership is key to the successful implementation of the project. These roles can help to establish the structures and processes necessary for student-staff partnerships in educational institutions. (Bovill, 2017). In addition, engaging students as partners can also present significant challenges for educators, who need to learn how to work with students and ensure that collaboration is beneficial for both students and educators (Cook-Sather et al., 2014). In addition, Mercer-Mapstone et al. (2017) point out in their article that such partnerships without adequate support can have serious negative effects, such as causing

excessive workload for lecturers or even contributing to increased student stress. Therefore, educators and institutions must provide adequate support for such partnerships and pay attention to the benefits created for both students and educators. Educators and institutions must be open to engaging students as partners and provide the appropriate support and structure for collaboration (Healey and Healey, 2019). In addition, it is of course not negligible that educators are equipped to develop and maintain collaborative partnerships and support students to become active participants in the educational process. Educators and institutions also need to be flexible and remain open to new perspectives and changes (Cook-Sather et al., 2017). Direct partnerships can face additional challenges and difficulties, such as inequalities between students and teachers, time constraints, communication difficulties, and a lack of motivation to participate (Dvorakova and Matthews, 2016).

2. Kano-model

In our research, we analysed students' expectations using the Kano model methodology (Kano, 1984). The model is well known in the field of quality management and has recently become an increasingly popular method for categorising customer expectations even in the case of higher education (see McDowell, 2016; Madzík etal., 2019). Using the model we can distinguish must-be, one-dimensional, attractive, indifferent and reverse quality attributes. The model has updated versions but we use the original evaluation (see Yang, 2005; Lee etal., 2011; Shahrestani etal., 2020;).

Must-be expectations are those which, if not included in the product, will cause customer dissatisfaction, while their presence or high level will only result in dissatisfaction being eliminated. Performance characteristics' presence or high level cause satisfaction while their low level or missing cause dissatisfaction. Reverse characteristics have the opposite effect, i.e. their presence causes dissatisfaction. Attractive features are not expected by the customer, so their absence does not increase their dissatisfaction, but their presence surprises them and makes them happy. Indifferent features do not affect feelings. Questionable attributes are attributes that are controversial or illogical, for example, because their presence and absence cause satisfaction too. They are not usually displayed in the analysis. The relationship between the appearance of a characteristic and satisfaction is illustrated in Figure 1 below.
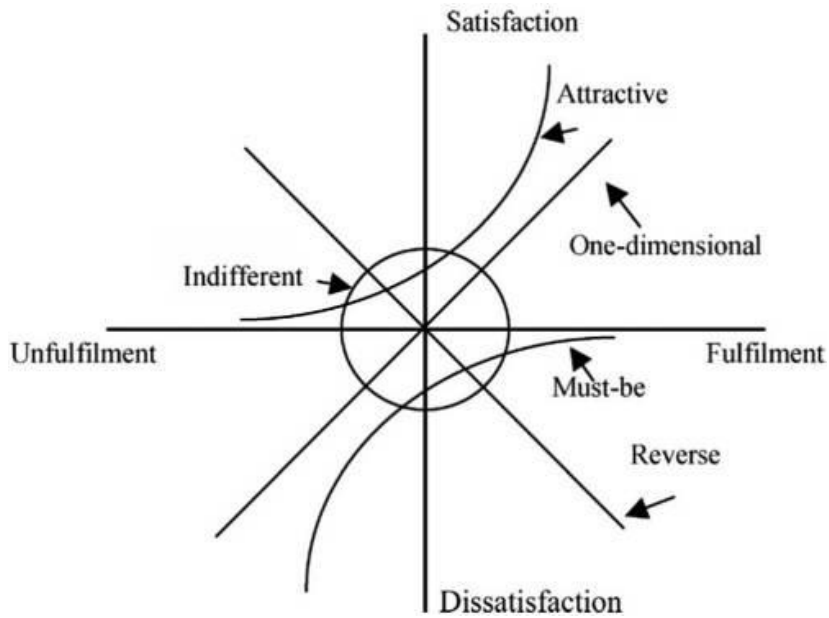
Figure 1. Kano-model
Source: Shahin et al., 2013

In the questionnaire, the respondents have to rate two statements. The so-called, functional question asks how they would feel if the attribute is included or highly present in the product. The dysfunctional question refers to how they would feel if the feature was not included or only at a low level. They are asked to rate this on a scale of 1 to 5, where 1 - I like it, and would be happy with it, 2 - I like it, and would expect it, 3 - does not matter, 4 – I do not like it but could accept it, 5 – I do not like it and could not accept it. Based on the responses received, a rating table is used to determine the dimension of the attribute, see Table 1 below.

Table 1. The evaluation table of Kano-model

Requirements		Dysfunction				
		1.	2.	3.	4.	5.
Function	1.	Q	A	A	A	O
	2.	R	I	I	I	M
	3.	R	I	I	I	M
	4.	R	I	I	I	M
	5.	R	R	R	R	Q

Notes: Q – Questionable, A – Attractive, O – One-dimensional, M – must be features, I – Indifferent, R – Reverse quality attributes
Source: Shahin et al., 2013

3. Data and Methodology

In our research we use questionnaire to measure students' requirements against the elements of partnership with lecturers. We examined 24 aspects based on the work of Tóth – Bedzsula (2021). These were:

- There are informal activities with lecturers outside the classroom.
- Lecturers are personally available for students (outside the classroom as well).
- The lecturer is helpful with student's problems.
- The lecturer maintains a direct and attentive relationship with students.
- Students can trustingly contact their instructors with their problems.
- Lecturers and students are treated equally (e.g. when keeping the deadlines).
- The lecturer articulates clear rules and requirements.
- Fair student performance assessment.
- The lecturer prefer group work.
- The lecturer adapts the curriculum to students' career goals.
- The lecturer consider students as colleagues.
- Lecturers ask for feedback on their work.
- The lecturer consider students' opinion.
- Students pay attention and are active during lectures.
- Students give feedback on the education and the lecturer including positive ones as well.
- Students are curious and open to the curriculum.
- The students constructively assist the instructor in solving the problems that arise.
- Prompt bidirectional communication
- Mutual respect and politeness
- The lecturer works and does research with students
- The lecturer mentors and supervises the talented and interested students
- The lecturer supports the manifestation of students individually
- The lecturer recognizes the student performance
- The lecturer inspire students and motivate them to participate in common problem solving

The sample was collected in the spring semester of 2023 using google forms. Students were asked to complete the questionnaire at the beginning of class. We tried to distribute the questionnaire to all year groups in all degree courses, both full-

time and part-time. Sample size were N=320 cases. After data collection we use K-means cluster to identify groups of students with homogenous requirements. First we use Hierarchical Cluster Analysis with Ward method to identify the proper number of clusters. On the base of this we determined 4 cluster is proper. But as the 4th class contains only 4 responses, thus we excluded this from further analysis. Otherwise, this small number of class is remained in the case of 3 and 5 clusters as well. Clusters' attributes is represented by the Tables 2-5 below.

Table 2. The clusters' distribution according to gender

			1	2	3	Total
Gender	Man	Count	57	60	14	131
		%	37,5%	44,1%	50,0%	41,5%
	Woman	Count	95	76	14	185
		%	62,5%	55,9%	50,0%	58,5%
Total		Count	152	136	28	316
		%	100,0%	100,0%	100,0%	100,0%

Note: χ^2 test significance value: 0,33
Source: own analysis

Table 3. The clusters' distribution according to age

			1	2	3	Total
Age	18 - 23 yo	Count	137	114	27	278
		%	90,1%	83,8%	96,4%	88,0%
	24 - 30 yo	Count	12	11	1	24
		%	7,9%	8,1%	3,6%	7,6%
	31 - 49 yo	Count	3	11	0	14
		%	2,0%	8,1%	0,0%	4,4%
Total		Count	152	136	28	316
		%	100,0%	100,0%	100,0%	100,0%

Note: χ^2 test significance value: 0,07
Source: own analysis

Table 4. The clusters' distribution according to category of students

		1	2	3	Total
Part time	Count	16	25	0	41
	%	10,5%	18,4%	0,0%	13,0%
Full time	Count	136	111	28	275
	%	89,5%	81,6%	100,0%	87,0%
Total	Count	152	136	28	316
	%	100,0%	100,0%	100,0%	100,0%

Note: χ^2 test significance value: 0,014
Source: own analysis

Table 5. The clusters' distribution according to level of education

			1	2	3	Total
level of graduation	Fosz*	Count	43	25	15	83
		%	28,3%	18,4%	53,6%	26,3%
	Bsc	Count	101	107	13	221
		%	66,4%	78,7%	46,4%	69,9%
	Msc	Count	8	4	0	12
		%	5,3%	2,9%	0,0%	3,8%
Total		Count	152	136	28	316
		%	100,0%	100,0%	100,0%	100,0%

Note: χ^2 test significance value: 0,02,

*Fosz – higher vocational education

Source: own analysis

The first cluster composed by students with a very mixed level of education, but master level has the highest % here, and an average age of 21 years old mostly full-time students. The second cluster is typically made up of bachelor students and older part-time students. The third cluster consists only of young students with an average age of 20 years, who learn typically at lower level (Fosz) education.

3. Results

The results of our analysis is represented by the Table 6 below. We can conclude that the difference between clusters is given by the amount of indifference categories. The members of the third cluster (with the youngest and lowest level of education) are totally uninterested, as all elements fall into Indifference Kano-category We can call them Disinterested students, they give 8,9% of the whole sample. The first cluster has more interest as they have 13 indifferent, but 8 attractive and 3 one-dimensional categories. Here should be note, that there are no must be elements, that represent basic needs, instead one dimensional features are those, that show important attributes, as their lack result in dissatisfaction. These are clear rules and requirements (7), fair assessment (8), and mutual respect and politeness (19). Others like helpful lecturer (3), direct and attentive relationship (4), contact with instructor (5), considering students' opinion (13), interest of courses (17), mentoring (21), performance recognition (23) and inspiring (24) are all attractive elements, and their lack doesn't matter, but their presence cause satisfaction. We can call them as group of interested students and according to the demographic distribution, master students are mostly such students.

The second cluster consist of those students, who have the most interest, since almost all attributes are attractive one. They evaluated only 2 categories as

indifferent, like groupwork (9) and active participation in lectures (14). Informal activities with lecturers (1), availability of lecturer (2) equal treatment with lecturers (6), consideration of career goals (10), consideration as colleagues (11), asking feedback (12) and feedback on education (15), common problem solving (17) and bidirectional communication (18), common research with lecturers (20), and individual support (22) became attractive features, so they happy about them. Helpful lecturer (3) has become a one-dimensional attribute, so they are disappointed if they won't get it. We can see that these are mainly older part time students at bachelor level. We can call them enthusiastic students, and they give 43% of students.

Table 6. The most frequent Kano-category of partnership elements in different clusters.

	Clusters		
	1	2	3
1. Informal activities with lecturers	I	A	I
2. Availability of lecturer	I	A	I
3. Helpful lecturer	A	O	I
4. Direct and attentive relationship	A	A	I
5. Students can trustingly contact their instructors	A	A	I
6. Equal treatment with lecturers	I	A	I
7. Clear rules and requirements	O	O	I
8. Fair assessment	O	O	I
9. Groupwork	I	I	I
10. Consideration of career goals	I	A	I
11. Consideration as colleagues	I	A	I
12. Lecturer asks feedback	I	A	I
13. Consider students' opinion	A	A	I
14. Active participation in lectures	I	I	I
15. Feedback on the education	I	A	I
16. Students are interested in course	A	A	I
17. Students assist in solving problems	I	A	I
18. Prompt bidirectional communication	I	A	I
19. Mutual respect and politeness	O	O	I
20. Common research	I	A	I
21. Mentoring of talented students	A	A	I
22. Individual support	I	A	I
23. Performance recognition	A	A	I
24. Inspiring participation	A	A	I

Source: own analysis

It should be note that although there were no attribute, where the most frequent category were reversal, but the active participation in lectures (71 votes) and groupwork (48 votes) were those, where this category received a significant vote, so every 5th student doesn't like to participate in lectures, and 15% don't like groupwork. On other side we can see, that clear rules (75 votes) are must be attributes for every 4th student, while fair evaluation (69 votes) was the same for 22% of the students.

We assumed that these differences would thank to the different motivation of students. And we asked them why they participate in tertiary education. At the lowest level (Fosz) student want to learn new things (42%), want to get a degree (31%), but knowing new people (11%) and get status (7%) were also significant. At bachelor level get a degree (78%), while at master level the same (25%) and learn new things (58%) were the most frequent answer. But between the clusters there were no significant difference (significance value is 0,254, but 50% of the cells expected value is less than 5) in the motivation of students. But it should be note that in the totally unmotivated group 61% of student said, that they wanted (only) a degree, or 3% were here because of good entertainment options and only 36% wanted to learn new things.

4. In Conclusion

In our research we examined the elements of student partnership using Kano-model. We analyser 316 students answer at business area. We found that there are 3 main groups of student with decreasing requirements. The most important features of the education are clear rules and requirements, fair assessment and mutual respect as the lack of these cause dissatisfaction in most of the students (91%). For some students (43%) helpful lecturer also have the same effect. These findings are parallel with Tóth and Bendzsula's (2021) results, as they also found that the first two attributes were the most important for students. We also found that 43% of students, mostly elder and part-time students, were enthusiastic and evaluate, if they are treated as colleagues, or involve in common research, problem solving, have bidirectional communication with lecturers and can give feedback on education. These finidings are the opposite of Tóth and Bendzsula (2021), as the first two statement along with common informal activities were the least preferred elements according to their research. One-fifth of the students doesn't like to participate in lectures, and 15% hate groupwork. Finally we identified the 9% of students as totally uninterested, as they have no requirements only want to get a certificate.

The limitation of our research is the sample size, and the regional nature of students, although we wanted to measure only the opinion of the student in our faculty. It should be note, that the response rate of the part-time students was lower. So we would continue data collection in order to get robust results.

5. Acknowledgements

References

1. Bovill, C. (2014). *An investigation of co-created curricula within higher education in the UK, Ireland, and the USA*. Innovations in Education and Teaching International, Vol. 51. No. 1., pp. 15-25.

2. Bovill, C. (2017). *A Framework to Explore Roles Within Student-Staff Partnerships in Higher Education: Which Students Are Partners, When, and in What Ways?* International Journal for Students as Partners, vol. 1. no. 1., DOI:10.15173/ijsapp.v1i1.3062

3. Cook-Sather, A., & Felten, PP. (2017). *Ethics of academic leadership: Guiding learning and teaching*. In F. Su, & M. Wood (Eds.), Cosmopolitan perspectives on academic leadership in higher education (pp. 175-191). London: Bloomsbury Academic. http://doi.org/10.5040/9781474223058.ch-010

4. Cook-Sather, A., Bovill, C., & Felten, PP. (2014). *Engaging students as partners in learning and teaching: A guide for faculty*. Jossey-Bass, San Francisco, p. 304., IBSN: 978-1-118-43458-1

5. Dvorakova, L. S., & Matthews, K. E. (2016). *Graduate learning outcomes in science: variation in perceptions of single- and dual-degree students*, Assessment & Evaluation in Higher Education, vol 42, no. 6., pp. 900-913. https://doi.org/10.1080/02602938.2016.1208804

6. Healey, M. & Healey R.L. (2019). *Students as Partners Guide: Student Engagement Through Partnership A guide to the Advance HE Framework*, Higher Education Academy. Available
https://www.researchgate.net/publication/338096919_Students_as_Partners_Guide_Student_Engagement_Through_Partnership_A_guide_to_the_Advance_HE_Framework

7. Healey, M., Flint, A., & Harrington, K. (2014). *Engagement through partnership: Students as partners in learning and teaching in higher education*. Higher Education Academy. Available:
https://www.researchgate.net/publication/264240134_Engagement_through_partnership_students_as_partners_in_learning_and_teaching_in_higher_education

8. Kano, N., Seraku, K., Takahashi, F. & Tsuji, S. (1984), *Attractive quality and must-be quality*, The Journal of the Japanese Society for Quality Control, vol. 14., no. 2., pp. 39-48.

9. Lee, Y.C., Lin, S. B. & Wang, Y. L.. (2011), *A New Kano's Evaluation Sheet*. The TQM Journal, vol. 23., no. 2, pp. 179–95., DOI: 10.1108/17542731111110230.

10. Madzík PP., Budaj PP., Mikuláš D. & Zimon D. (2019), *Application of the Kano Model for a Better Understanding of Customer Requirements in Higher Education—A Pilot Study*, Administrative Sciences*, vol. 9, no. 1, pp. 1-18. https://doi.org/10.3390/admsci9010011

11. Mcdowall, M. PP. (2016), *Applying The Kano Model To Higher Education: Moving Beyond Measuring Student Satisfaction*, Thesis and dissertation, University of North Dacota, ppp. 153.

12. Mercer-Mapstone, L., Dvorakova, L. S., Matthews, K. E. & Abbot, S., Cheng, B., Felten, PP., Knorr, K Marquis, E. Shammas, & Swaim, K. (2017). *A systematic literature review of students as partners in higher education.* International Journal for Students as Partners, vol. 1, no. 1. May 2017., pp. 1-23, Available: https://opus.lib.uts.edu.au/handle/10453/162694

13. Mihans, I.I., Richard, J., Long, D.T. & Felten, PP. (2008). *Power and expertise: Student-faculty collaboration in course design and the scholarship of teaching and learning*. International Journal for the Scholarship of Teaching and Learning, vol. 2, no. 2., DOI:10.20429/ijsotl.2008.020216

14. Shahin, A., Pourhamidi, M., Antony, J. & Park, S. H. (2013), *Typology of Kano Models: A Critical Review of Literature and Proposition of a Revised Model*, International Journal of Quality & Reliability Management, Vol. 30., No. 3., pp. 341 – 358, http://dx.doi.org/10.1108/02656711311299863

15. Shahrestani, H. V., Shahin A., Teimouri H., & Barzoki A. S. (2020) *Revising the Kano Model for Designing an Employee Compensation System*, The TQM Journal, Vol. 32., No. 1. pp. 78-91., DOI 10.1108/TQM-05-2019-0153

16. Tóth Zs. & Bedzsula B. (2021) *Treating Students as Partners – Is it so Simple? An empirical Investigation of Student Partnership in a Business Education Context*, Vezetéstudomány/Budapest Management Review, vol. 52., no. 5., pp. 38-51., DOI: 10.14267/VEZTUD.2021.05.04

17. Werder, C., & Otis, M. M. (2009). *Engaging student voices in the study of teaching and learning*. Stylus Publishing, Sterling,. pp. 240., ISBN 9781579224202

RECOMMENDER SYSTEM'S ECONOMIC IMPACT ON E-BUSINESS. A THEORETICAL REVIEW

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Abstract: *The rapid advancement of technology and the Internet led to an unprecedented abundance of information and data. Where too much information exists, the risk raises for that information to become irrelevant or too hard to handle; a phenomenon called information overload. Filtering vasts amounts of data and highlighting relevant information became a priority, especially for ecommerce business. Recommender Systems (RS) as a branch of Decision Support Systems were developed and implemented to help users handle information overload and access items based on relevancy. The financial returns RS have brought stimulated the spread of such referral systems to other business domains. As knowledge is a critical resource in nowadays economy, efficient knowledge production and management are a prerequisite for competitive advantage. E-businesses are concerned with online traffic on their platforms and with customer experience and impressions. The multitude of e-businesses facilitated by the Internet has created a highly competitive market in terms of gaining customers loyalty. New available frontier technologies might help online retailers enhance their customer pool and build a solid relationship with their existing ones. One major issue RS tackle is the information overload, meaning that vasts amounts of data might confuse the customer in making a purchase choice, paradoxically due to too many options. Information overload might lead to fatigue, purchase postpone and overall loss for the online retailers. RS have the power to gather data and transform it to valuable personalized knowledge; a feature that can add more revenue, build customer trust, build a personalized customer relationship and even influence the distribution value chain. In this paper we propose a theoretical overview on the RS and how they create value, their fields of implementation and how they are working. By doing so, we enhance both the RS and the e-commerce literature by analyzing tools and means of economic development provided by the DT.*

Keywords: *recommender-systems; decision support systems; e-commerce; content-based filtering; information-overload.*

JEL Classification: *L81; L86*

Introduction

Internet-based software applications have led to an unprecedented level of unlimited and effortless of network connectivity. Digital transformation (DT) technologies and the usage of Internet-facilitated online software challenge and shape traditional economic models, creating both opportunities and systemic threats Yanqing Duan, Edwards, and Dwivedi (2019); and Guven (2020). Businesses are being impacted in terms of innovation, knowledge, new potential revenues and the overall business model (Machado, Silvana, and Davide 2021).

The permeability of Internet-powered services let to the phenomenon of Internet of things and its adoption in production value chain let to the term Industry 4.0 (Guven 2020). Companies that will adopt Industry 4.0 feature would maximize their changes as a competitive advantage in highly globalized world. Machado, Silvana, and Davide (2021) identified four thematic areas on successful Industry 4.0 integration within the organization: a) digital enrichment of resources to leverage human performance; b) collaboration and networking; c) leadership and learning; and d) new forms of digitally enabled knowledge-intensive value creation. According to (Machado, Silvana, and Davide 2021) digital transformation could be structured in the following categories: the technological aspect of DT (devices, social media, analytics); the organizational perspective of DT (changes in the internal processes and structure of the company with focus on DT) and the social aspect of DT (improvement of customer experience, user interface). In the end, DT and Industry 4.0 goal is to raise productivity, efficiency and flexibility in terms of production and operation effort using emergent digital technologies.

In this technologically influenced era, knowledge is of primary importance for companies (Akhavan, Philsoophian, and Karimi 2019) and the capacity to extract and filter knowledge from information might determine the market's winners. Knowledge management research have begun in the 1960's and still continues. Early researchers were preoccupied on capturing or codifying knowledge and preserve it explicitly (Machado, Silvana, and Davide 2021). Today, knowledge is considered a critical resource in economic terms hence organizations that want to grow and benefit from digital changes, must find efficient ways to organize and create knowledge (Machado, Silvana, and Davide 2021).

In a digital ecosystem, digital tools enhance knowledge management process, creating a spiritual of business performance. The overall learning process and knowledge preservation techniques and mechanisms can benefit from DT adoption within organizations as software enhance codifying, storing, filtering and sharing of data as knowledge (Machado, Silvana, and Davide 2021).

The presence of vasts amounts of data led to the creation of filtering tools to better navigate through it. The rapid raise of IT and the use of online services have generated an unprecedented information availability regardless of the domain (Roetzel 2019). As a consequence, powerful technologies such as AI, cloud computing are used to create decision support systems. With knowledge being a critical resource and digital technologies available to manipulate it, AI powered decision support systems efficiently organize, identify patterns and make correlations in large data creating knowledge (Machado, Silvana, and Davide 2021).

What are Expert systems

Expert systems (ES) are informatic knowledge-based systems (KBS) (Yi Zhang et al. 2017; Liao 2005; do Rosário et al. 2015) designed as substitutes for human expertise in a given domain (Saibene, Assale, and Giltri 2021; Tavana and Hajipour 2019; Liao 2005; M. Radwan, Senousy, and M. Riad 2016; Alshare et al. 2019). Their role as decision support tools is to provide structured assessments, conclusions, or predictions by mimicking the human-expert advisory/decision-making process up to a certain possible degree (Kaklauskas 2015; Golini and Kalchschmidt 2015; Ravasan and Rouhani 2014; Atanasova 2019; Fait et al. 2019; Chatterjee et al. 2021; Al-Ebbini, Oztekin, and Chen 2016; Saibene, Assale, and Giltri 2021; Zerbino et al. 2018; Y. Duan, Edwards, and Xu 2005; Cortés Sáenz et al. 2015).

ES, as a branch of Artificial Intelligence (AI) field (Atanasova 2019; Bradac and Walek 2017; do Rosário et al. 2015; Nazari et al. 2018; Ikram and Qamar 2015) and together with similar terms (such as intelligent systems, informatic systems, recommender systems, warning systems or advisory systems) belong to the decision support systems (DSSs) umbrella term (Kaklauskas 2015; Belciug and Gorunescu 2020; Leo Kumar 2019). DSSs are computational tools that employ multiple disciplines and query vasts amounts of data, emulating the human decision-making process (Belciug and Gorunescu 2020; Arnott and Pervan 2008).

What are Recommender systems

Recommender System (RS) are knowledge-based systems that have derived from ES as separate branch or variant in mid-1990s. They are information processing systems that continuously gather specific data in order to build customized relevant suggestions for users (Ricci, Rokach, and Shapira 2011; Yalcin and Bilge 2021; Fernandes et al. 2020; Ahmadian et al. 2022; Tlili and Krichen 2021). By engaging specific algorithms, RS are able to query dynamically generated data (e.g., likes, dislikes, views, number of replays or other criteria) building a profile based on

which valuable personalized items are highlighted and provided to individual users (Biswas and Liu 2022; Tlili and Krichen 2021).

Traditionally, RS have mostly present in e-commerce business, but recently successful applications have been developed in e-business, e-learning, e-tourism, etc. (Yi Zhang et al. 2017; Natarajan et al. 2020; R, Kumar, and Bhasker 2020). Increased interest from both the research community and the practitioners came as RS are being implemented in big tech companies like Amazon, Netflix, LinkedIn, eBay, Pandora, Meta, Google, Twitter, Quora etc. (Ricci, Rokach, and Shapira 2011). Such companies use RS to benefit from their pattern exploitation power and increase revenues as users are presented with new items to explore/purchase (Biswas and Liu 2022).

As the amount of Internet-available data is growing, users are facing more and more with information overload (IO) (Ricci, Rokach, and Shapira 2011; Ahmadian et al. 2022; K. Kim and Ahn 2017; Wu et al. 2022; Yang and Gao 2017; Silva et al. 2019). IO is a counterproductive state where users are exposed to too much data, rendering much of it as non-processable and inapplicable (S. Zhang et al. 2016; Terán, Mensah, and Estorelli 2018; Zhou et al. 2020; F. Zhang et al. 2020). (Roetzel 2019) shows that IO also has negative financial impacts and can induce users into a state of fatigue (S. Zhang et al. 2016). In this context, last decades have witnessed an increase in referral systems relevancy and usage (Ahmadian et al. 2022; Bogaert et al. 2019; Roetzel 2019; Terán, Mensah, and Estorelli 2018) as they help to cope with IO by screening, refining and personalizing data, providing rich user experience (K. Kim and Ahn 2017; Ricci, Rokach, and Shapira 2011; Alabdulrahman and Viktor 2021).

RS generate value for customers/users and companies that have implemented them, mostly in terms of time-savings and alternatives for the former and customer-knowledge for the latter (Wu et al. 2022; Scholz et al. 2017; Leo Kumar 2019). For companies, among the immediate effects RS have, is the revenue growth as more products are being recommended and (possibly) sold (Kumar and Thakur 2018; K. Kim and Ahn 2017). RS enable the trails users left from browsing the Internet to enhance or develop adjacent businesses (K. Kim and Ahn 2017) by creating personalized profiles. The knowledge captured and stored from the users' profiles help businesses to adapt to their customer's changing preferences, being up-to-date with the market demands and trends (Wu et al. 2022; Kumar and Thakur 2018).

For users, one of the most important attributes of RS is that it handles IO, helping detect relevant items, exempting the user from stressful factors such as the time-consuming searching or decision process (Kunaver and Požrl 2017; Kumar and Thakur 2018).

Methodology

Literature review

This section provides a brief background on how and where RS have been developed and implemented. Since RS have spread into multiple domains and have gained popularity in many areas, researchers have tried to address the challenges that have occurred over time and constantly update recommendation algorithms; an endeavour has led to a variety of RS approaches in multiple domains. The following literature review is intended to offer an informative context of RS applications.

Among the first most visible and profitable usage of RS had been in e-commerce and in the online services provided by the big tech companies (Biswas and Liu 2022; Cordero et al. 2020; Protasiewicz et al. 2016; Zhou et al. 2020). According to (Silva et al. 2019) in terms of ecommerce roughly 35% of Amazon's sales are due to RS. For giant streaming platforms like Netflix, ⅔ of the watched movies are through recommendations and 38% of Google News are clicked thanks to existing referral system. (Zhou et al. 2020) offers the example of YouTube, saying that up to 60% of the videos are being watched through recommendations. For Netflix, they offer different statistics, attributing 80% of movie choices to RS.

Their efficiency in keeping the customers engaged, the potential returns generated, and the scalability capabilities, have motivated researchers and practitioners to study, develop and implement RS across various business domains, such as: tourism (Tlili and Krichen 2021; Binucci et al. 2017; Esmaeili et al. 2020); streaming platforms (Jakomin, Bosnić, and Curk 2020); music (Fernández-García et al. 2022; Ben Sassi, Ben Yahia, and Liiv 2021); movies (Walek and Fojtik 2020); recipes (Lei et al. 2021); hotels (Nilashi et al. 2021); hairstyle (Pasupa, Sunhem, and Loo 2019); news (Symeonidis, Kirjackaja, and Zanker 2021; Ulian et al. 2021); academia and research (Pradhan et al. 2021; Protasiewicz et al. 2016); peer to peer lending (Liu et al. 2021); recruitment services (Cardoso, Mourão, and Rocha 2021); medicine (Ferran Torrent-Fontbona, Massana, and López 2019); or additive manufacturing (Ying Zhang and Fiona Zhao 2022).

The literature acknowledges that regarding the domain, there is an unprecedented availability of information (Natarajan et al. 2020). The rapid advancement of the Internet and its adjacent technologies have generated the problem of too many options, or IO. Among RS main objectives is to help end-users handle IO and quickly filter through data for relevant personalized items (Lei et al. 2021; F. Zhang et al. 2020; K. Zhang et al. 2021; Kunaver and Požrl 2017; K. Kim and Ahn 2017; Yang and Gao 2017; Scholz et al. 2017; Biswas and Liu 2022; Guo, Deng, and Wang 2019; Ait Hammou, Ait Lahcen, and Mouline 2019; F. Zhang, Liu, and Zeng 2017; Zangerle and Bauer 2022; Heinrich et al. 2022; Khalid, Lundqvist, and Yates 2022).

In dealing with IO, RS researchers and developers engaged certain methodologies with different algorithms. In this respect, RS differ in terms of the used methodology. Since novel RS methodologies and algorithms are being constantly combined (Ali et al. 2020), there is not a rigid list of possible methodologies for developing an RS. But although RS permit flexibility due to the need to adapt to a specific implementation-dependent niche (Tlili and Krichen 2021; Liu et al. 2021), certain traditional approaches are being highlighted (Ricci, Rokach, and Shapira 2011; Khusro, Ali, and Ullah 2016).

Two paradigms to create RS emerged as traditional or classic and a third one that derives and combines the first two: Collaborative Filtering (CF), Content-Based Filtering (CBF) and Hybrid approaches (Fernández-García et al. 2022; Khalid, Lundqvist, and Yates 2022; Natarajan et al. 2020). Most RS are built using the Collaborative Filtering (CF) approach that recommends items to a user/customer depending on the valuation or feedback provided by other users (e.g., in its most simple implementation, valuation, or feedback could mean likes or dislikes) (Kumar and Thakur 2018; Ricci, Rokach, and Shapira 2011; Scholz et al. 2017; Khalid, Lundqvist, and Yates 2022; Guo, Deng, and Wang 2019). CBF takes into consideration the user's past behavior and makes referrals based on user's historical pattern of preferences (Khalid, Lundqvist, and Yates 2022; Ricci, Rokach, and Shapira 2011; Bagher, Hassanpour, and Mashayekhi 2017).

There is a third category acknowledged by the literature called hybrid approach that mixes CF and CBF in order to secure stronger performance and relevancy of the recommended items (Ricci, Rokach, and Shapira 2011; Bagher, Hassanpour, and Mashayekhi 2017; Esmaeili et al. 2020; F. Zhang et al. 2020; Kumar and Thakur 2018).

The aforementioned hybrid approaches have tried to overcome CF and CBF weaknesses by combining the algorithms. Several new approaches have been developed in order to surpass the challenges traditional methodologies weren't able to handle completely. The literature is homogenous concerning what those limitations are, namely data sparsity and the cold-start problem (Esmaeili et al. 2020; Fernández-García et al. 2022; Tlili and Krichen 2021; Ali et al. 2020; Cordero et al. 2020; Ait Hammou, Ait Lahcen, and Mouline 2019; Zhou et al. 2020; Bogaert et al. 2019; Liu et al. 2021; Ricci, Rokach, and Shapira 2011; R, Kumar, and Bhasker 2020; Hong et al. 2019). In sum, data sparsity appears when there is no sufficient complete information in a dataset/database, hence making it difficult for the RS (especially CF) to make relevant referrals. The cold-start problem occurs for new users, where no sufficient data exists to either include the user in a similarity group or make predictions about their past preferences (Natarajan et al. 2020). An in-depth

analysis of the Pure Cold-Start problem, its challenges and improvement scenarios is found in (Silva et al. 2019). Often times, those challenges are treated separately but (F. Zhang et al. 2020) regards the cold-start problem as the extreme stage of data sparsity. Besides these main issues, Ait Hammou, Ait Lahcen, and Mouline (2019) addressed expense computational time; and Kunaver and Požrl (2017) provided more details of other challenges such as the big data problem and over fitting or scalability to high dimensional data (Koohi and Kiani 2017). Also, a non-technical challenge for RS might be the users' trust in collecting cookies information for creating personalized profile; an issue described by Ardissono and Mauro 2020; Mazeh and Shmueli (2020).

Conclusions and further work

In trying to overcome the aforementioned challenges of RS, newer methodologies and RS design approach have been implemented in various domains with the goal of enhancing the recommendations relevancy and accuracy.

To reduce data sparsity and improve computational time Ait Hammou, Ait Lahcen, and Mouline (2019) have proposed FRAIPA v2, an RS that uses auto-tresholding, preference grouping and error estimations to pre-estimate the users' preferences based on past representation of the users and items. (Kumar and Thakur 2018) have taken into consideration the importance of context and preferred patterns in user activity to determine a meaning in the order of recommended items (Kumar and Thakur 2018).

Ali et al. (2020) have adopted deep neural networks in producing citation recommendations for research manuscripts on digital libraries. (Biswas and Liu 2022) developed a smartphone RS. Deep learning technique integration had been considered by various authors (Biswas and Liu 2022; Chambua, Niu, and Zhu 2019; R, Kumar, and Bhasker 2020).

Other studies have tried to compensate the cold-start problem with existing data the users leave on the internet, mainly in social media. (Ardissono and Mauro 2020) introduces a Multi-faceted Trust Model that integrates social links with public anonymous feedback received by user profiles and user contributions in social networks. He, Ai, and Wu (2021) have used a Social Bayesian Personalized Ranking algorithm, which utilizes social connections to improve the prediction of the ranking of items and users.

Bagher, Hassanpour, and Mashayekhi (2017) proposed an evolutionary user model that incrementally adapts with changes of user interest. This capacity of RS to adapt over time with users' changing behaviors and tastes is called time-aware, and it has

been addressed by other authors as well (Ahmadian et al. 2022; Jakomin, Bosnić, and Curk 2020; F. Zhang, Liu, and Zeng 2017).

The location-dependent and travel RS employ specific algorithms for yielding recommendations based on points of interests (POI); users' current position (near or far from POI); fetching most-visited places from TripAdvisor (Binucci et al. 2017; Cai, Lee, and Lee 2018; Esmaeili et al. 2020; K. Zhang et al. 2021).

(Hong et al. 2019) proposed a crowdsourcing based RS that incorporates the knowledge and insights of crowd workers and neighboring items from human expertise into the recommendation of new items.

Some have included the functionalities and benefits of ES in RS design (Shojaei and Saneifar 2021) in group recommender systems (Castro, Yera, and Martínez 2018; Pujahari and Sisodia 2020; Seo et al. 2021; Yalcin and Bilge 2021); conversational RS (Cordero et al. 2020); intuitionistic fuzzy approach (Guo, Deng, and Wang 2019).

References

1. Ahmadian, Sajad, Nima Joorabloo, Mahdi Jalili, and Milad Ahmadian. 2022. "Alleviating Data Sparsity Problem in Time-Aware Recommender Systems Using a Reliable Rating Profile Enrichment Approach." Expert Systems with Applications 187 (January)
2. Ait Hammou, Badr, Ayoub Ait Lahcen, and Salma Mouline. 2019. "FRAIPA Version 2: A Fast Recommendation Approach Based on Self-Adaptation and Multi-Thresholding." Expert Systems with Applications 118 (March): 209–16.
3. Akhavan, Peyman, Maryam Philsoophian, and Mohamad Hosein Karimi. 2019. "Selection and Prioritization of Knowledge Management Strategies as Proportionate with Organizations' Level of Maturity Using Fuzzy TOPSIS Approach, Case Study: A Research Organization." VINE Journal of Information and Knowledge Management Systems 49 (3): 397–419.
4. Alabdulrahman, Rabaa, and Herna Viktor. 2021. "Catering for Unique Tastes: Targeting Grey-Sheep Users Recommender Systems through One-Class Machine Learning." Expert Systems with Applications 166 (March): 114061.
5. Al-Ebbini, Lina, Asil Oztekin, and Yao Chen. 2016. "FLAS: Fuzzy Lung Allocation System for US-Based Transplantations." European Journal of Operational Research 248 (3): 1051–65.
6. Ali, Zafar, Pavlos Kefalas, Khan Muhammad, Bahadar Ali, and Muhammad Imran. 2020. "Deep Learning in Citation Recommendation Models Survey." Expert Systems with Applications 162 (December): 113790.
7. Alshare, Khaled A., Mohammad Kamel Alomari, Peggy L. Lane, and Ronald D. Freeze. 2019. "Development and Determinants of End-User Intention: Usage of Expert Systems." Journal of Systems and Information Technology 21 (2): 166–85.

8. Ardissono, Liliana, and Noemi Mauro. 2020. "A Compositional Model of Multi-Faceted Trust for Personalized Item Recommendation." Expert Systems with Applications 140 (February): 112880.

9. Arnott, David, and Graham Pervan. 2008. "Eight Key Issues for the Decision Support Systems Discipline." Decision Support Systems 44 (3): 657–72.

10. Atanasova, Irena. 2019. "A University Knowledge Management Tool for the Evaluation of the Efficiency and Quality of Learning Resources in Distance E-Learning." International Journal of Knowledge Management (IJKM) 15 (4): 38–55.

11. Bagher, Rahimpour Cami, Hamid Hassanpour, and Hoda Mashayekhi. 2017. "User Trends Modeling for a Content-Based Recommender System." Expert Systems with Applications 87 (November): 209–19.

12. Belciug, Smaranda, and Florin Gorunescu. 2020. "A Brief History of Intelligent Decision Support Systems." In Intelligent Decision Support Systems—A Journey to Smarter Healthcare, edited by Smaranda Belciug and Florin Gorunescu, 57–70. Intelligent Systems Reference Library. Cham: Springer International Publishing.

13. Ben Sassi, Imen, Sadok Ben Yahia, and Innar Liiv. 2021. "MORec: At the Crossroads of Context-Aware and Multi-Criteria Decision Making for Online Music Recommendation." Expert Systems with Applications 183 (November): 115375.

14. Binucci, Carla, Felice De Luca, Emilio Di Giacomo, Giuseppe Liotta, and Fabrizio Montecchiani. 2017. "Designing the Content Analyzer of a Travel Recommender System." Expert Systems with Applications 87 (November): 199–208.

15. Biswas, Pratik K., and Songlin Liu. 2022. "A Hybrid Recommender System for Recommending Smartphones to Prospective Customers." Expert Systems with Applications 208 (December): 118058.

16. Bogaert, Matthias, Justine Lootens, Dirk Van den Poel, and Michel Ballings. 2019. "Evaluating Multi-Label Classifiers and Recommender Systems in the Financial Service Sector." European Journal of Operational Research 279 (2): 620–34.

17. Bradac, Vladimir, and Bogdan Walek. 2017. "A Comprehensive Adaptive System for E-Learning of Foreign Languages." Expert Systems with Applications 90 (December): 414–26.

18. Cardoso, Alan, Fernando Mourão, and Leonardo Rocha. 2021. "The Matching Scarcity Problem: When Recommenders Do Not Connect the Edges in Recruitment Services." Expert Systems with Applications 175 (August): 114764.

19. Castro, Jorge, Raciel Yera, and Luis Martínez. 2018. "A Fuzzy Approach for Natural Noise Management in Group Recommender Systems." Expert Systems with Applications 94 (March): 237–49.

20. Chambua, James, Zhendong Niu, and Yifan Zhu. 2019. "User Preferences Prediction Approach Based on Embedded Deep Summaries." Expert Systems with Applications 132 (October): 87–98.

21. Chatterjee, Saptarshi, Debangshu Dey, Sugata Munshi, and Surajit Gorai. 2021. "Dermatological Expert System Implementing the ABCD Rule of Dermoscopy for Skin Disease Identification." Expert Systems with Applications 167 (April): 114204.

22. Cordero, P., M. Enciso, D. López, and A. Mora. 2020. "A Conversational Recommender System for Diagnosis Using Fuzzy Rules." Expert Systems with Applications 154 (September): 113449.

23. Cortés Sáenz, David, Nelly Gordillo Castillo, Carles Riba Romeva, and Joaquim Lloveras Macià. 2015. "A Fuzzy Approach for the Selection of Non-Traditional Sheet Metal Cutting Processes." Expert Systems with Applications 42 (15): 6147–54.

24. Duan, Yanqing, John S. Edwards, and Yogesh K Dwivedi. 2019. "Artificial Intelligence for Decision Making in the Era of Big Data – Evolution, Challenges and Research Agenda." International Journal of Information Management 48 (October): 63–71.

25. Esmaeili, Leila, Shahla Mardani, Seyyed Alireza Hashemi Golpayegani, and Zeinab Zanganeh Madar. 2020. "A Novel Tourism Recommender System in the Context of Social Commerce." Expert Systems with Applications 149 (July): 113301.

26. Fernandes, Marta, Susana M. Vieira, Francisca Leite, Carlos Palos, Stan Finkelstein, and João M. C. Sousa. 2020. "Clinical Decision Support Systems for Triage in the Emergency Department Using Intelligent Systems: A Review." Artificial Intelligence in Medicine 102 (January): 101762.

27. Fernández-García, Antonio Jesús, Roberto Rodriguez-Echeverria, Juan Carlos Preciado, Jorge Perianez, and Juan D. Gutiérrez. 2022. "A Hybrid Multidimensional Recommender System for Radio Programs." Expert Systems with Applications 198 (July): 116706. https://doi.org/10.1016/j.eswa.2022.116706.

28. Golini, Ruggero, and Matteo Kalchschmidt. 2015. "Designing an Expert System to Support Competitiveness through Global Sourcing." International Journal of Production Research 53 (13): 3836–55.

29. Guo, Junpeng, Jiangzhou Deng, and Yong Wang. 2019. "An Intuitionistic Fuzzy Set Based Hybrid Similarity Model for Recommender System." Expert Systems with Applications 135 (November): 153–63.

30. Guven, Huseyin. 2020. "Industry 4.0 and Marketing 4.0: In Perspective of Digitalization and E-Commerce." In Agile Business Leadership Methods for Industry 4.0, edited by Bulent Akkaya, 25–46. Emerald Publishing Limited.

31. Heinrich, Bernd, Marcus Hopf, Daniel Lohninger, Alexander Schiller, and Michael Szubartowicz. 2022. "Something's Missing? A Procedure for Extending Item Content Data Sets in the Context of Recommender Systems." Information Systems Frontiers 24 (1): 267–86.

32. Hong, Dong-Gyun, Yeon-Chang Lee, Jongwuk Lee, and Sang-Wook Kim. 2019. "CrowdStart: Warming up Cold-Start Items Using Crowdsourcing." Expert Systems with Applications 138 (December): 112813.

33. Ikram, Aqdas, and Usman Qamar. 2015. "Developing an Expert System Based on Association Rules and Predicate Logic for Earthquake Prediction." Knowledge-Based Systems 75 (February): 87–103.

34. Jakomin, Martin, Zoran Bosnić, and Tomaž Curk. 2020. "Simultaneous Incremental Matrix Factorization for Streaming Recommender Systems." Expert Systems with Applications 160 (December): 113685.

The Annals of the University of Oradea. Economic Sciences

TOM XXXII, 1st Issue, July 2023

35. Kaklauskas, Arturas. 2015. "Intelligent Decision Support Systems." In Biometric and Intelligent Decision Making Support, edited by Arturas Kaklauskas, 31–85. Intelligent Systems Reference Library. Cham: Springer International Publishing.

36. Khalid, Asra, Karsten Lundqvist, and Anne Yates. 2022. "A Literature Review of Implemented Recommendation Techniques Used in Massive Open Online Courses." Expert Systems with Applications 187 (January): 115926.

37. Khusro, Shah, Zafar Ali, and Irfan Ullah. 2016. "Recommender Systems: Issues, Challenges, and Research Opportunities." In Information Science and Applications (ICISA) 2016, edited by Kuinam J. Kim and Nikolai Joukov, 1179–89. Lecture Notes in Electrical Engineering. Singapore: Springer.

38. Kiani Mavi, Reza, and Craig Standing. 2018. "Critical Success Factors of Sustainable Project Management in Construction: A Fuzzy DEMATEL-ANP Approach." Journal of Cleaner Production 194 (September): 751–65.

39. Kim, Kyoung-jae, and Hyunchul Ahn. 2017. "Recommender Systems Using Cluster-Indexing Collaborative Filtering and Social Data Analytics." International Journal of Production Research 55 (17): 5037–49.

40. Koohi, Hamidreza, and Kourosh Kiani. 2017. "A New Method to Find Neighbor Users That Improves the Performance of Collaborative Filtering." Expert Systems with Applications 83 (October): 30–39.

41. Kumar, Pushpendra, and Ramjeevan Singh Thakur. 2018. "Recommendation System Techniques and Related Issues: A Survey." International Journal of Information Technology 10 (4): 495–501.

42. Kunaver, Matevž, and Tomaž Požrl. 2017. "Diversity in Recommender Systems – A Survey." Knowledge-Based Systems 123 (May): 154–62.

43. Lei, Zhenfeng, Anwar Ul Haq, Adnan Zeb, Md Suzauddola, and Defu Zhang. 2021. "Is the Suggested Food Your Desired?: Multi-Modal Recipe Recommendation with Demand-Based Knowledge Graph." Expert Systems with Applications 186 (December): 115708.

44. Leo Kumar, S.P. 2019. "Knowledge-Based Expert System in Manufacturing Planning: State-of-the-Art Review." International Journal of Production Research 57 (15–16): 4766–90.

45. Liao, Shu-Hsien. 2005. "Expert System Methodologies and Applications—a Decade Review from 1995 to 2004." Expert Systems with Applications 28: 93–103.

46. Liu, Yuhang, Huifang Ma, Yanbin Jiang, and Zhixin Li. 2021. "Learning to Recommend via Random Walk with Profile of Loan and Lender in P2P Lending." Expert Systems with Applications 174 (July): 114763.

47. M. Radwan, Nouran, M. Badr Senousy, and Alaa El Din M. Riad. 2016. "A New Expert System for Learning Management Systems Evaluation Based on Neutrosophic Sets." Expert Systems 33 (6): 548–58.

48. Machado, Andreia de Bem, Secinaro Silvana, and Calandra Davide. 2021. "Knowledge Management and Digital Transformation for Industry 4.0: A Structured Literature Review." Knowledge Management Research & Practice.

49. Mazeh, Itzik, and Erez Shmueli. 2020. "A Personal Data Store Approach for Recommender Systems: Enhancing Privacy without Sacrificing Accuracy." Expert Systems with Applications 139 (January): 112858.

50. Natarajan, Senthilselvan, Subramaniyaswamy Vairavasundaram, Sivaramakrishnan Natarajan, and Amir H. Gandomi. 2020. "Resolving Data Sparsity and Cold Start Problem in Collaborative Filtering Recommender System Using Linked Open Data." Expert Systems with Applications 149 (July): 113248.

51. Nazari, Somayeh, Mohammad Fallah, Hamed Kazemipoor, and Amir Salehipour. 2018. "A Fuzzy Inference- Fuzzy Analytic Hierarchy Process-Based Clinical Decision Support System for Diagnosis of Heart Diseases." Expert Systems with Applications 95 (April): 261–71.

52. Nilashi, Mehrbakhsh, Behrouz Minaei-Bidgoli, Mesfer Alrizq, Abdullah Alghamdi, Abdulaziz A. Alsulami, Sarminah Samad, and Saidatulakmal Mohd. 2021. "An Analytical Approach for Big Social Data Analysis for Customer Decision-Making in Eco-Friendly Hotels." Expert Systems with Applications 186 (December): 115722.

53. Pasupa, Kitsuchart, Wisuwat Sunhem, and Chu Kiong Loo. 2019. "A Hybrid Approach to Building Face Shape Classifier for Hairstyle Recommender System." Expert Systems with Applications 120 (April): 14–32.

54. Pradhan, Tribikram, Suchit Sahoo, Utkarsh Singh, and Sukomal Pal. 2021. "A Proactive Decision Support System for Reviewer Recommendation in Academia." Expert Systems with Applications 169 (May): 114331.

55. Protasiewicz, Jarosław, Witold Pedrycz, Marek Kozłowski, Sławomir Dadas, Tomasz Stanisławek, Agata Kopacz, and Małgorzata Gałężewska. 2016. "A Recommender System of Reviewers and Experts in Reviewing Problems." Knowledge-Based Systems 106 (August): 164–78.

56. Pujahari, Abinash, and Dilip Singh Sisodia. 2020. "Aggregation of Preference Relations to Enhance the Ranking Quality of Collaborative Filtering Based Group Recommender System." Expert Systems with Applications 156 (October): 113476.

57. Ravasan, Ahad Zare, and Saeed Rouhani. 2014. "An Expert System for Predicting ERP Post-Implementation Benefits Using Artificial Neural Network." International Journal of Enterprise Information Systems (IJEIS) 10 (3): 24–45.

58. Ricci, Francesco, Lior Rokach, and Bracha Shapira. 2011. "Introduction to Recommender Systems Handbook." In Recommender Systems Handbook, edited by Francesco Ricci, Lior Rokach, Bracha Shapira, and Paul B. Kantor, 1–35. Boston, MA: Springer US.

59. Roetzel, Peter Gordon. 2019. "Information Overload in the Information Age: A Review of the Literature from Business Administration, Business Psychology, and Related Disciplines with a Bibliometric Approach and Framework Development." Business Research 12 (2): 479–522.

60. Rosário, Cláudio Roberto do, Liane Mahlmann Kipper, Rejane Frozza, and Bruna Bueno Mariani. 2015. "Modeling of Tacit Knowledge in Industry: Simulations on the Variables of Industrial Processes." Expert Systems with Applications 42 (3): 1613–25.

61. Saibene, Aurora, Michela Assale, and Marta Giltri. 2021. "Expert Systems: Definitions, Advantages and Issues in Medical Field Applications." Expert Systems With Applications 177 (114900).

62. Scholz, Michael, Verena Dorner, Guido Schryen, and Alexander Benlian. 2017. "A Configuration-Based Recommender System for Supporting e-Commerce Decisions." European Journal of Operational Research 259 (1): 205–15.

63. Seo, Young-Duk, Young-Gab Kim, Euijong Lee, and Hyungjin Kim. 2021. "Group Recommender System Based on Genre Preference Focusing on Reducing the Clustering Cost." Expert Systems with Applications 183 (November): 115396.

64. Shojaei, Mansoore, and Hassan Saneifar. 2021. "MFSR: A Novel Multi-Level Fuzzy Similarity Measure for Recommender Systems." Expert Systems with Applications 177 (September): 114969.

65. Silva, Nícollas, Diego Carvalho, Adriano C. M. Pereira, Fernando Mourão, and Leonardo Rocha. 2019. "The Pure Cold-Start Problem: A Deep Study about How to Conquer First-Time Users in Recommendations Domains." Information Systems 80 (February): 1–12.

66. Symeonidis, Panagiotis, Lidija Kirjackaja, and Markus Zanker. 2021. "Session-Based News Recommendations Using SimRank on Multi-Modal Graphs." Expert Systems with Applications 180 (October): 115028.

67. Tavana, Madjid, and Vahid Hajipour. 2019. "A Practical Review and Taxonomy of Fuzzy Expert Systems: Methods and Applications." Benchmarking: An International Journal 27 (1): 81–136.

68. Terán, Luis, Alvin Oti Mensah, and Arianna Estorelli. 2018. "A Literature Review for Recommender Systems Techniques Used in Microblogs." Expert Systems with Applications 103 (August): 63–73.

69. Tlili, Takwa, and Saoussen Krichen. 2021. "A Simulated Annealing-Based Recommender System for Solving the Tourist Trip Design Problem." Expert Systems with Applications 186 (December): 115723.

70. Torrent-Fontbona, Ferran, Joaquim Massana, and Beatriz López. 2019. "Case-Base Maintenance of a Personalised and Adaptive CBR Bolus Insulin Recommender System for Type 1 Diabetes." Expert Systems with Applications 121 (May): 338–46.

71. Ulian, Douglas Zanatta, João Luiz Becker, Carla Bonato Marcolin, and Eusebio Scornavacca. 2021. "Exploring the Effects of Different Clustering Methods on a News Recommender System." Expert Systems with Applications 183 (November): 115341.

72. Walek, Bogdan, and Vladimir Fojtik. 2020. "A Hybrid Recommender System for Recommending Relevant Movies Using an Expert System." Expert Systems with Applications 158 (November): 113452.

73. Wu, Zhenyong, Lina He, Xinguo Ming, and Mark Goh. 2022. "Service-Oriented Knowledge Recommender System and Performance Evaluation in Industrial Product Development." International Journal of Production Research 60 (20): 6226–47.

74. Yalcin, Emre, and Alper Bilge. 2021. "Novel Automatic Group Identification Approaches for Group Recommendation." Expert Systems with Applications 174 (July): 114709.

75. Yang, Dong-Hui, and Xing Gao. 2017. "Online Retailer Recommender Systems: A Competitive Analysis." International Journal of Production Research 55 (14): 4089–4109.

76. Zangerle, Eva, and Christine Bauer. 2022. "Evaluating Recommender Systems: Survey and Framework." ACM Computing Surveys 55 (August).

77. Zerbino, Pierluigi, Davide Aloini, Riccardo Dulmin, and Valeria Mininno. 2018. "Process-Mining-Enabled Audit of Information Systems: Methodology and an Application." Expert Systems With Applications 110: 80–92.

78. Zhang, Fuguo, Qihua Liu, and An Zeng. 2017. "Timeliness in Recommender Systems." Expert Systems with Applications 85 (November): 270–78.

79. Zhang, Fuguo, Shumei Qi, Qihua Liu, Mingsong Mao, and An Zeng. 2020. "Alleviating the Data Sparsity Problem of Recommender Systems by Clustering Nodes in Bipartite Networks." Expert Systems with Applications 149 (July): 113346.

80. Zhang, Kun, Xinwang Liu, Weizhong Wang, and Jing Li. 2021. "Multi-Criteria Recommender System Based on Social Relationships and Criteria Preferences." Expert Systems with Applications 176 (August): 114868.

81. Zhang, Shuwei, Ling Zhao, Yaobin Lu, and Jun Yang. 2016. "Do You Get Tired of Socializing? An Empirical Explanation of Discontinuous Usage Behaviour in Social Network Services." Information & Management, Special Issue on Papers Presented at Pacis 2015, 53 (7): 904–14.

82. Zhang, Yi, Hongshu Chen, Jie Lu, and Guangquan Zhang. 2017. "Detecting and Predicting the Topic Change of Knowledge-Based Systems: A Topic-Based Bibliometric Analysis from 1991 to 2016." Knowledge-Based Systems 133 (October): 255–68.

83. Zhang, Ying, and Yaoyao Fiona Zhao. 2022. "A Web-Based Automated Manufacturability Analyzer and Recommender for Additive Manufacturing (MAR-AM) via a Hybrid Machine Learning Model." Expert Systems with Applications 199 (August): 117189.

84. Zhou, Wang, Yongluan Zhou, Jianping Li, and Muhammad Hammad Memon. 2020. "LsRec: Large-Scale Social Recommendation with Online Update." Expert Systems with Applications 162 (December): 113739.

THE MANAGER PROFILE IN THE CULTURAL INSTITUTIONS. CASE STUDY - THE STUDENTS' CULTURAL HOUSES FROM ROMANIA

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Abstract: *The article focuses on several relevant directions for what the profile of the cultural institutions manager in the Romanian public domain represents, accentuating a specific type of public institution, meaning, the students' houses of culture. The questionnaire was the method used to obtain the data concerning the manager's activity and his role within the Romanian public cultural institution. The research survey consisted of a questionnaire made up of five questions, which was sent to all the managers of the cultural houses of the students in Romania and to some other managers of cultural institutions (theaters, museums, libraries, cultural departments). The answers received were summarized and ranked according to the most important areas of interest regarding management and the institutional role assumed by the cultural manager. The results of the questionnaires showed that the role of manager of a state cultural institution in Romania is challenging and full of contradictions and dilemmas. All respondents agreed that being a manager in a cultural institution requires knowing very well the target group(s) or the beneficiaries of the organized activities and having the necessary vision to satisfy exactly those cultural needs that they require. The main problem is that the human and material resources to satisfy these needs are often limited, so the manager is the one who must make correct and firm decisions regarding the distribution of these resources so that the proposed objectives turn into the expected results. Mainly, the measures for change and a productive management are: facilitating the attraction of income (own, subsidies, other types of financing) for the development of the activity of the students' culture houses, including on the part of investments in the existing cultural heritage; increasing the number of employees, as well as their appropriate motivation in terms of salary (and/or other benefits); the creation of effective levers for closer collaboration between similar institutions in Romania; promoting the institution through professional marketing means; continuous adaptation of the institution's actions to the current needs of students.*

Keywords: *Cultural Public Institutions; Public Management; Artistic Innovation; Cultural entrepreneurship; Romanian students' cultural houses; Youngsters Non-formal Education; Governmental public policies.*

JEL Classification: *I250; M190; L320*

Introduction

Through the topic addressed, we want to make an honest x-ray of the duties and role of the manager of culture in the public sector in Romania and the marketing strategies with which he must be aware, taking as a focused case study the directors of cultural houses of students. The best marketing strategies for defining the role of the public cultural manager and his vision for a successful future of the cultural programs of the institution which he leads and their impact in the society. More than that, the students' houses of culture have a major role in training young people for artistic careers, as well as for life. They are an important link between university life and society, transferring the young people's values and artistic potential towards the community acknowledgment of which they are part of.

The results of the research and the practical implications, beyond the particularities of each students' houses of culture, are relevant in the reality of the present, offering a radiography of some important cultural edifices of Romania. Inside situations, pleasant and less pleasant aspects, things to change and concrete proposals to accelerate the evolution and development of these cultural centres are reference points for the deciding government authorities that have the right to give the green light for change. This article is also about the role of the managers of public cultural institutions have to play, to revive the Romanian cultural houses.

1. *Public cultural institutions and their role in society, as a result of the manager's vision and strategies for development*

The management of the Romanian cultural public institutions first of all involves the concrete awareness and research of the forms and methods of organization existing within the institutions as well as the production of values in an aesthetic, artistic, moral sense, the protection and circulation of the cultural heritage. The analysis of clear resources, the development and discovery of new beneficial opportunities for the institution are priorities. Identifying the demand/offer mechanism, benefiting the art consumer with a project adapted to the requirements of the times and without pursuing the direct material profit is the main concern for a successful management. The budget is always in relation to the projects expected in a certain period of time. Culture is a field in which the budget is very important and without it projects cannot be carried out at the highest level. According to the answers, culture is one of the most important means of expression and development for a nation. In Romania, culture is seen as an elitist domain in which not everyone

can have access. This is where the major role and the unique factor offered by the cultural houses of Romanian students comes into play, which offer free or mostly subsidized cultural programs, offering free access to the public who want theatre performances, music, folklore, painting exhibitions, graphics, concerts and non-formal education for young people. Unfortunately, in Romania art consumers are few in number, and this barometer indicates the fact that there is a need for any approach or development project and its facilitation towards a society with strong values of the new generations. The role of the cultural manager is to make the offer of cultural goods and services attractive and to open wide access to the public, nationally and internationally.

1.2. *Contemporary cultural policies, between youngster movements and preserving the traditional cultural elements*

The students' houses of culture have a major role in training young people for artistic careers, as well as for life. They are an important link between university life and society, transferring the young people's values and artistic potential towards the community acknowledgment of which they are part of. The culture generated through these institutions has a specific dynamic, focused on the contemporary, new, non-commercial, quality. Moreover, the houses of culture are keepers of the traditional culture, "old fashioned", supporting the traditional values, so that we do not ignore our cultural roots and identity values, in our pursuit of new and fleeting things. The old music, folklore dances, Christmas traditions and customs, traditional Romanian carols, poetry nights with recitals from classical Romanian poets are living proofs of the national patrimony which must be preserved. "Too much interest in what is contemporary will determine the state to become just an adept of what is trendy, recklessly ignoring the roots in search of the fleeting novelty. Beautiful things and of durable value are thus destroyed in the name of progress, that sweat landscapes, replacing gold with steel, declaring that the old music and poetry are boring. In a certain manner, this is an even greater crime, because the patrimony can no longer be rebuilt after it has been destroyed, and the indifference towards the contemporary work will leave a hole in history" (Mundy, 2000, pp 19), thus tradition and innovation coexist in these cultural dwellings. The Romanian National Strategy for Cultural Development mentions between 2016 - 2022: "Culture - a durable development factor, reaffirms the importance of identity and local and regional specificity, which implies the need to protect the cultural patrimony and to make the community become aware of its value. These objectives converge towards making culture the fourth pillar of a durable development, together with the economy, social

domain and environment. These measures support the contribution that culture and cultural patrimony have to the territorial vitality, by putting forward elements of local and regional identity through a better protection of the cultural patrimony." The Students' Houses of Culture from the country's cities which are or are not university centres, have a major say in the national cultural landscape, as well as in the civic education of young artists.

2. Research methodology
The questionnaire was the method used to obtain and summarise the data concerning the current subject of analysis. The target group consisted of 30 respondents, of which 14 were managers of Romanian students' cultural houses and 16 were managers of public cultural institutions in Romania (museums, libraries, theater, state opera, local culture directorates, the municipal house of culture). The study took place between September and December 2022. We applied questionnaires composed of 5 relevant questions for the cultural manager's activity and role within the public institution:

1. In your experience, what does the profession of manager in a cultural institution entail?
2. Does the budget allocated to the institution you lead cover the needs of the institution? If so, to what extent?
3. Name three measures (of any kind) that you would think of and implement in the student culture house/in the public cultural institution you lead, if you had all the necessary leverage (legal, financial, etc.).
4. The problem of the human factor in students' culture houses/in public cultural institutions

a) How do you see the role of the staff – administrative, financial-accounting, cultural – in the student culture house/in the public cultural institution that you lead, what are its duties and what changes would you bring (if you see a need for change in this chapter)?
b) Does the current organization chart of the institution meet all the needs for the optimal functioning of the public cultural institution/the students' culture house?

5. What does culture in general and culture in Romania represent, from your point of view, as a manager of a cultural institution?
We have studied research articles published by specialists in the cultural domain, belonging to different countries, opinions and particularities of the cultural manager from Romania, expressed in press articles and official declarations, as well as studies

belonging to the National Institute for Research and Cultural Training. The hypotheses of our study sought to establish how important the role of the cultural manager is in the change in society and in the development of quality cultural programs, the budget limitations and the clear budget dependence of cultural programs, the shortage of personnel in public cultural institutions, the visibility and adaptation of the programs cultural to the new cultural and educational trends of the public in general and of students in particular. The questionnaire was applied to students' houses of culture, the managers offering answers which reflect their own point of view and experience. We thank them for their valuable intake that they provided to this study article. The first question - In your experience, what does the profession of a cultural institution manager pursue? - has received ample answers, from which we could extract several defining characteristics of this leading role, of cultural manager. Upon the whole, according to the answers, being a manager of a cultural institution entails many and various qualities, gained through the years of experience in the cultural domain, as well as following speciality courses, according to one of the cultural managers that have replied: "the profession of manager in a cultural institution presumes a sum of skills, knowledge and vast experience in the cultural domain." In the categories listed below we also included answers and references to the personal qualities which a cultural manager must hold.

3. *The Cultural Manager and his strategies for developing the image of the institution*
The cultural manager of the public cultural institutions is himself the best marketing strategy for the institution. The profession of manager in a cultural institution presumes a sum of skills, knowledge and vast experience in the cultural domain.

- Experience in the cultural domain: „previously acquired knowledge", „experience organising cultural events acquired in years of working with the institution staff, collaborators and especially young people and students" , a good management of the financial and human: "analysis of the clear resources", „concrete awareness and research of the organisation types and methods within the institution, as well as producing aesthetic, artistic, moral values, protecting and circulating the cultural patrimony". „It is necessary that the cultural manager is experienced in planning, organising and efficiently leading the organisation", he must be „ a good coordinator and administrator, expert in legislation - „the manager must coordinate the entire activity, to be involved to the tiniest detail, to be a good administrator and a good knowledge of the laws", "to know the law".

- Professionalisation and speciality training: „the professional competences specific to a manager (complex speciality training, the capacity to motivate and mobilise the team, to plan and coordinate)", „to motivate the subordinate personnel", „acquiring professional competences such as flexibility, adapting to permanent and imminent changes".
- Specific personal qualities of the cultural manager: „personal development, with focus on the institution's cultural specific", to be a "good communicator, a good mediator and negotiator", „to be a good people person, know how to coordinate a team, be a team player, before a leader." The manager of a cultural institution would be ideally characterised by "creativity, ability to communicate, negotiation, verbal fluency, capacity to analyse and synthesise, good team leadership skills, efficiency, adaptability and flexibility, strategic thinking, spontaneity and quickness in taking decisions, special abilities in planning and organising operations and activities as well as the desire to permanently inform".
- Innovation and vision: „enlarging the cultural horizon", „knowing to attract the public in your projects", „creativity, the idea to create something that has not been done before you, and to "grow", to take the best out of what others have done before you for your objective." Being a good cultural manager means "to love art encouraging creation, to have the capacity to visualise and interpret talent, knowing how to establish a dialogue with the artists and connect them to the cultural projects that you have in view.", „ developing and discovering new opportunities which are beneficial to the institution", „developing collaborations and partnerships with other cultural and educational institutes".
- Focus on results and the institution image: „the proposed objectives to transform into expected results", a good cultural manager will be preoccupied to satisfy the cultural needs that the beneficiaries of the cultural act have. Another aspect belonging to the role of cultural manager is to "finalize the managerial process". Also, in order to make sure that the institution grows and is recognised for its initiatives, the manager needs to "initiate and implement cultural projects that contribute to the increased visibility of the institution".

3.1. *Developing cultural programs for a large variety of public is a big challenge - Who is the audience?*

According to another answer to the questionnaire, a good cultural manager must manage very well and weigh in the cultural supply and demand relationship, so that the cultural product will meet its proper public, and the artistic act to reach the beneficiary: „To be a manager in a cultural institution implies a very good knowledge of the target group (groups) or the beneficiaries of the organised cultural activities and the vision to satisfy those specific cultural needs that they require". Following the same idea, another answer similar to the one above, sees the manager as being responsible with "identifying the supply/demand mechanism, benefiting the art consumer with a project adapted to the demand of the current times and without following a direct material profit." The cultural institution manager from Romania needs to create attractive projects, "contributing to the degree of curiosity of those who benefit from the institution's services". Besides creating the profile of the cultural institution manager, the respondents have also referenced their experience as student house of culture managers, a role for which they require specific attributes such as:

- Knowledge on the ways to "specifically approach the young beneficiaries and students to whom the institution's activities are addressed"
- Adapting to permanent and imminent change, of the successive young generations
- Reshaping their personalities, by acquiring abilities and personal aptitudes such as understanding, patience or knowledge of pedagogy, psychology, which help in getting close to young people and understanding their needs

3.2. *The Cultural Manager - between the "old" culture and the "new" culture*

Being the manager of a cultural institution in Romania is indeed a challenge. "Culture is complicated, but there is no reason to also make its management complicated" (Mundy, 2000, pp 28) and still, in general, both in Europe, as well as in our country, the situation is quite the reverse, the management of the cultural institutions being a difficult process from a law perspective, autonomy regarding the budget, financial resources, human and logistic. The manager of the students' culture houses must level up to the community expectations, one of the main requirements being those to transform the image of this traditional institution and to constantly reorganise the cultural and artistic program, so it answers the needs of the constantly changing young generations, to respect the budget limitations, but also the main cultural-artistic lines of these culture institutions, some over 80 years old (such as the Bucharest Students' Culture House). Tradition and innovation are two terms that need to coexist under the same roof and combine harmoniously and generate positive

results within society, drawing the youth and the students towards this sector of national patrimony and traditional cultural values, best represented in departments dedicated to folklore. "Society is in need of balance between conservation and new, between youth and old age, between particularity and diversity. Culture, as well as nature, uses the past to feed the future" (Mundy, 2000, p 6), therefore the directors of the students' houses of culture have the duty or responsibility to take forward the specific authentic cultural elements, defining for the Romanian culture, all of which needs to be found in the offer of cultural activities and services of the public institution. On the other hand, the manager of the students' houses of culture must have a vision, and must be open to the future. Young people are the "raw material", if we may use this metaphor, that these institutions mostly use, modelling entire student generations, and representing through this mission an "universal school of cultural-artistic fulfilment and an active forum of methodical guidance" (Hodorog, 2007, pp 36). Of course, when we reach this point, the concern to train the youth not only from an artistic point of view, but also from a human perspective appears, by sharing moral values, which accompany or derive from the student cultural-artistic activities. Returning to the previous point, the element of new is part of the vision of the Romanian cultural institution director, as well as the director of each Students' House of Culture from any city in the country, maintaining, at least regarding innovating cultural projects, a large power to shift the artistic landscape and cultural consumption. It so happens that jazz bands, folk ensembles or established house of culture events identify with the name of the city and become a cultural brand of the city, colouring and providing life to the cultural life of the city in question. The Student Folk Ensemble „Mărțișorul" belonging to "Dumitru Farcas" Students' House of Culture is a true brand and an ambassador of folklore, renowned both nationally, as well as internationally. The student theatre festival "Nights in Thalia's world" organised by the Ploiești Students' House of Culture has reached its XVIIth edition, an event with tradition and resonance at a national level and with great impact in Ploiești city. Therefore, the directors of the students' houses of culture represent managers of the cultural public institutions whose main objective is with the young people and for the benefit of young people, by elaborating and managing a cultural-artistic offer specific to this target audience. The young people are "the engine of cultural development; they are active cultural consumers and at the same time represent the future public that will consume events and cultural property" (Voicu, Dragomir, Barlaboi, 2017, pp 210). In Europe, the youth has an essential role and a substantial role in the cultural sector, the institutions and cultural creative centres being sustained by the governmental organisms in the work with the young people, under the aspect of "investing in cultural resources, including the tangible

and intangible patrimony such as dancing, music, theatre and festivals, cand develop strong creative and sustainable economies, can create opportunities for young people and can strengthen the social identity and cohesion. Promoting creativity among the young people and recovering the creative potential and energy must be a priority in finding creative solutions to the current challenges" (Culture as a vector for youth development, UNESCO, 2013).

3.3. *The cultural manager - between the objectives of the cultural agenda and the budget limitations*

The budget and the income of the public cultural institutions have always represented a sensitive subject, through the many cultural actions that have remained outside the events agenda of the students' houses of culture. The grant-own income percentage has not suffered many transformations, approximately 90% of the institutions expenses, generally speaking, have been covered from public finances, with regards to the financing of the institution's projects, the remaining expenses regarding invoices and maintenance or the equipping of the spaces within the institution were covered by its own income. Therefore, the control over the budget, the optimum and successful management of the cultural agenda, so that it ensures the continuity of the traditional projects of the institutions, investing in new, innovating projects, keeping the balance within the approved budget, all of these are very important aspects that come under the ability of the students' house of culture manager of being a good fund and financial resource and human resource administrator of the institutions that they lead. According to the results obtained, it can be proven that not every specialist in the cultural sector has what it takes to be a good cultural manager or specialist in managing the cultural agenda. The cultural manager can be similar to a cultural entrepreneur, in the fight with the budget and having beforehand the objective of ticking as many cultural-artistic activities as possible and to bring innovation, on a small budget. "They are rather cultural entrepreneurs, than public servants or public personas, in their heart, spirit and action" (Albinsson, 2019, pp 355), as the author of a study about cultural managers from Sweden asserts. Arjo Klamer (2011, pp 141-156), whom the author of the study quotes, "adds a moral value to the ones he includes in the category of cultural entrepreneurs. (...) To be focused on the cultural content, over the art itself and over the creative process represents a moral attribute of the cultural entrepreneurs". Moreover, the author insists on the fact that cultural entrepreneurship supposes the creation of value, a process where money is a means and not a purpose. Finally, we list below a few characteristics of the cultural entrepreneur, which the Swedish author mentions and which we consider similar, if not identical to the ones belonging to the managers of the students' houses of culture.

The need for autonomy in creating the work agenda and establishing the cultural-artistic programs from the current years; A permanent sense of alertness regarding new opportunities of cultural collaboration, both national and international; Prioritising events when the budget is insufficient; A strong desire to innovate, to move forward, to stand out with new and impactful projects; A visionary character which has a degree of spontaneity and a good start in the community's larger cultural agenda; The motivation to attract acknowledgement from society for the young artists; Offering young artists a solid "ground", where they can find support and the opportunity to launch artistic productions, in a high visibility space, through the public cultural institution profile, known through seniority and tradition; Prudence in choosing and selecting the collaborative artists, to maintain the high moral spirit of the artistic productions, by avoiding elements such as vulgarity, extremist messages, etc. (Albinsson, 2019, pp 363). Analysing the empirical data gathered through the questionnaire, regarding the question "Does the budget allocated to the institution that you lead, cover its needs? If yes, to what extent?", we have mainly identified negative answers regarding the consistency of the budget funds, from all the managers of the students' houses of culture.

"The allocated budget does not cover at all the needs of the institution (I am referring here both to the administrative needs, investments, personnel, as well as for the ones regarding organising cultural events.)"

„The institution's budget was not and is not sufficient. The needs of the institutions are many, therefore they cannot be covered through the allocated budget. They can be achieved with priority, but only with a substantial annual budget."

„The allocated budget only covers basic needs of the institutions. We also require subventions when it comes to investments in modernising the unit and reaching a professional level with regards to the cultural-artistic and creative activities.

„Evidently more is needed, the budget only covers the administrative survival of the institution, however I believe that regardless of the resources that we have, in order to paint, dance, sculpt, sing, do sports, plant a tree, etc. you do not need money. If within every person there is a creative force, it will manifest regardless of whether there is or there isn't any money."

"The budget is always in relation to the expected projects within a certain period of time. Culture is a domain in which budget is very important and without it, no high level projects can be attained."

„The budget allocated to the institution only covers "personnel expenses". With regard to "Goods and services", although the budget is insufficient, the institution's activity takes place within normal conditions due to the cost

efficiency and the judicious use of the allocated funds. We are constantly facing an undersized budget regarding "other expenses" - scientific and social-cultural actions, the progress of the projects listed in the activity agenda, being possible only by remastering the expenses in order to fit the allocated funds (for example, reducing the number of participants in the national festivals competitions)."

3.4. *The cultural manager - a link between the financing organism and society*
"Cultural manager is an interface more or less visible for the beneficiary public" according to one of the houses of culture managers in their answer regarding the role of the students' houses of culture director, an answer that we consider pertinent, through the fact that this role entails the transfer of artistic, moral and cultural value from the institution towards society. This value has nothing to do with the financial results or with an economic efficiency model, the elements of cultural patrimony and cultural expression having a symbolic value, of cohesion, expressions, acknowledgement and satisfaction of the identity needs of individuals and the community. In addition to the culture spread by the cultural organisms in the private environment, the cultural manager of a public institution has the moral responsibility towards society, by assuring the quality of the artistic act as well as a responsibility towards representing all or as many public categories as possible, by providing a wide, mass access to the artistic act. "The cultural politics in the public sector should counterbalance the negative effects of the commercial influences in the cultural sector" (Albinsson, 2019, p 6). This idea represents the responsibility which a manager takes when they "deliver" a high standard cultural act, when they choose their collaborators and partners in the projects that they unfold. The concern for the quality of the artistic act is constant, both in the way we prepare the young people and students that follow non formal education classes pr preparation hours for a specific domain (modern dance, folklore, picture, jazz, theatre, literature, etc.), but also in the nature, diversity and need to satisfy the large culture consuming public. The accessibility criteria is also very important when we speak of the cultural-artistic events agenda belonging to a public cultural institution, and implicitly, to the students' houses of culture, in order to respect the right of the final culture act beneficiary, the citizen, to participate, to have free access to culture, a right guaranteed by the Constitution. If we wish to measure the performance of a public cultural institution, the factors that would determine the success are the ones incorporated in the quad basic model of the cultural entrepreneurship, displayed by the Swedish author: economic prosperity, artistic innovation, social change and institutional development. At the economic prosperity chapter, this cannot be measured within a specific timeframe or an exact financial value, the positive results

and the evolution of the young artists prepared on the students' houses of culture "benches" being visible for years, through the acknowledgement of their talent and hard work on the national and international scenes. The concrete results of training the young people and students that develop or start their artistic career under the guidance of the hired reviewers can be measured in a) award, scholarships, rewards, projects, nominations; b) the number of participants in the programs, non-formal education classes and cultural events; c) the number of invitations to tournaments, festivals, national and international conferences, competitions; d) the number of students and student organisations that have developed projects throughout the year; e) the number of events. It is evident that, keeping in mind these aspects of efficiency or performance evaluation of the public culture institution, evaluating the financial gain has no object. "From an economical point of view, the financial analysis of the cultural institutions shows an economic inefficiency in all the institutions. Most of them are institutions that are supported through grants, generating small income, in relation to the supported costs. This situation is due to the lack of adequate stimulants in growing the income, die to the subventions secured by the local or national authorities, which cover, at least in theory, the costs connected to maintaining the facilities and the costs of the activities carried out." How well the cultural manager manages to bring visibility, interest and participation from the society must be estimated or measured through other factors than financial ones. "The evaluation of the cultural institutions is not possible to be made only through financial indicators, because these institutions have a variety of objectives. In order to evaluate these objectives, there are appropriate methods through which several internal and external variables are being compared. The non-parametric methods are being used that are usually applied to measure the efficiency of the service production, for example DEA (Data Envelopment Analysis)". Therefore, the students' houses of culture manager constantly assumes an active role in the relation to the government's financial organism, that requires results and respecting the measuring factors of the results, specifically, the quality and quantity indicators in the Implementation Report (supporting document filled in at the end of each cultural activity), according to the cultural policies adopted at national level. Also, there is a permanent relationship with the cultural beneficiary, for which they elaborate cultural programs together with the review team, consultant and artistic counsellors. The alternative methods through which we can receive answers regarding the level of satisfaction and participation are: measuring the number of visitors, applying satisfaction questionnaires, having a visitors suggestions book or blog, site where the culture act beneficiaries can express their opinions.

4. Conclusions

The research hypotheses were confirmed, in general, through the study and the questionnaire method, so that the research hypotheses established a priori were validated by the research results. All respondents considered culture important for preserving the true values of a nation. The manager of the public cultural institution in Romania has the moral obligation to transmit these values to current and future generations, through cultural and educational programs. "When we talk about culture in Romania, we think of Eminescu, Brâncusi, Caragiale, Iorga, Luchian, Tonitza, Enescu, Porumbescu, Zamfir, Maria Tănase, as prominent personalities... at the Romanian Opera, at the Athenaeum, at so many museums and theaters that have delighted the souls of Romanians over time, and these cultural fruits must have continuity", specified one of the respondents. A clear fact that emerged from the answers to the questionnaire in an overwhelming proportion was that the profession of a manager in a cultural institution requires an accumulation of skills, knowledge and vast experience in the field of culture. A cultural manager is best to have creativity, communication skills, negotiation and verbal fluency, the ability to analyse and synthesize, good team management skills, efficiency, adaptability and flexibility, strategic thinking, spontaneity and speed in decision-making, special skills for planning and organizing operations and activities, as well as the desire for permanent information. Beyond the qualities, aptitudes, and experience of the cultural manager, the future is more important. A public cultural institution manager must always ask questions regarding the future, what they can change, where they can bring innovation, what they can add and how they can satisfy the cultural consumer generally as well as the non-formal education needs and personal development of the young people and students that pass the institution's threshold. For this, they assume certain objectives, that they later measure through results. The results depend on strategy and on the team that implements the projects. The team and the quality of the cultural act are interconnected. The focus placed on an authentic culture will lead to guaranteed success, because authenticity and originality creates value.

The government authorities that are responsible with public politics and financing need to provide support and find solutions that will encourage the means of self-financing for the public cultural institutions. When asked about the budget, all respondents stated that the budget is insufficient and alternative financial sources must always be found. The budget allocated to cultural institutions fully covers only the Title "Staff expenses". Regarding the Title "Goods and services", although the budget is insufficient, the activity of cultural institutions in Romania is carried out under normal conditions due to the efficiency of expenses and the judicious use of

allocated funds. Culture managers in Romania are constantly faced with the allocation of an undersized budget for scientific and social-cultural actions, the implementation of the projects included in the action calendar being possible by resizing the expenses in order to fit into the allocated funds (for example, reducing the number of participants in national festivals/competitions), as well as by running projects exclusively online. As for investment funds, although they are urgently needed and constantly requested, this is not a priority for government funding entities.

The students' houses of culture have a major role in the young people's education, beyond the school or university program, as well as in their civic education. "Culture and cultural institutions have a major role in the civic education, because through them, the citizens can affirm themselves through a cultural point of view, can express their vision over the world, as well as their knowledge and skills, and thus to own the role of active citizens, informed and successful, in a democratic society" (Kochoska, Petrovski, 2015, p 2). Through education, entire generations of young people are prepared to understand the cultural act, to disseminate it, and why not, to generate it. "Education represents a crucial element within the cultural politics that must not be left completely in the hands of the Education Department. It is so crucial that it can be said that the preparation of the population to join its culture is just as important as preparing them for work. The two are more interconnected as Europe shifts focus from heavy industry to creative industry, the main job creation engine. This is why, this chapter will take into consideration two major themes: the public education to allow it to enjoy and partake in the cultural life and the necessary education that will permit a constant number of people to continue their careers in the cultural department" (Mundy, 2000, pp 48). In addition to the private cultural forms (independent organizations, cultural centres etc.) the students' houses of culture have the responsibility to assure massive access to the artistic act, by involving a large number of young people and students, as beneficiaries of the artistic act, as well as creators and generators of the cultural manifestations. The course of trajectory of the cultural act must be a continuous process, fluid and open, from the beneficiary or consumer, to the creative artist, these roles always being interconnected and experienced at the same time by the students that create the cultural act, but who also participate, at the same time, at their own productions, together with the larger audience. The student cultural environment is a dynamic environment, the institution needing to keep up with this dynamic that they need to also incorporate in their cultural programs. The key defining words for the success of a public cultural institution are: "accessibility, diversity, openness, responsibility and flexibility" (Kochoska, Petrovski, 2015, p 8). Also, in contrast to the commercial

culture, the students' houses of culture are those traditional culture propagation oasis, authentic, as well young independent artists, that are just beginning their journey, who are extremely talented and who need support, by being offered a space and guidance to artistically express their creative potential. A continuous challenge for the cultural manager is to take into consideration the level of participation in the cultural programs that are implemented or hosted, culture not being a "passive distraction, but (...) a problem of active involvement and interest" (Mundy, 2000, pp 28). The cultural manager has a key role in building the image of the cultural institution, through cultural programs, through innovation, through the decisions that they need to take bearing in mind the vision and the results that they want to reach. They develop and contribute to quality cultural projects and help, implement and support their reception from the audience or from the specific group of beneficiaries. The support of the authorities is necessary to generate the large access to culture, permanent innovation of the programs, of the needs that appear regarding the personnel and the facilities offered by the spaces where the youth activities take place, specifically in this dynamic university environments.

References

1. Albinsson, S., *Breaking new ground: Intrapreneurs in Swedish Cultural Institutions*, The Nordic Journal of Cultural Policy, vol. 22, Nr. 2-2019, 355-380

2. Balcerzyk, D., *Cooperation Instruments between Cultural Institutions and the Environment*, article in the `International Journal of Contemporary Management`, January 2017

3. Batko, R., *Evaluation of audit criteria for cultural institutions: a research report*. Article in `European Research Studies Journal`, Volume XXIV, Issue 1, February 2021, Jagiellonian University

4. Bonet, L., Schargorodsky, *Theatre management. Methods and strategies for organisations and spectacle institutions*, Coordinating editor Carmen Croitoru, Pro Universitaria Publishing house 2017

5. Galeka, M., Smolny, K., *Economic Efficiency of the Cultural Institutions*, Wroclaw University of Economics and Business, Hradec Economic Days Vol. 7 (1) January 2017

6. Hodorog, L., *Students' House of Culture from the University Center Cluj-Napoca*, Ardealul Print House Cluj, 2007

7. Hodorog, L., Cluj-Napoca Students' House of Culture, *The cradle of our Studenthood*, Ardealul Print House Cluj, 2009

8. Kochoska, J., Petrovski, D., *The Role of Cultural Institutions in Civic Education*, „St Kliment Ohridski" University, Bitola, Macedonia. Article in `International Journal of Science and Research` (IJSR), April 2015

9. Koľveková, G., Liptáková, E., Śebová, M., *Measurement of Efficiency in Cultural Instituţions*, The 13th International Days of Statistics and Economic, Prague, September 5-7, 2019

10. Măruţoiu, V., C., *The 60th Anniversary of the „Mărţişorul" Folk Ensemble and the „Laurenţiu Hodorog" Carols and Winter Traditions Festival*, IV-th edition - About Tradition, Performance, Continuity, `SEMN` Magazine, Text and Image Atelier nr 11 from 2017, Cluj-Napoca, Romania

11. Milăşan, F., *Laurenţiu Hodorog" Carols and Winter Traditions Festival – About Living, Feeling, Testimony and Traditional Treasury*, in `SEMN` Magazine, Text and Image Atelier nr 10 from 2016, Cluj-Napoca, Romania

12. Mundy, S., *Cultural politics. A small ghide*, European Council Publishing House, May, 2000

13. Voicu, Ş., Dragomir, A., Barlaboi, S., *Developing creativity and creative potential in the youth segment*, p. 217, study published in the `Culturadata Notebooks`, Volume 2/2017, Coordinators: Carmen Croitoru, Anda Becuţ, The Romanian National Institute for Cultural Research and Training (INCFC), Pro Universitaria Publishing House, Bucharest, 2017

14. European Cultural Politics: compendium of all basis data and trend, European Council, ERICarts, Bonn: ARCultMedia, 2000. [Online], Available: https://www.culturalpolicies.net/resources/cultural-policy-system/

15. MetruCub – Cultural resources [Online], Available: http://m3culture.ro/sample-page/

16. UNESCO Culture as a vector for youth development, [Online], Available: http://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-cultureasavector.pdf

DRIVERS OF DIGITAL TRANSFORMATION IN PRODUCT DEVELOPMENT, BUSINESS MODELING AND HUMAN RESOURCES MANAGEMENT

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Abstract: *Digital transformation profoundly affects the business world, with both positive and negative outcomes. The purpose of this paper is to analyze how three business areas have been affected by the digital transformation. Therefore, we analyze the digital transformation of product development, the human resources management process, and business models. The analysis provides information and knowledge to researchers who address technological development in their work. A literature review on the evolution of the three fields has been performed. The comparative analysis reveals the existence of three main drivers concerning DT adoption in the three fields: improving communication, costs reduction, and increasing efficiency. The findings are relevant both for the three domains analyzed and for future research on the development of digitalization in general.*

Keywords: *Digital transformation, business model, product development, business process, human resource management*

JEL Classification: *M10; M15; O32*

Introduction

Companies worldwide are increasingly prioritizing the subject of digital transformation (DT). This reality underscores the critical need to be able to adjust and embrace new trends and technologies, as ignoring them is not an option (Ismail et al., 2017). Innovating new business models and creating new smart processes and services by using digital technologies and data in an organization, are considered

aspects that are related to digital transformation according to many researchers in the field (Schwertner, 2017). Digitalization is currently having a major impact on the economy (Annarelli et al., 2021), also identified from the perspective of the emergence of new companies with a digital tentacle or the disappearance of other well-known companies from the market that have not been able to integrate technology into their business model (Schmidt et al., 2016).

Digitalization significantly impacts a multitude of industries and provides competitive advantages in all fields of activity (Verhoef et al., 2021). Although there are articles that follow technological development in various domains, we can affirm that there are extremely few articles that pursue a comparative analysis of how major business aspects have been affected by DT. The present work follows the evolution of DT in three areas: business models, product development, and human resources management. Thus, we encompass the most important aspects, namely: the business domain, the products offered to the customer, and of course, the workforce. In this context, we address the following research question:

> RQ: How have business modelling, product development, and human resources been affected by DT?

To answer the question, we rely on a literature review. We can consider this framework to be suitable for analyzing and understanding how business models, product development, and human resources management embrace and support digital transformation.

This paper is structured as follows. Chapter 1 is represented by a literature review on each field. The second chapter presents the three variables that we use to analyze the similarities of each field in relation to DT, the discussions and the comparison between the three fields' DT paths. Finally, Chapter 3 concludes and details avenues for future research.

1. Literature review

1.1. The evolution of Business Models through the digital transformation

Researchers commonly agree that there isn't only one single way of defining business models (Fehrer et al., 2018), thus we can find ideas regarding the "way firms do business" (Osterwalder et al., 2005; Zott and Amit, 2010; Fehrer et al., 2018; Luz Martin-Pena et al., 2018; Bican and Brem, 2020), correlating to the value creation (Porter, 1985; Nielsen and Lund, 2014; Schallmo and Williams, 2018), the formalization of components and elements of business models (Osterwalder and Pigneur, 2010), or capturing the network and connections which are creating around them (Zott and Amit, 2010; Bican and Brem, 2020; Li, 2020).

The first major changes in businesses models started to appear in the 1990s (Nielsen and Lund, 2014; Luz Martin-Pena et al., 2018; Schallmo and Williams, 2018). The existence of the term "E-Business" aligns with the evolution of the Internet, chronologically speaking (Nielsen and Lund, 2014; Luz Martin-Pena et al., 2018). This period can also be identified as the 1st wave of digital transformation (Kotarba, 2018). As a result of incorporating information and communication technologies (ICT) in their activities (Luz Martin-Pena et al., 2018), companies have developed a new business model – "E-Business". The most important changes appeared in the way that the company communicated with its customers, suppliers, employees, and partners (Luz Martin-Pena et al., 2018; Schallmo and Williams, 2018). In their study in (Amit and Zott, 2001), Amit and Zott concluded that there were four major value drivers which enhance the value creation in E-Business. These dimensions had a direct impact on the profit of the company: efficiency compared to other businesses, being able to lock-in customers, and offer complementary goods (Zott and Amit, 2010).

In early 2000s, the Digital Business Model has replaced the E-Business concept. This change from 'E' to 'D' was questioned by researchers (Luz Martin-Pena et al., 2018), because at the first look it just seems as one is a continuation of the other. Business models started to modify due to the development of new ICT, such as mobile devices, platforms, analytical tools and IoT (Luz Martin-Pena et al., 2018; Schallmo and Williams, 2018; Bican and Brem, 2020). There are also new terms which start to be present in the literature, such as business actors, internet-enabled commerce, digital product and digital service (Cîmpan et al., 2022).

The implementation of new technologies has changed different parts of the business model. First, we notice an enhanced resource optimization, which permits interactions between different actors and systems (Bican and Brem, 2020). Communication continued to change in the 2nd wave of DT (Kotarba, 2018), now being almost entirely digital and in real time, facilitated by the smart devices and social media platforms (Schallmo and Williams, 2018). The use of smart devices has significantly increased the value proposition of the company (Bican and Brem, 2020). They are used for value creation for both the company and the customers. The mobile technologies are collecting personalized customer data, which is being used for creating tailored products and services, which aim to closely serve the customer needs (Schallmo and Williams, 2018). The customers are not only given the best-fitted product/service but they are also being emerged into a rich customer experience (Bican and Brem, 2020). The commerce has also shifted to an online environment, being sustained by multiple digital payment options though secure online platforms (Luz Martin-Pena et al., 2018; Schallmo and Williams, 2018). The

changes appearing can be divided in three main categories: automation - businesses automate or improve their activities and procedures using digital technologies, extension - businesses use digital technologies to foster new business models that complement current activities and processes rather than replacing them, and transformation - new business models could substitute established ones thanks to digital technologies (Li, 2020).

Finally, at this moment digital platforms have been rapidly adopted by the companies and placed at the core of their activities. Their most important trait is their openness, impacting many layers: the platform user layer, the platform infrastructure layer, and the platform provider layer (Fehrer et al., 2018; Rahman and Thelen, 2019). Platform business models are thought of as open business models because they are built on a collaborative infrastructure that links numerous different actors (Fehrer et al., 2018). Though sometimes the platform offers very little value to its users, if it successfully involves and links more kinds of actors, it can develop a successful business ecosystem around it (Cîmpan et al., 2022) and support the centralization of all the activities, resources and actors surrounding the firm (Rahman and Thelen, 2019). The shift of value creation from inside the firm to outside the firm, between different actors, implies counting on a larger, more varied set of resources (Fehrer et al., 2018). The cost reduction for most actors is a key value capture mechanism for the platform business model (Fehrer et al., 2018).

1.2. The evolution of product development through the digital transformation

Product development has been defined in multiple ways. Krishnan & Ulrich (Krishnan and Ulrich, 2001) defined it by adopting an entrepreneurial perspective as „the transformation of a market opportunity and a set of assumptions about product technology into a product available for sale", while Florén & Frishammar (Florén and Frishammar, 2012) adopt a process perspective, defining it as „a set of transformations of input elements into output elements". DT influence on product development has been observed by analyzing the evolution of technologies and of product development paradigms.

Concerning technology use in product development, in the year 1963, (Ross and Rodriguez, 1963) introduced us to the concept of CAD (Computer-Aided Design), a software used for generating electronic files that can be employed in various manufacturing operations such as printing and machining. Its advent significantly enhanced designers' productivity and heightened design quality, amongst other benefits. The next step in the evolution of product development was the emergence of the concept Computer-Aided Manufacturing (CAM) software (Spanninga, 1979) which enabled manufacturers to use computers to control and automate the

manufacturing process, reducing errors and increasing efficiency (Schweitzer et al., 2019). The evolution of product development continued with the Product Lifecycle Management (PLM) system, a software solution that captures, manages, and shares product-related information, including data on various versions of a product throughout its lifecycle (Schweitzer et al., 2019). More recently, the concept of Digital Product Development appeared in the field and with-it technologies like 3D printing, virtual reality, and the Internet of Things (IoT) (Albukhitan, 2020). Additive Manufacturing, also known as 3D Printing, combines different materials and processes that share the ability to convert 3D data directly into physical objects (Albukhitan, 2020). The Internet of Things (IoT) typically refers to situations in which objects, sensors, and other everyday items that are not typically considered computers are enabled with network connectivity and computing capabilities (Rose et al., 2015). This allows these devices to exchange, generate, and consume data with minimal human intervention, thereby enabling a wide range of new applications and services (Li et al., 2015). Finally, Industry 4.0 encompasses a wide range of areas and technologies aimed at improving the efficiency, productivity, and quality of industrial processes (Kurasov, 2021). Some of the key technologies associated with Industry 4.0 include additive manufacturing technologies, such as 3D printing, as well as modeling and visualization tools that also involves the integration of systems, leveraging the Internet of Things and cloud services while ensuring cyber security (Kurasov, 2021). Artificial intelligence, big data analytics, energy-efficient technologies, and alternative energy solutions are also important components of Industry 4.0 (Santos et al., 2017).

Concerning product development paradigms, a major change is represented by the adoption of Agile development for software products (Trott, 2012), a flexible product development which allows modifications to a product or to the development process, even during the later stages of development, without causing significant disruptions. It encourage adaptive planning and delivery, using a time-boxed iterative approach that responds quickly to changes (Reifer, 2002). Unlike conventional methods, these approaches prioritize the creation of early versions of functioning products, using mostly collaborative techniques such as pair programming, refactoring, and customer involvement (Racheva et al., 2008). Overall, digital transformation has transformed product development from a slow, linear process to a fast, iterative, and highly collaborative one. Companies that embrace digital technologies are better equipped to stay competitive in a rapidly changing market (Cooper, 2019; Schweitzer et al., 2019; Barrane et al., 2021).

1.3. Evolution of digital transformation in HRM

The human resource management (HRM) function has undergone a change over time with the advent of digital technologies (Bondarouk and Brewster, 2016; Schmidt et al., 2016). Therefore, the requirements for HR professionals have also changed, they must be able and open to develop new digital skills in order to manage roles and responsibilities that are constantly changing due to the evolution of information technologies (Ulrich et al., 1995). HR personnel are forced to go beyond the administrative side and acquire new knowledge on the strategic side with the role of achieving strategic partnerships within the company, having knowledge in managing change and technology (Bell et al., 2006; Vrontis et al., 2022).

E-HRM (e-Enabled Human Resource Management) is part of an effective human resource management strategy and practice in various organizations (Ruël et al., 2004; Bondarouk and Ruël, 2009; Strohmeier, 2020). At a theoretical level, e-HRM is defined as a way of implementing HRM strategies, policies and practices in companies by using web-based channels (Ruël et al., 2004; Strohmeier, 2020). However, the transition from classical to digital HRM was achieved gradually because there was a lack of knowledge about the terminology, practices, and theories of this new field of digital HRM(Strohmeier, 2007; Bondarouk and Ruël, 2009; Parry and Tyson, 2011; Bondarouk and Ruël, 2013). Before digital technologies made their presence felt in HRM, formerly known as "people management", the work of employees in that department was repetitive and hampered by various processes and procedures (Bondarouk and Ruël, 2009; Bondarouk et al., 2017).

The need for HR professionals to understand all digital tools has also increased greatly. A broader perspective of the impact that technology has on the entire organization should also be known by the HR department, as they are part of the integration and development of new processes in a company (Bondarouk and Ruël, 2013; Strohmeier, 2020). Any change within an organization brings with it a disruption of the current state of affairs, having a significant impact at all organizational levels. Thus, it is important that HR is prepared for change and, at the same time, has the ability to provide flexible solutions to adapt to change for the entire organization (Ebersold and Glass, 2015; Strohmeier, 2020).

The new trend of companies introducing e-HRM processes and the adoption of new technologies brings a series of advantages and disadvantages that are expected both by the organization and especially by the HR department and its employees (Ismail et al., 2017; Nikolaou, 2021). Among the most important processes in HRM are the recruitment, selection, and performance evaluation of employees, which are directly affected positively or negatively by technologies (Thompson et al., 2008; Nikolaou, 2021). The presence of digital tools in HRM is variable from company to company

and this is given by the stage at which organizations have decided to implement digitization processes (Zhou et al., 2021). In other words, we can have companies that are currently in the early stages of digitalization (often they are small companies or companies with a more rigid organizational culture) and fully digitalized companies (Strohmeier, 2020; Zhou et al., 2021; Chugunova and Danilov, 2022).

2. Drivers of DT evolution in the three fields

The digital transformation process has transformed all three considered areas along the years, being quite slow and tardive at first, but incremental, and coming at a fast pace due to the development of ICT, therefore, constantly catching up with the trends. Product development was the first area where the impact of the DT process can be noticed, in the form of CAD and its successor, CAM software, which were created in order to enhance the designers' productivity and quality, control and automate the manufacturing process (Ross and Rodriguez, 1963; Peddireddy et al., 2020). The improved CAM software was created in a time spawn when the other considered areas started being impacted as well. The 1990s were a common changing point, due to the creation of Internet facilitated technologies. We can identify three common drivers for adopting digital transformation in all three considered areas: improving communication, costs reduction, and increasing efficiency.

DT impacted the way communication was done at all business models' levels. It not only improved communication inside the firm, among the employees, but in the environment around it, between all the actors which are involved (such as customers, suppliers and partners) (Luz Martin-Pena et al., 2018; Schallmo and Williams, 2018). One of the long-term benefits of the DT process is the development of platforms, which are constructed on a collaborative infrastructure (Fehrer et al., 2018), process automation and outstanding communication between the actors. However, the advantages of DT on communication improvement can be mostly noticed at micro level, inside and between each department of the company. The mobile technologies help to collect personalized customer data, which are used in order to create the best fitted product for the customers (Schallmo and Williams, 2018; Bican and Brem, 2020). This can only be possible due to the complex systems which help collect, consolidate, visualize, and analyze data in a systematic manner (Santos et al., 2017), thus creating a flexible product development, where modifications can be made in the product development process up to the later stages of development and without disrupting it (Trott, 2012). In the HR department, ICT are breaking the barriers on a global level, permitting the recruitment process to access candidates from all over the globe (Strohmeier, 2020; Nikolaou, 2021).

Another area with a recurrent impact of DT is related to the incurred costs. The DT has triggered an essential change by reducing costs and adding value to the businesses. The platforms technology has reduced the costs involved for the transactions (Fehrer et al., 2018) and has centralized all the activities and resources, for a better allocation (Rahman and Thelen, 2019). In a similar way, the HR department has benefited from platform adoption by reducing repetitive work, and improving the administrative systems (Bondarouk and Ruël, 2009, 2013). However, not all companies have this adoption level, and the HR department is one of the last ones where the automatization processes are introduced (Ruël and van der Kaap, 2012). In production development the interconnected devices help to exchange, generate, and consume data with minimal human interaction, thus reducing the costs for the human resources allocated in the development processes (Li et al., 2010).

Adopting platforms and ICT has not only contributed to costs' reduction for the company, but also for increasing efficiency at all levels. First of all, we can observe the creation of an enhanced resource optimization, regarding all resources, financial, material or human (Bican and Brem, 2020). The e-HRM processes promise efficiency through the implementation of technology supported HR policies and practices, and most importantly they increase employees' performance, thus allowing them to acquire new technical skills (Ruël et al., 2007; Bondarouk and Ruël, 2013). This can also contribute to the achievement of strategic objectives on a higher organizational level (Ruël et al., 2004, 2007). In product development, at first, the DT was focusing on improving efficiency by automating processes and reducing errors in the manufacturing process (Schweitzer et al., 2019). Later on, we notice a different type of efficiency, in systems like PLM, which are performant in collecting and managing product-related data. A consequence to these types of systems is the possibility of expanding to new markets and audiences (Cooper, 2019; Schweitzer et al., 2019; Barrane et al., 2021). Last but not least, the DT has contributed to the overall financial performance of the companies, by providing a basis for new profit-generation methods for the companies (e.g. commission-based, advertising (Nielsen and Lund, 2014)).

3. Conclusion

The purpose of this article was to identify common patterns of digital transformation in areas such as business models, product development, and human resources management. Through a literature review, we observed the evolution of each domain through the lenses of digital transformation. The research reveals how technology was adopted in each field and which was its impact. Each field has a different pace

of adaptation to new trends. If in the case of product development and business models, technological advancements have been a perfect fit for their evolution, in the case of human resources, there is still a reluctance to fully implement the systems created by technological development. Although digital transformation affects each field differently, we have identified common drivers which have affected DT adoption in all three areas: improving communication, costs reduction, and increasing efficiency. Digital transformation has left its mark on each analyzed field and continues to impact them in the present.

Naturally, our research has some limitations due to the constant and extremely rapid development of technology and the large flow of information that spreads quickly regarding the analyzed subject. Hence, these limitations offer us the opportunity for future research in each analyzed field. Therefore, regarding business models, the ones that guide future studies are blockchain, artificial intelligence, and the internet of things. In the case of product development, Industry 4.0 is pursued, which aims to improve the efficiency, productivity, and quality of industrial processes. This supports the direction of business models and aims to implement systems such as the Internet of Things and cloud services while ensuring cyber-security. The field of human resources is affected differently by digital transformation; therefore, it is in a continuous process of adaptation to change, and the implementation of high-performance digital systems seems to be much slower compared to the other two analyzed fields.

4. Acknowledgements

References
1. Albukhitan, S., 2020. Developing Digital Transformation Strategy for Manufacturing. Procedia Computer Science 170, 664–671. https://doi.org/10.1016/j.procs.2020.03.173
2. Amit, R., Zott, C., 2001. Value creation in E-business. Strat. Mgmt. J. 22, 493–520. https://doi.org/10.1002/smj.187
3. Annarelli, A., Battistella, C., Nonino, F., Parida, V., Pessot, E., 2021. Literature review on digitalization capabilities: Co-citation analysis of antecedents, conceptualization and consequences. Technological Forecasting and Social Change 166, 120635. https://doi.org/10.1016/j.techfore.2021.120635
4. Barrane, F.Z., Ndubisi, N.O., Kamble, S., Karuranga, G.E., Poulin, D., 2021. Building trust in multi-stakeholder collaborations for new product development in the digital transformation era. BIJ 28, 205–228. https://doi.org/10.1108/BIJ-04-2020-0164

5. Bell, B.S., Lee, S.-W., Yeung, S.K., 2006. The impact of e-HR on professional competence in HRM: Implications for the development of HR professionals. Hum. Resour. Manage. 45, 295–308. https://doi.org/10.1002/hrm.20113

6. Bican, P.M., Brem, A., 2020. Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is There A Sustainable "Digital"? Sustainability 12, 5239. https://doi.org/10.3390/su12135239

7. Bondarouk, T., Brewster, C., 2016. Conceptualising the future of HRM and technology research. The International Journal of Human Resource Management 27, 2652–2671. https://doi.org/10.1080/09585192.2016.1232296

8. Bondarouk, T., Ruël, H., 2013. The strategic value of e-HRM: results from an exploratory study in a governmental organization. The International Journal of Human Resource Management 24, 391–414. https://doi.org/10.1080/09585192.2012.675142

9. Bondarouk, T., Ruël, H., Parry, E., 2017. Electronic HRM in the smart era. Emerald Publishing Limited.

10. Bondarouk, T.V., Ruël, H.J.M., 2009. Electronic Human Resource Management: challenges in the digital era. The International Journal of Human Resource Management 20, 505–514. https://doi.org/10.1080/09585190802707235

11. Chugunova, M., Danilov, A., 2022. Use of Digital Technologies for HR Management in Germany: Survey Evidence. SSRN Journal. https://doi.org/10.2139/ssrn.4010539

12. Cîmpan, I., Crișan, E.L., Salanță, I.I., Mihăilă, A.A., 2022. Digital Platforms Business Models. Revista de Management Comparat International 23, 612–629.

13. Cooper, R.G., 2019. The drivers of success in new-product development. Industrial Marketing Management 76, 36–47. https://doi.org/10.1016/j.indmarman.2018.07.005

14. Ebersold, K., Glass, R., 2015. THE IMPACT OF DISRUPTIVE TECHNOLOGY: THE INTERNET OF THINGS. IIS. https://doi.org/10.48009/4_iis_2015_194-201

15. Fehrer, J.A., Woratschek, H., Brodie, R.J., 2018. A systemic logic for platform business models. JOSM 29, 546–568. https://doi.org/10.1108/JOSM-02-2017-0036

16. Florén, H., Frishammar, J., 2012. From Preliminary Ideas to Corroborated Product Definitions: Managing the Front End of New Product Development. California Management Review 54, 20–43. https://doi.org/10.1525/cmr.2012.54.4.20

17. Ismail, M.H., Khater, M., Zaki, M., 2017. Digital Business Transformation and Strategy: What Do We Know So Far? Cambridge Service Alliance 10, 1–35.

18. Kotarba, M., 2018. Digital Transformation of Business Models. Foundations of Management 10, 123–142. https://doi.org/10.2478/fman-2018-0011

19. Krishnan, V., Ulrich, K.T., 2001. Product Development Decisions: A Review of the Literature. Management Science 47, 1–21. https://doi.org/10.1287/mnsc.47.1.1.10668

20. Kurasov, D.A., 2021. Computer-aided manufacturing: Industry 4.0. IOP Conf. Ser.: Mater. Sci. Eng. 1047, 012153. https://doi.org/10.1088/1757-899X/1047/1/012153

21. Li, F., 2020. The digital transformation of business models in the creative industries: A holistic framework and emerging trends. Technovation 92–93, 102012. https://doi.org/10.1016/j.technovation.2017.12.004

22. Li, R., Luo, T., Zha, H., 2010. 3D Digitization and Its Applications in Cultural Heritage, in: Digital Heritage: Third International Conference, EuroMed 2010, Lemessos, Cyprus, November 8-13, 2010. Proceedings 3. Springer Berlin Heidelberg, pp. 381–388.

23. Li, S., Xu, L.D., Zhao, S., 2015. The internet of things: a survey. Inf Syst Front 17, 243–259. https://doi.org/10.1007/s10796-014-9492-7

24. Luz Martin-Pena, M., Diaz-Garrido, E., Sanchez-Lopez, J.M., 2018. The digitalization and servitization of manufacturing: A review on digital business models. Strategic Change 27, 91–99. https://doi.org/10.1002/jsc.2184

25. Nielsen, C., Lund, M., 2014. A Brief History of the Business Model Concept. SSRN Journal. https://doi.org/10.2139/ssrn.2579439

26. Nikolaou, I., 2021. What is the Role of Technology in Recruitment and Selection? Span. J. Psychol. 24, e2. https://doi.org/10.1017/SJP.2021.6

27. Osterwalder, A., Pigneur, Y., 2010. Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons.

28. Osterwalder, A., Pigneur, Y., Tucci, C.L., 2005. Clarifying Business Models: Origins, Present, and Future of the Concept. CAIS 16. https://doi.org/10.17705/1CAIS.01601

29. Parry, E., Tyson, S., 2011. Desired goals and actual outcomes of e-HRM: e-HRM goals and outcomes. Human Resource Management Journal 21, 335–354. https://doi.org/10.1111/j.1748-8583.2010.00149.x

30. Peddireddy, D., Fu, X., Wang, H., Joung, B.G., Aggarwal, V., Sutherland, J.W., Byung-Guk Jun, M., 2020. Deep Learning Based Approach for Identifying Conventional Machining Processes from CAD Data. Procedia Manufacturing 48, 915–925. https://doi.org/10.1016/j.promfg.2020.05.130

31. Porter, M.E., 1985. Competitive advantage: creating and sustaining superior performance. Free Press ; Collier Macmillan, New York : London.

32. Racheva, Z., Daneva, M., Buglione, L., 2008. Supporting the Dynamic Reprioritization of Requirements in Agile Development of Software Products, in: 2008 Second International Workshop on Software Product Management. Presented at the 2008 Second International Workshop on Software Product Management, IEEE, Barcelona, Spain, pp. 49–58. https://doi.org/10.1109/IWSPM.2008.7

33. Rahman, K.S., Thelen, K., 2019. The Rise of the Platform Business Model and the Transformation of Twenty-First-Century Capitalism. Politics & Society 47, 177–204. https://doi.org/10.1177/0032329219838932

34. Reifer, D.J., 2002. How good are agile methods? IEEE Softw. 19, 16–18. https://doi.org/10.1109/MS.2002.1020280

35. Rose, K., Eldridge, S., Chapin, L., 2015. The Internet of Things: An Overview. The internet society (ISOC) 80, 1–50.

36. Ross, D.T., Rodriguez, J.E., 1963. Theoretical foundations for the computer-aided design system, in: Proceedings of the May 21-23, 1963. Presented at the spring joint computer conference, pp. 305–322.

37. Ruël, H., Bondarouk, T., Looise, J.K., 2004. E-HRM: Innovation or Irritation. An Explorative Empirical Study in Five Large Companies on Web-based HRM. Management Revue 15, 364–380.

38. Ruël, H., van der Kaap, H., 2012. E-HRM Usage and Value Creation. Does a Facilitating Context Matter? German Journal of Human Resource Management 26, 260–281. https://doi.org/10.1177/239700221202600304

39. Ruël, H.J.M., Bondarouk, T.V., Van der Velde, M., 2007. The contribution of e-HRM to HRM effectiveness: Results from a quantitative study in a Dutch Ministry. Employee Relations 29, 280–291. https://doi.org/10.1108/01425450710741757

40. Santos, K., Loures, E., Piechnicki, F., Canciglieri, O., 2017. Opportunities Assessment of Product Development Process in Industry 4.0. Procedia Manufacturing 11, 1358–1365. https://doi.org/10.1016/j.promfg.2017.07.265

41. Schallmo, D.R.A., Williams, C.A., 2018. History of Digital Transformation, in: Digital Transformation Now!, SpringerBriefs in Business. Springer International Publishing, Cham, pp. 3–8. https://doi.org/10.1007/978-3-319-72844-5_2

42. Schmidt, R., Zimmermann, A., Möhring, M., Nurcan, S., Keller, B., Bär, F., 2016. Digitization – Perspectives for Conceptualization, in: Advances in Service-Oriented and Cloud Computing: Workshops of ESOCC 2015. Springer International Publishing, Taormina, Italy, pp. 263–275.

43. Schweitzer, F.M., Handrich, M., Heidenreich, S., 2019. DIGITAL TRANSFORMATION IN THE NEW PRODUCT DEVELOPMENT PROCESS: THE ROLE OF IT-ENABLED PLM SYSTEMS FOR RELATIONAL, STRUCTURAL, AND NPD PERFORMANCE. Int. J. Innov. Mgt. 23, 1950067. https://doi.org/10.1142/S1363919619500671

44. Schwertner, K., 2017. Digital transformation of business. TJS 15, 388–393. https://doi.org/10.15547/tjs.2017.s.01.065

45. Spanninga, D., 1979. REAPS SYMPOSIUM-SAN DIEGO, SEPTEMBER 12, 1979, in: Proeedings of the REAPS Technical Symposium September 11-13, 1979. San Diego, California.

46. Strohmeier, S., 2020. Digital human resource management: A conceptual clarification. German Journal of Human Resource Management 34, 345–365. https://doi.org/10.1177/2397002220921131

47. Strohmeier, S., 2007. Research in e-HRM: Review and implications. Human Resource Management Review 17, 19–37. https://doi.org/10.1016/j.hrmr.2006.11.002

Thompson, L.F., Braddy, P.W., Wuensch, K.L., 2008. E-recruitment and the benefits of organizational web appeal. Computers in Human Behavior 24, 2384–2398. https://doi.org/10.1016/j.chb.2008.02.014

48. Trott, P., 2012. Innovation management and new product development, 5th ed. ed. Financial Times/Prentice Hall, Harlow, England ; New York.

49. Ulrich, D., Brockbank, W., Yeung, A.K., Lake, D.G., 1995. Human resource competencies: An empirical assessment. Hum. Resour. Manage. 34, 473–495. https://doi.org/10.1002/hrm.3930340402

50. Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., Haenlein, M., 2021. Digital transformation: A multidisciplinary reflection and research agenda. Journal of Business Research 122, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

51. Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., Trichina, E., 2022. Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review. The International Journal of Human Resource Management 33, 1237–1266. https://doi.org/10.1080/09585192.2020.1871398

52. Zhou, Y., Liu, G., Chang, X., Wang, L., 2021. The impact of HRM digitalization on firm performance: investigating three-way interactions. Asia Pac J Hum Resour 59, 20–43. https://doi.org/10.1111/1744-7941.12258

53. Zott, C., Amit, R., 2010. Business Model Design: An Activity System Perspective. Long Range Planning 43, 216–226. https://doi.org/10.1016/j.lrp.2009.07.004

DIGITAL TRANSFORMATION VULNERABILITIES: ASSESSING THE RISKS AND STRENGTHENING CYBER SECURITY

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Abstract: *Digital transformation has revolutionized the way organizations operate, enabling them to leverage advanced technologies for increased efficiency and productivity. However, along with the benefits, digital transformation also brings new vulnerabilities and risks, particularly in the realm of cybersecurity. This abstract aims to provide an overview of the vulnerabilities associated with digital transformation and highlight the importance of assessing risks and strengthening cybersecurity measures to mitigate potential threats.*
The rapid adoption of cloud computing, Internet of Things devices, and interconnected systems has expanded the attack surface for cybercriminals. Organizations must recognize the potential vulnerabilities introduced by these technologies, such as data breaches, system failures, and unauthorized access. Understanding the specific risks associated with digital transformation is crucial for developing effective cybersecurity strategies.
Assessing risks involves evaluating the organization's digital infrastructure, identifying potential weak points, and determining the likelihood and potential impact of various threats. This process enables organizations to prioritize cybersecurity efforts and allocate resources effectively. It also involves evaluating the security measures in place, including firewalls, intrusion detection systems, encryption protocols, and employee training programs, to ensure they are up to date and resilient against emerging threats.
Strengthening cybersecurity requires a multi-layered approach that encompasses technical measures, organizational policies, and a culture of security awareness. Implementing robust security controls, such as regular software updates, network segmentation, and access controls, helps fortify digital systems against attacks. Additionally, establishing incident response plans and conducting regular security audits aids in identifying vulnerabilities and responding swiftly to cyber incidents.
Furthermore, fostering a culture of cybersecurity awareness among employees is essential. Educating staff on best practices, such as strong password management, phishing awareness, and safe browsing habits, empowers them to become the first line of defence against cyber threats.

Keywords: *digital transformation vulnerabilities, data breaches, cyber threats, cyber security.*

JEL Classification: O30

1 Introduction

Digital transformation has brought about a revolution in the way businesses operate, changing the way companies interact with their customers, employees, and partners. The adoption of digital technologies has led to the creation of new business models, improved efficiency, and better decision-making capabilities. However, with these benefits come new risks and vulnerabilities that organizations must be aware of to protect themselves from cyber threats.

As organizations continue to embrace digital transformation, the dependence on digital infrastructure grows. This dependence makes organizations vulnerable to cyber threats, including ransomware attacks, data breaches, and other malicious activities. The reliance on digital infrastructure also increases the attack surface for cybercriminals, making it easier for them to launch attacks on organizations. Also, digital transformation may lead to a change of the organizational culture. While the innovation and new technologies adoption may be efficient for the companies, they can also create stress among the people in the organization.

2 Literature

In today's digital age, cybersecurity is a growing concern for individuals and organizations alike. With the rise of cybercrime, it has become increasingly important to assess the risks associated with cybersecurity and take measures to strengthen it. This literature review aims to explore the latest research on assessing the risks and strengthening cybersecurity.

Assessing the Risks

Assessing the risks associated with cybersecurity and taking measures to strengthen it is critical in today's digital age. According to a study by Böhme et al. (2010), risk assessment involves identifying the assets at risk, the potential threats, and the vulnerabilities of the system. This can be achieved through various methods, such as conducting a risk assessment survey, performing vulnerability scanning, and penetration testing. Several tools, such as the Common Vulnerability Scoring System (CVSS) and the Open Web Application Security Project (OWASP), can also be used to assess the risks associated with cybersecurity.
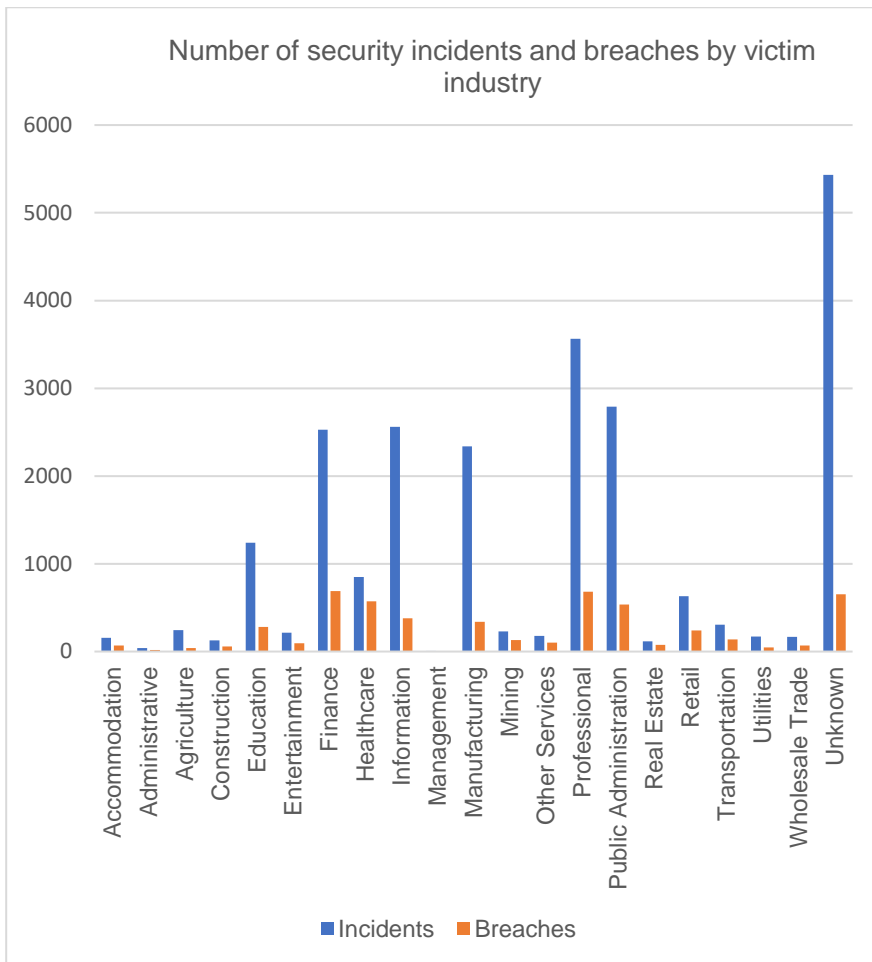
Various methods, such as risk assessment surveys, vulnerability scanning, and penetration testing, can be used to assess the risks associated with cybersecurity.

Additionally, implementing frameworks such as NIST and strategies such as DiD, and utilizing advanced technologies like AI, ML, and blockchain can help to enhance cybersecurity. This literature review highlights the importance of assessing risks and implementing measures to protect against cyber threats.

Methods of research

Verizon's annual cyber-attack studies, known as the "Verizon Data Breach Investigations Report" (DBIR), provide valuable insights into the cybersecurity landscape. Comprehensive Data Analysis: The DBIR leverages a vast dataset collected from various sources, including Verizon's own investigations, partner organizations, and contributors from around the world. This comprehensive approach provides a holistic view of cyber threats and trends. Global Perspective: The studies cover a wide range of industries and sectors, offering a global perspective on cyber-attacks. This includes data from organizations of all sizes, from small businesses to large enterprises, across different regions. Industry-specific Insights: Verizon's DBIR often includes industry-specific breakdowns, highlighting unique challenges faced by various sectors. This allows organizations to gain sector-specific insights and tailor their security strategies accordingly.

Analysing the data (23,896 incidents and 5,212 breaches) provided by this report for the year 2022, we noticed that not all incidents turn into breaches, and from the table below that in some areas the number of incidents is exponentially higher than that of breaches, which indicates a higher security of the systems, but in other areas the number of incidents is comparable to that of breaches, which denotes a poor security of system (https://www.verizon.com/business/en-gb/resources/2022-data-breach-investigations-report-dbir.pdf).

Number of security incidents and breaches by victim industry

A comprehensive approach to cybersecurity research can help organizations identify potential cyber threats and take measures to protect against them. Here are some methods of research for assessing the risks and strengthening cybersecurity:

Risk Assessment Surveys: A risk assessment survey is a method of research that involves collecting information about the organization's assets, vulnerabilities, and threats. The survey can be conducted in various forms, such as questionnaires or interviews, to identify potential cyber threats and their likelihood of occurrence.

Vulnerability Scanning: Vulnerability scanning is a method of research that involves using automated tools to scan networks, systems, and applications for known vulnerabilities. This method can help identify weak spots in an organization's cybersecurity infrastructure.

Penetration Testing: Penetration testing is a method of research that involves simulating cyber-attacks to identify potential vulnerabilities in an organization's infrastructure. This method can help identify potential weaknesses that could be exploited by attackers.

Framework Implementation: Implementing cybersecurity frameworks such as the NIST cybersecurity framework can be a method of research to assess and strengthen cybersecurity. This method involves using a framework to identify and prioritize cybersecurity risks and take measures to mitigate them.

Artificial Intelligence and Machine Learning: Using AI and ML to detect and respond to cyber threats in real-time can be a method of research for strengthening cybersecurity. This method involves analysing data to detect patterns and anomalies that may indicate cyber-attacks.

Blockchain Technology: Blockchain technology can be used as a method of research to enhance cybersecurity. This method involves using a decentralized and immutable ledger to provide a secure and tamper-proof record of transactions.

Analysis of Cybersecurity Incidents: Analysing past cybersecurity incidents can be a method of research to identify potential threats and vulnerabilities. This method involves reviewing incident reports to identify common patterns and trends in cybersecurity incidents.

Dependence on digital infrastructure and its vulnerabilities

The threat landscape is constantly evolving, and new cyber threats emerge daily. With the adoption of new technologies, the threat landscape is becoming even more complex, making it challenging for organizations to keep up. According to ENISA report for the period January 2019- April 2020 one can distinguish five tendencies to develop the attacks. Software protagonists are the malware ones in a variety of forms continuously updating and transforming themselves according to the targets, from mobile devices to personal devices used in remote working during the pandemic, ransomware which encrypt the files to blackmail, detected on employees' devices in the public sector but also in private companies and a consequence of the large amount of private stolen files, the report identifies credential stuffing attacks.

As the organizations keep the digital transformation, the digital infrastructure dependency increases and challenges the organizations to be vulnerable in terms of technology operation and human beings. This way, the attacks horizon is expanding, and it is launching a series of attacks upon the organizations and the control of these attacks becomes harder to achieve, the risks become harder to measure, and the costs become higher both from financial perspective and a human one. As a result of a deep measurement of the associated risks of digital transformation, specific to every company, these can identify the nature of the vulnerabilities to schedule the actions to decrease the risk that has a great impact on the organization. These pieces of information may be used to develop an extensive strategy of cybersecurity, the work

being ongoing because of the constant threats so, overtime there can be created a security culture inside the organizations, ideally having all the employees well prepared regarding the best drills for the cybersecurity.

Weak digital technologies that some of the companies use, as an outdated software, insecure networks, or a huge number of IoT devices, that is predicted to reach 41.76 billion devices all over the world until the ending of 2023 (increasing from 35.37 billion in 2022) according to Frost and Sullivan (2022), all these may become an easy to enter gateway for malware. The operational vulnerability of the companies comes from the weak points of their processes and procedures: easy to crack passwords, not enough access controls, or inadequate backups of the files. Human errors or poorly training of the staff play an important role in phishing actions or some ransomware or spyware programs entering. Deliberate actions of complaining staff in a company may bring a series of significant prejudices and this is again on of the vulnerabilities we have already mentioned, human ones.

3 Strengthening Cybersecurity

There are several strategies for strengthening cybersecurity that organizations can implement. One such strategy is the use of security controls, such as firewalls, intrusion detection systems, and anti-virus software. In their study Kuipers et al. (2021) found that security controls were a critical component of any cybersecurity strategy and could help to prevent or mitigate cyber-attacks.

Another approach is to implement the Defence in Depth (DiD) strategy, which involves implementing multiple layers of security controls to protect against cyber threats (Mishra et al., 2020).

In addition to these strategies, organizations can also use advanced technologies to strengthen their cybersecurity. For example, artificial intelligence (AI) and machine learning (ML) can be used to detect and respond to cyber threats in real-time. Blockchain technology can also be used to enhance cybersecurity by providing a decentralized and immutable ledger of transactions.

Another strategy for strengthening cybersecurity is employee training and awareness. This involves providing employees with training on how to recognize and respond to potential cyber threats, as well as implementing policies and procedures for data protection and access control.

To improve their cybersecurity, the organizations must adopt a proactive approach. This includes the implementing of the best procedures of cybersecurity, like login with two or more factors (2FA or MFA), regular software updates and training of employees. The most employed security systems are:

Firewall to prevent unauthorized access from outside the network by filtering the network traffic, set up on some predefined criteria, like IP address, network ports and the employed protocol. Firewall's purpose is to protect devices against unauthorized access from outside the network.

Endpoint Detection and Response (EDR) is a cybersecurity option that focuses on detecting and answering the threats on endpoints, like desktops, laptops, or servers, and analysing the activity on them. EDR may detect and prevent cyber-attacks by analysing signs of suspicious activity or unauthorized activity on their device. This also may include protective functions against cyber threats, like anti-virus, anti-malware, or anti-ransomware. An efficient system should probably include both a firewall and an EDR.

Another type of technology is Intrusion Detection System (IDS) that is detecting cyber-attacks through an analysis on network traffic. IDS are searching for unusual activity signals or unauthorized ones, like the attempt to access a system or to send files outside the network. This type of technology can be set up to generate a series of warnings when it is detecting suspicious activity, so that a series of actions can be performed to fight the attacks. IDS may be perceived as a preventing option, while EDR may be perceived as a responsive option, that can be used to fight the attacks that succeeded to pass IDS and reach the level of endpoints.

 Another option is Security Information and Event Management (SIEM) that is collecting and analysing files from different sources, like system logs, security warnings and networking events, to identify types and signals of suspicious or unauthorized activity. This system may use AI algorithms or ML to prevent in real-time the threats and it can be integrated with firewall, EDR, or IDS technologies.

Virtual Private Network (VPN): A VPN is a network security system that allows remote workers to securely access a company's network. It creates a secure encrypted connection between a user's device and the company's network, ensuring that sensitive data is protected.

Cloud Security: Cloud security refers to the protection of data stored in cloud computing environments. It involves using various security measures, such as encryption and access controls, to ensure that data is secure and protected from unauthorized access.

Encryption solutions of storage and transmission technologies is used to protect digital data from being accessed or modified by unauthorized users. It involves converting plaintext into ciphertext using a mathematical algorithm and a secret key. Encryption plays a critical role in cybersecurity because it helps to protect sensitive information from being intercepted, stolen, or tampered with during transmission or storage.

There are several encryption solutions available for cybersecurity, including:

Symmetric encryption: This method uses a single key to both encrypt and decrypt data. The key is typically shared between the sender and the recipient and is kept secret to prevent unauthorized access. Symmetric encryption is fast and efficient, but the key must be securely exchanged between the sender and the recipient.

Asymmetric encryption: This method uses a pair of keys, one public and one private, to encrypt and decrypt data. The public key is shared with anyone who wants to send encrypted data, while the private key is kept secret by the recipient. Asymmetric encryption is slower than symmetric encryption, but it eliminates the need for secure key exchange.

End-to-end encryption: This method ensures that data is encrypted from the sender to the recipient and cannot be accessed by any third-party, including service providers. End-to-end encryption is commonly used in messaging apps, email clients, and other communication platforms.

Hashing: This method creates a fixed-length string of characters, known as a hash, that represents the original data. Hashing is commonly used to verify the integrity of data, as any changes to the original data will result in a different hash.

Digital signatures: This method uses a combination of hashing and asymmetric encryption to create a unique digital signature that can be used to verify the authenticity of a document or message.

There are a lot of options to be used at the same time for a more complex approach of the files, devices, and networks security. The prejudices of the cybercrime have been estimated in 2022 to 8.44 trillion USD opposing 1.16 trillion USD in 2019, and the estimates are reaching 24 trillion USD in 2027. International Cybersecurity services market is estimating that will be reaching 304.4 billion USD in 2027 facing a fast-increasing tendency, being double in comparison with 2020 when the value was little under 150 billion USD (https://www.statista.com/statistics/).

An example of a company that has implemented security systems in the products it offers to customers is the technological giant Apple, which offers both the software and the hardware the newest and most complex solutions.

Apple's macOS has several built-in security features that help to protect users and their data from various threats, including malware, phishing attacks, and other forms of cyber-attacks. Some of the key security features of macOS include:

Gatekeeper: This feature helps to prevent users from installing malicious software by restricting installations to apps from the App Store or from identified developers.

System Integrity Protection (SIP): This feature protects key system files and folders from being modified, even by users with administrator privileges. This helps to

prevent malicious software from hijacking system resources or installing system-level malware.

File Vault: This feature provides full-disk encryption for the Mac's hard drive, protecting all the user's data from unauthorized access.

Firewall: This feature blocks incoming connections to the Mac and helps to prevent unauthorized access to the user's network or system resources.

Safari: Apple's web browser includes several security features, including protection against phishing attacks, malware, and malicious websites.

Automatic security updates: macOS includes automatic security updates, which helps to ensure that users are always running the latest security patches and fixes for known vulnerabilities.

Touch ID and Face ID: On Macs equipped with Touch ID or Face ID, users can use biometric authentication to log in to their accounts, adding an additional layer of security.

The Security Enclave is a component of the Apple-designed M-series chipset used in Macs and iOS devices. It is a secure area of the processor that is designed to protect sensitive data such as biometric information (such as Touch ID and Face ID), encryption keys, and other sensitive data. The Security Enclave is a hardware-based solution that is isolated from the rest of the system, meaning that it is not accessible from any other part of the device. It has its own dedicated processor, memory, and storage, and is designed to perform security-related tasks in a highly secure and efficient manner. One of the key features of the Security Enclave is its ability to perform secure boot and verify the integrity of the operating system before it is loaded. This ensures that the system is running on a trusted and secure operating system, which helps to protect against various types of attacks. The Security Enclave is also responsible for managing the encryption keys used to encrypt sensitive data on the device. These keys are stored securely in the Enclave and are used to encrypt and decrypt data on the fly. This ensures that even if an attacker gains access to the device's storage, they will not be able to access the encrypted data without the encryption keys.

Overall, the Security Enclave is a critical component of Apple's security architecture, providing a highly secure environment for sensitive data and ensuring that the device is protected against a wide range of attacks.

4 Conclusion

Digital Transformation brought a lot of benefits for the organizations, but it also brought new risks and vulnerabilities. As the organizations keep up embracing of

digital transformation, it is highly important that they access the most current and complex security services to protect themselves against new and appropriate types of cyber-attacks, many of them being capable of passing security systems. The COVID-19 pandemic has accelerated the digitalization process, weakening at the same time remote working systems and the companies whose employees used work from home. The latest technological improvements like AI and ML changes the way in which organizations work and think, but it also emphasizes new challenges for the cybersecurity which deserves to be studied in the future. For example, how can cybercriminals use AI to create high-end attacks, and ML to automatize the attacks, situation that make detection and the answer of traditional security systems, difficult to deal with. All these things have happened in the last few years, this being the reason why the introduction of the most current security systems and permanent update can be the most efficient solution which organization might take into consideration, according to the type of activities they perform. Companies should pay special attention on cybersecurity, in a responsible way, and they should manage technological risks and they should focus also on the cultural changes that might occur inside the organization. Analysing the costs that have previously been mentioned, both the preventing and the possible prejudices companies might encounter, it becomes ever more clearly why cybersecurity solutions must be adopted.

References
1.Acosta, Ernesto C. Anti-virus strategies and their functions, CYSE 600, Cybersecurity Principles, 2019
2.Andrade, Norberto Nuno Gomes De, and Antonella Zarra. Artificial Intelligence Act: A Policy Prototyping Experiment: Operationalizing the Requirements for AI Systems part I (2022)
3.Böhme, Rainer; Félegyházi, Márk. Optimal Information Security Investment with Penetration Testing, Decision and Game Theory for Security pp 21-37, Springer 2010
4.Kuipers, S.L.; Schonheit, M. Data breaches and effective crisis communication: A comparative analysis of corporate reputational crises. Corporate Reputation Review. 2021
5.Lin, Iuon-Chang; Liao, Tzu-Chun. A survey of Blockchain Security Issues Ad Challenges, International Journal of Network Security, Vol. 19, No. 5, Pag. 653-659, 2017
6.Mishra, Sakshi; Anderson, Kate; Miller, Brian; Boyer, Kyle; Warren, Adam. Microgrid resilience: A holistic approach for assessing threats, idenifying vulnerabilities, and designing corresponding mitigation strategies, 2020, https://www.sciencedirect.com/science/article/abs/pii/S0306261920302385?via%3Dihub
7.Reis, Joao; Amorim, Marlene; Melao, Nuno; and Patricia Mato. Digital Transformation: A Literature Review and Guidelines for Future Research, h

https://www.researchgate.net/publication/323994364_Digital_Transformation_A_Literature_Review_and_Guidelines_for_Future_Research

8.Rong, Chunming; Nguyen, Son T.; Jaatun, Martin Gilje. Beyound lightning: A survey on security challenges in cloud computing, Computers & Electrical Engineering, Vol. 39, Issue 1, Pag. 47-54, 2013

9.Sebastian, Ina M.; Mocker, Martin; Ross, Jeanne W.; Moloney, Kate G.; Beath, Cynthia; Fonstad, Nils O. How Big Old Companies Navigate Digital Transformation, MIS Quarterly Executive, September 2017

10.Shaukat, Kamran; Luo, Suhuai; Varadharajan, Vijay; Hameed, Ibrahim A.; Xu, Min. A survey on Machine Learning Techniques for Cyber Security in the Last Decade, https://ntnuopen.ntnu.no/ntnu-xmlui/bitstream/handle/11250/2730527/Hameed%2C+Ibr.pdf?sequence=2

11.Soviany, Sorin; Pușcoci, Sorin; Pescaru, Gheorghiță; Dragomir, Radu. Sisteme de detecție a intruziunilor, https://www.agir.ro/buletine/726.pdf

12.Tripathi, Vaibhav; Dubey, Anmol; Sathvik, Kesari; Subhashini, N. A comparative Study of Machine Learning Algorithms for Anomaly-Based Network Intrusion Detection System , https://link.springer.com/chapter/10.1007/978-981-19-0745-6_2

13.Vey, Karin; Fandel-Meyer, Zipp; Tanja, Jan S.; Schneider, Christian. Learning & Development in Times of Digital Transformation: Facilitating a Culture of Change and Innovation, https://doi.org/10.3991/ijac.v10i1.6334

14.*** Tendințe emergente, Raport ENISA ian. 2019-apr. 2020, https://www.enisa.europa.eu/publications/report-files/ETL-translations/ro/etl2020-emerging-trends-ebook-en-ro.pdf

15. *** The top Growth Opportunities for IoT in 2023, https://www.frost.com/frost-perspectives/the-top-growth-opportunities-for-iot-in-2023/

16.*** https://www.statista.com/statistics/

17.***https://www.verizon.com/business/en-gb/resources/2022-data-breach-investigations-report-dbir.pdf

CHARACTERISTICS OF A LEADERSHIP DEVELOPMENT PROGRAM PILOT RESEARCH AT A HUNGARIAN SME OPERATING IN THE ICT SECTOR

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Abstract: *The current research reports on a pilot study that was conducted to test the feasibility of a larger study exploring a leadership development program at a small and medium-sized enterprise (SME) in the ICT (Infocommunications) sector in Hungary. The study employed a mixed-methods approach to data collection, which included literature review, document analysis, and structured interviews with various participants involved in the leadership development program. The literature review focused on the history, current state, existing gaps and limitations, and theoretical frameworks and concepts related to the research topic. The document analysis aimed to gain an in-depth understanding of the research topic and complement the findings from the literature review. The structured interviews were designed to be consistent and standardized, with a pre-determined set of questions asked to each participant. The interviews were conducted with a diverse group of participants, including the CEO, People Development Manager, Hiring managers, Domain Engineering Leads, the Human Resources team, and participants of the leadership development program.*

The current research is a smaller-scale version of a full-scale study (also called a "feasibility" study), as well as the pre-testing of a particular research instrument, in our case, document analysis and interview schedule. Pilot researches are a crucial element of a good study design, as it does not guarantee success in the main study, but it does increase the likelihood of success. (Polit et al., 2001, Teijlingen et al., 2001)

The paper also discusses the importance of leadership in the ICT sector, citing a survey of Society for Information Management members that identified leadership as the most important soft skill for employees in the sector. The article notes that understanding the preferences of different generations at the workplace is essential to create an effective leadership development program. Out of the total number of employees, 52 currently work in the company's software development division, and the preferences and motivations of these employees will be a critical factor in designing a successful program.

The paper concludes by stressing the importance of pilot studies in research and how they increase the likelihood of success in the main study. The study's authors hope that the results

of this pilot study will provide insight into the characteristics of a leadership development program and assist in developing a more extensive study on the topic.

Keywords: *Pilot; Leadership development; SME; Generation Y, Generation Z, interview, document analysis*

Introduction to the pilot research

A pilot research is a small feasibility study designed to test various aspects of the methods planned for a larger, more rigorous, or confirmatory investigation. (Arain et al., 2010)

IT continues to increase in importance as a context for organizational behavior research as IT firms establish large industries as well as accounting for significant recurring and discretionary expenditure in other organizations. (Hickman et al., 2018) The current pilot study is part of an ongoing research of a leadership development program, conducted at a Budapest, Hungary-based SME (small and medium-sized enterprise), working in the ICT sector.

In this paper, our aim is to present the goal setting, preparation and launch phases of the program and the research itself, as well as presenting a relevant literature review on the topic of the research.

The present research constitutes a pilot study and feasibility analysis of a larger-scale investigation. This preliminary study aims to test the efficacy of the research instrument, specifically the interview schedule and document analysis, before implementation in the main study. In research design, pilot studies are indispensable as they improve the probability of success for the primary investigation, albeit without guaranteeing it. In other words, while pilot studies do not assure favorable outcomes, they do help to increase the chances of achieving them. This is in accordance with the recommendations of Polit et al. (2001) and Teijlingen et al. (2001).

Material and methods

ICF Tech Hungary, an SME operating in Budapest, has been established in 2019, as a subsidiary of Accretive Technology Group operating in Seattle, WA, since 1997, with the mission to expand the business in Europe and as such, be able to scale the company. The company is working in the ICT sector developing web-based technology platforms and websites catering to millions of users every day. One of

their most important development projects is currently in the top 10 most visited websites in the World.

ICF Tech Hungary has 72 employees today and is intensely scaling up. The growth is mainly focused on the software development areas of the company, out of 40 new employees hired in 2022, 30 employees are working in these departments, while the rest are in support functions.

A survey of Society for Information Management members indicated that leadership is the most important soft skill for employees working in the ICT sector. (Hickman et al., 2018, Kappelman et al., 2016) Our research focuses on the leadership development program of the company's software development division.

This study adopts a mixed-methods approach to gathering and analyzing data, utilizing both qualitative and quantitative data collection methods. The research methodology consists of three main components: a comprehensive literature review, a detailed analysis of relevant documents, and a set of structured interviews. Together, these elements allow for a thorough exploration of the research questions at hand. The research has been conducted between Q1 2022 and Q2 2023.

The literature review is a critical component of this study as it provides a comprehensive understanding of the existing research and literature related to the research topic. A systematic approach was employed to search for relevant literature using various databases and search engines, including Google Scholar, Scopus, and Web of Science. The literature review is focused on the following key areas: the history and evolution of the topic, the current state of the research, the existing gaps and limitations, and the theoretical frameworks and concepts related to the topic.

The document analysis method is used to collect and analyze data from various sources, including documentation related to the learning and development processes of the company. The purpose of the document analysis is to gain an in-depth understanding of the research topic. The data collected through document analysis is used to support and complement the findings from the literature review.

Structured interviews are used to collect primary data from participants who have relevant experience and knowledge related to the research topic. The structured interviews are designed to be consistent and standardized, with a pre-determined set of questions asked to each participant. The purpose of structured interviews is to gain an understanding of the participants' perspectives, opinions, and experiences related to the research topic. The interviews were conducted with a diverse group of participants, including the CEO, People Development Manager, Hiring managers, Domain Engineering Leads, the Human Resources team, and participants of the leadership development program. All together 1 CEO, 1 People Development Manager, 4 Domain Engineering Leads and 5 members of the Human Resources

team took part in the program implementation and the selection process (the selection committee). All together 10 members of the software development team took part in the selection process of the leadership development program as candidates and 9 of them were selected to enter the program. The remaining 1 candidate did not meet the criteria of the skill-matrix and this candidate was lacking professional knowledge as well. The candidates were asked to write cover letters as part of the selection, in which they expressed their motivation to join the development program. This allowed members of the selection committee to perform in-depth personal interviews with the candidates about the role and focus on their measurable skills, abilities, personality traits, along with their technical skills - as demonstrated on the skill matrix. A loyal, highly skilled employee makes a significant contribution to organizational success through competencies, experience, and skills. (Szondi, 2020)

Small and medium-sized enterprises operating in the ICT (Infocommunications) sector in Hungary

Between 2013 and 2017, the number of small and medium-sized enterprises operating in the ICT sector increased dynamically, by an average of 6,3% per year in Hungary. By 2017 the number of companies operating in the sector increased by 28% compared to 2013. (KSH, 2019)

The share of small and medium-sized enterprises within the sector did not change during the five years examined (99%). Their economic weight is much more modest than this, but their role in the labor market is significant. In 2017, 48% of those participating in the sector's activities and 39% of employees belonged to SMEs. Personal expenditures increased by an average of 8.5% per year during the period under review, in 2017 their proportion was 29% within the sector. (KSH, 2019). For the relevance of the current research, companies with increasing personal expenditures are more likely to spend on training and development as well.

Results and discussion

Generations at the workplace

As preferences of work and workplace are different for different generations, it is vital to understand these preferences (Gaidhani et al., 2019) to be able to assess motivation factors and create an effective leadership development program. Out of the total number of employees, 52 currently work in the company's software development division, which is 69 percent of all staff, we assessed the generational composition of these employees.

The following graph represents the age distribution of employees in the software development division of the company. The x-axis displays different age groups, and the y-axis shows the number of employees falling into each group. The graph shows that the largest group of employees (20 individuals) is between the ages of 20 and 25, followed by 16 individuals in the 26-30 age range. The number of employees gradually decreases with increasing age, with only 2 individuals in the 36-40 age range and 3 individuals above the age of 41. This information was used to assess the age diversity within the software development division of the company.

Table 1. Age distribution of employees in the company's software development division
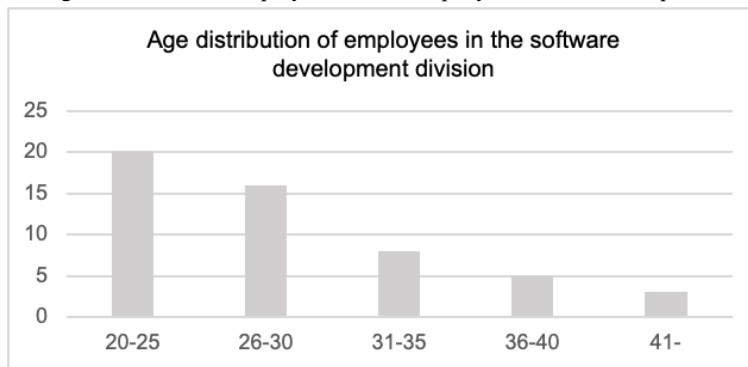
Source: Own editing based on the document analysis of the researched company

The following table illustrates the age ranges typically associated with "Generation Y" and "Generation Z", as identified in the literature review. It is not a traditional graph with axes and numerical values, but rather a visual representation of age ranges associated with each generation. This information was used to contextualize research findings or to better understand the characteristics and behaviors of different generational cohorts.

Table 2. Generation Y and Generation Z age in 2023

Name of generation	Date of birth	Age in 2023
Generation Y	1981-1995	42-28 years old
Generation Z	1996-2010	27-13 years old

Source: Own editing based on the literature review

The following graph shows the distribution of employees in the company's software development division based on their generational cohort. The X-axis indicates the generational cohorts being compared, specifically "Generation Z" and "Generation Y". The Y-axis shows the number of employees in each cohort. This information was used for analyzing the demographics of the company's workforce. Based on the

literature review and document analysis, as shown on the graph, the majority of employees in the software development division, except for 2 employees, are between 20-30 years old, and as such, they fall in the Gen Z and Gen Y categories. Most of them are Gen Z employees.

Table 3. Generation Z and Generation Y employee distribution in the software development division
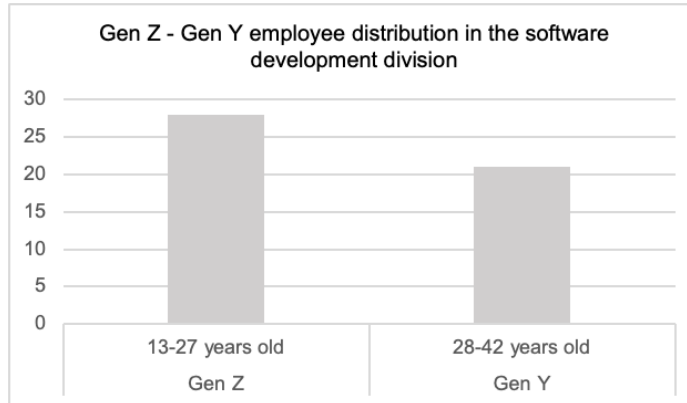
Source: Own editing based on the document analysis of the researched company

Gen Z - Gen Y motivation at the workplace

Career development is a process of increasing individual employability to achieve the desired career. Niati et al. (2021) proved their hypothesis in their research, that training can improve employee work performance which in turn can improve the employee's career development as well. However, there is no uniform strategy for organizational advancement, and career systems develop differently in each company based on resources, external and internal factors. (Szondi, 2020)

Employers should provide a supportive environment with clear structures and unambiguous reward and development indicators when recruiting a younger generation like Generation Y or Generation Z. A well-coordinated career management system always starts with the process of selection, but the next steps are based on finding the balance between the employee's career goal and the company's interest. (Szondi et al. 2019) Baum (2019) also suggests "giving voice" to Generation Y and engaging them in conversation.

It is valuable to understand workplace motivation variations amongst different generations of employees. (Cennamo et al., 2008) To engage employees in conversation, the company conducts a detailed, anonymous engagement survey every year to measure satisfaction, engagement and to be able to address any issues within the company. The survey has been conducted in Q1 2022 and Q1 2023 at the

company, using Likert scale questionnaires and free-form text questionnaires, in an online format.

Based on the results of the first engagement survey, conducted in Q1 2022, we found that:

- 50% of employees indicated that they would like to see more career opportunities within the company.
- 45% of employees indicated that they would like to see more development and training opportunities within the company.

The same questionnaire was used in the follow-up engagement survey, one year later, in order to be able to compare the results. Based on the results of the second engagement survey, conducted in Q1 2023, we found that:

- 25% of employees indicated that they would like to see more career opportunities within the company. This shows a significant improvement within the area, as a direct result of the company leadership program.
- 30% of employees indicated that they would like to see more development and training opportunities within the company. This is also an improvement, however as not all employees participate in the leadership program and the company is expecting them to attend other trainings in the future, this decrease is less significant than the previous answer.

Leadership Development Program

Employees are expected to take more responsibility for enhancing current skills and adding new ones to meet current job demands, prepare for leadership opportunities, and ensure their own employability to move and adapt within and between organizations as needed (Molloy et al., 2010) As the company is going through intense scale-up progress, focused on the software development divisions, the need for new teams and leaders started to emerge from the beginning of 2022. These complex business problems require long-term leadership development processes. (Day et al., 2014)

Data regarding the correlation between employee motivation and career opportunities have already been established by the engagement surveys, and as a result, management decided to fill leadership positions in-house, meaning they would promote employees already working for the company. Hickman's 2018 research offers several propositions for leadership development in Information Technology, from which *P1. IT units with formal mentorship programs will be better positioned to fill leadership positions with internal candidates* and *P2. Leadership*

development treated as a core business process rather than a series of isolated events will result in improved program outcomes - directly reflects the leadership development program of ICF Tech Hungary. The company established that in order to be able to promote leaders, they first need to determine the skills and competencies needed to be further developed throughout the program. The company used findings of the interviews with the CEO, People Development Manager, Hiring managers, Domain Engineering Leads, and the Human Resources team to determine these leadership skills and competencies, summarizing and measuring them using the scorecard method. (Smart et al., 2008, Boudlaie et al., 2020) Within the company framework, employees with special abilities and excellent competencies can be identified along the created talent dimensions. (Szondi et al. 2019) At the beginning of planning, the leadership team created objectives (goals) for the leadership development program, to ensure that the program is planned in its entirety and that it covers all areas needed to be able to promote the new leadership team, as shown in Table 6. They set short term goals for the first quarter of the program, mid term goals for the second quarter and long term goals for the last 6 months (covering two quarters) of the program.

In this context, *short term goals - as shown in Table 4.* - represent the planning phase of the program, from identifying training needs, to conducting engagement surveys, creating a skill matrix and a formal training plan for the program.

Mid term goals reflect on the communication of the program to internal candidates, conducting interviews with said internal candidates, with the end goal of launching the program and trainings for the quarter.

Long term goals reflect on the continuation and finalization of trainings for participants, with the ultimate goal of being able to promote them into new team lead positions. The company would like to ensure that the success of the program is properly measured, and in order to do so, KPI's were set and monitored throughout the program.

The company set its desirable turnover rate at below 15% for the entirety of the program, as based on the findings of the engagement survey, it is proved that retention is in strong correlation with employee career paths and motivation. The company uses this KPI (key performance indicator) data to cross-reference the results of the engagement survey.

Table 4. Objectives of the Leadership Development Program Planning

	SHORT TERM OBJECTIVES	
	Short term objectives (3 months, Q3 of 2022)	Key results for short term objectives
Training needs	Identify training needs	Identify and align the objectives of the leadership development program with the overall business objectives
Employee motivation	Identify the motivation of current employees in order to commit long-term at the company	Engagement survey (every 12 months) and regular (biweekly) employee 1/1 discussions. Questionnaire during the interviews about motivation for new employees
Skill-matrix	Create skill matrix for internal selection and training plan purposes	Use the scorecard-method for skill-matrix creation, with the involvement of the People Development and Hiring Managers
Training plan	Create a thorough and detailed training plan for the program based on employee motivation and overall program goals	The HR team has learning&development expertise, and with the help of the newly hired People Development Managers, create a thorough and transparent training plan for selected employees to participate in
Retention	Ensure employee retention for participants, keep turnover rate below 15%	Communicate the program on all internal platforms and ensure training and development needs and career aspirations of participants are met
	MID TERM OBJECTIVES	
	Mid term objectives (3 months, Q4 of 2022)	Key results for mid term objectives
Program communication	Identify employees interested in becoming leaders and team leads	Create a transparent communication material about the leadership development program and collecting applications (cover letters by employees where they express their interest in participating in the program)
Interviews	Conduct interviews for the selecion of internal applicants	At the interviews conducted with employees wishing to participate in the program, HR and the selected hiring managers used the scorecard method for selection
Launch the program	Launch the leadership development program	Ensure that participating employees have proper time and support allocated for the program
Trainings	Technical and soft skill trainings for participants	Participating employees take part in various technical and soft skill trainings
Retention	Ensure employee retention for participants, keep turnover rate below 15%	By launching the program, the expected turnover is low, as employees participating in the program are less open and willing to leave the company for a better offer/opportunity
	LONG TERM OBJECTIVES	
	Long term objectives (6 months, Q1-Q2 of 2023)	Key results for long term objectives
Trainings	Technical and soft skill trainings for participants	Participating employees take part in various technical and soft skill trainings
Retention	Ensure employee retention, keep turnover rate below 15%	By promoting new leaders, the expected turnover is low, as the program caters to the moviational needs of the participating employees
Promotions	Promote participating employees into leadership and team lead roles	After completing the program, new leaders and team leads are being permanently promoted
Follow-up & Measurement	Follow up the training program by measuring the success	6 months after the promotion of new leaders and team leads, HR will conduct surveys from participants and their teams, conduct 1/1 discussions and measure satisfaction and engagement before launching the next leadership development program

Source: Own editing based on the document analysis of the researched company

Based on the research findings, the company identified measurable skills, abilities and personality traits - collectively called a 'Skill Matrix' for the leadership development program participants to be able to measure and further develop throughout the program, as shown in Table 5. This table outlines the key measurable skills, abilities, and personality traits that an ideal candidate for the leadership role should possess. The desired personality traits include being calm and collected, having proficient verbal and written English, being an excellent communicator with both stakeholders and team members, having an ambition for quality work, having professional curiosity, and having the ability to take feedback constructively. Technical skills listed include a deep understanding of company architecture, medior knowledge in at least one programming language, automated testing, architectural patterns, and monitoring software, as well as being comfortable with backend development. Additionally, the ideal candidate should have the ability to set clear objectives for the team, motivate team members, give constructive feedback, mediate conflicts between team members, and prioritize tasks effectively. In summary, this table serves as a guide to determine the essential skills and abilities required for the leadership position, providing a clear picture of the ideal candidate for the role.

Throughout the selection process, internal candidates received scores and notes for these competencies, to ensure everyone is trained based on their own needs and the program is focusing on individual levels as well.

Table 5. Identified skill matrix for participants of the Leadership Development Program

Measurable skills, abilities and personality traits
Calm and collected personality
Proficient use of English (verbal and written)
Excellent communicator – both with stakeholders and team members
Ambition for quality work, professional curiosity
Effectively implement feedback into their work
Precise with strong attention to detail (bugs, releases, etc.)
Independent problem solver, be able to prioritize between tasks and when it comes to delegating them
Takes responsibility
Setting clear objectives for the team and explaining why they matter
Motivating team members
Ability to give effective and constructive feedback to team members
Ability to mediate between team members in case of a conflict
Technical skills – expertise of the functions
Knowledge of the company architecture
Medior knowledge in one specific programming language
Medior knowledge in automated testing
Knowledge of architectural patterns
Knowledge of monitoring software
Comfortable with backend development

Source: Own editing based on the document analysis of the researched company

Based on the research findings, objectives were set for the participants of the program to ensure these are the goals they collaboratively need to achieve by the end of the program, as shown in Table 6. The table provides a list of key competencies and skills that are important for effective leadership. These competencies are grouped into four categories, each with its own set of abilities:

1. Drive Results: This category focuses on setting clear, challenging, and motivating targets for oneself and the team. It also emphasizes the ability to improve both individual and team performance.
2. Champion Change: This category involves the ability to recognize and communicate the need for change, as well as the ability to lead and take ownership of change within one's area of responsibility. It also emphasizes the importance of involving the team in identifying and

delivering change. A research conducted by Pierog and Dajnoki in 2020 about the expectations for managers concluded that the participants of their study ranked responsibility as the most important expectation. (Pierog - Dajnoki 2020) Responsibility as a trait is significant in our findings as well.

3. Lead: This category focuses on the ability to explain the vision and strategy of the organization in a way that is inspiring and motivating. It also involves spending time with the team to recognize and share good performance and behaviour, building the team's confidence to take responsibility, and supporting them to make decisions.

4. Develop: This category emphasizes the importance of developing the team's capabilities and supporting their career growth. This involves discussing aspirations, development, and career options with team members.

5. Work Collaboratively: This category highlights the ability to challenge constructively, build relationships across the organization, create an environment where best practices are shared, and encourage creativity to flourish.

Overall, table 6. provides a useful framework for assessing leadership skills and identifying areas for improvement. By focusing on these key competencies, individuals can develop their leadership skills and enhance their ability to lead teams and drive organizational success.

Table 6. Objectives (goals) for participants of the Leadership Development Program

Objectives	
Drive results	Ability to aim higher by setting clear, stretching and motivating targets for yourself and the team
	Ability to improve both your and the team's performance
Champion Change	Ability to identify and communicate the need for change outside of your area whilst suggesting alternatives
	Ability to take ownership and lead change in your area, set a positive example through your response to change
	Ability to involve the team in identifying and delivering change
Lead	Ability to explain the vision and strategy in a way that is meaningful and motivating
	Drive to spend time with the team to spot good performance and behaviour to recognize and share with others
	Ability to build the confidence of the team to take responsibility and support them to take more decisions
Develop	Ability to develop the team's capabilities and support them in developing their career. Discuss aspirations, development and career options
Work collaboratively	Ability to challenge constructively, build beneficial relationships across the organization, create an environment where best practices are shared, and creativity can flourish

Source: Own editing based on the document analysis of the researched company

Learning and development framework of the Leadership Development Program

70:20:10 is a learning and development framework that sets out a rationale for how employees learn. It states that 70% of our learning comes from challenging assignments and on-the-job experiences. 20% of our learning is developed from our relationships with other people, our networks, and the feedback we receive. 10% of our learning is derived from formal training, such as courses and workshops. (Scott et al., 2016) ICF Tech Hungary decided to follow the 70/20/10 learning approach (Table 7.) because the skill sets and goals listed previously in this research are so specific, that people get the majority of the skills and knowledge they need to do their job from on-the-job learning experiences, rather than from classroom or course-based learning (Scott et al., 2016) and to build more resilient workforces and create cultures of continuous learning is a strategic goal of the company. (Arets, et al. 2016)

Table 7. 70/20/10 Framework at ICF Tech Hungary

70/20/10 learning approach	70% through experience	20% through relationships	10% through formal trainings and materials
I.) Leadership role, values and principles	Being involved in leaders' meetings, plannings, Kick-off events pre-works	1:1 with CEO,HR Director, Domain Leaders and People Development Manager	Leaders eat last training program
II.) Leadership tasks and tools	Shadowing Team Leaders, first attending and after leading team meetings	Team Lead Mentors, People Development Manager	Leadership group skill coaching sessions
III.) Domain/team specific and other personal development	Implement and experience in their everyday work	Formal training (e.g., English), Head of Education, People Development Manager, Domain Leadership	Technical or English courses, formal trainings, books, confluence pages, showcases and other formal materials

Source: Own editing based on the document analysis of the researched company

Research limitations and further research opportunities

This pilot study on a leadership development program at an SME in the ICT sector has provided valuable insights into the feasibility of a larger-scale study. However, there are limitations to the study that need to be acknowledged. Firstly, the study was conducted in only one company, limiting the generalizability of the findings to other organizations. Secondly, the sample size for the structured interviews was relatively small, with only a few key stakeholders being interviewed. This could limit the depth and breadth of insights gained from the interviews. Thirdly, the study was conducted in a specific cultural and geographical context, and the findings may not apply to other contexts.

Despite these limitations, this pilot study has provided useful insights into the leadership development program of the company's software development division. The literature review has identified several gaps in the current research, which provides ample opportunities for further research. Future studies could focus on a larger sample size, including multiple companies in different geographic and cultural contexts, to improve the generalizability of the findings.

Further research could also explore the effectiveness of different leadership development approaches, such as coaching or mentoring, in the ICT sector. Further research could also explore the impact of leadership development programs on employee performance and job satisfaction.

In conclusion, this pilot study has provided valuable insights into the leadership development program at an SME in the ICT sector. While there are limitations to the study, it has identified several opportunities for further research. Future studies could build on the findings of this pilot study to provide a more comprehensive understanding of leadership development in the ICT sector.

References

1. Arain M,Campbell MJ, Cooper CL, Lancaster GA 2010 'What is a pilot or feasibility study? A review of current practice and editorial policy' in *BMC Medical Research Methodology*, vol. 10

2. Arets J, Jennings C, Heijnen V 2016 '70:20:10 into action, 70 20 10 institute' viewed 1 April 2023.

3. Baum T 2019 'A changing world of work. What can we learn from the service sector about employing millennials (and Gen Z)?' in *Organizational Dynamics* DOI: 10.1016/j.orgdyn.2019.04.001.

4. Boudlaie H, Mahdiraj, HA, Shamsi S, Jafari-Sadeghi V, Garcia-Pereze A 2020 'Designing a human resource scorecard: An empirical stakeholder-based study with a company culture perspective.' in *Journal of Entrepreneurship, Management and Innovation*, *16*(4), pp. 113-147.

5. Cennamo L., Macky K, Gardner D 2008 'Generational differences in work values, outcomes and person-organisation values fit' in *Journal of Managerial Psychology, Vol. 23*, pp. 891-906.

6. Day DV, Fleenor JW, Atwater LE, Sturm RE, McKee RA 2014 'Advances in leader and leadership development: a review of 25 years of research and theory' in *The Leadership Quarterly,* Vol. 25 No. 1, pp. 63-82, DOI: 10.1016/j.leaqua.2013.11.004.

7. Day DV 2001 'Leadership development: a review in context', in *The Leadership Quarterly*, Vol. 11 No. 4, pp. 581-613.

8. Gaidhani S, Arora L, Sharma BK 2019 'Understanding the attitude of generation Z towards workplace' in *International Journal of Management, Technology and Engineering*, *9*(1), pp. 2804-2812.

9. ICF Technology Hungary 2023, viewed 1 April 2023.

10. Hickman L, Akdere M 2018 'Effective leadership development in information technology: Building transformational and emergent leaders.' in *Industrial and Commercial Training*, *50*(1), pp. 1-9.

11. Kappelman L, Johnson V, McLean E, Torres R 2016 'The 2015 SI IT issues and trends study' in *MIS Quarterly Executive*, Vol. 15 No. 1, pp. 55-83.

12. Központi Statisztikai Hivatal KSH 2019, Az infokommunikációs szektor helyzete, viewed 1 April 2023.

13. Molloy JC, Noe RA 2010 'Learning" a living: Continuous learning for survival in today's talent market' in *S. W. J. Kozlowski, & E. Salas (Eds.). Learning,training, and development in organizations* pp. 333–361.

14. Niati DR, Siregar ZME, Prayoga Y 2021 'The Effect of Training on Work Performance and Career Development: The Role of Motivation as Intervening Variable' in *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(2), pp. 2385-2393.

15. Pierog A, Dajnoki K 2020 'Property expectations for managers' *Farkas Ferenc II. Nemzetközi Tudományos Konferencia*, 2020.

16. Priyono CT, Ariana S 2016 'Influence of work environment, motivation and career development on the work achievement on a timeless gift PT. Aligned sidoarjo.' in *International Journal of Applied Business and Economic Research,*14(3), pp. 2113–2131.

17. Polit DF, Beck CT, Hungler BP 2001 'Essentials of Nursing Research: Methods, Appraisal and Utilization'. in *5th Ed., Philadelphia: Lippincott Williams & Wilkins*

18. Scott S, Ferguson O 2016 'New perspectives on 70: 20: 10. *A good practice research paper'* viewed 1 April 2023.

19. Smart G, Street E 2008 'Who: The A Method for Hiring' New York S.l: Ballantine Books ; ghSMART.

20. Szondi R 2020 'A globális karriermenedzsment funkciói'. *Metszetek-Társadalomtudományi folyóirat*, *9*(1), pp. 49-64.

21. Szondi R, Gergely É 2019 'Karriertervezés és megtartás - Nagyvállalatok gyakorlatai az IT szektorban' *TAYLOR*. 11, 1. (jún. 2019), pp. 107–115.

22. Van Teijlingen E, Hundley V 2001 'The importance of pilot studies' in *Social research update*, (35), pp. 1-4.

TRANSFORMATIONAL LEADERSHIP, A SUCCESSFUL MODEL FOR ORGANIZATIONS IN LEADERSHIP STYLES

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Abstract: The issue of leadership as a phenomenon began in the 19th century and we even witness an earlier theory from 1885-1795 that was developed by the historian Thomas Carlyle, he called it the "Great Man" theory .This theory represents the leader as a different person from the rest of mortals, because this theory saw the leader as a messenger bearing the good news. And that he has the capacity and ability in his personality to shape the masses and turn them into society (the full range model of leadership. Leaders who have the capacity for leadership and action are the ones who will succeed in reaching the potential of the organization or society. From this theory arose another called the "trait approach" because it described the leader as a person with exceptional qualities. Later in the 1940s, the theory called "the situational approach" was developed. This theory focused on the behavior of the leader and not on his qualities, but this approach had drawbacks, like, if the leader is not able to shape himself then how can he motivate his people in his organization. That is why the search began for a strong model in leadership, which does not follow or according to the situation. Look for a theory that will have a character that will present its goals clearly, a theory that on the one hand can lead and promote the customs to the goals of the organization and on the other hand it shapes the situation. This model is expressed in the name " Transformational leadership" according to Burns 1978. Although there are many definitions of leadership, the principles of leadership in organizations are focused on the execution and promotion of processes whose principle and purpose are to lead in the design and determination of policy and its implementation. These processes include planning, defining procedures, building a vision and making decisions. This chain of events is also used by the road leader in motivating and leading his followers and encouraging them, because he instills in them the belief in their high ability. The leader always makes sure to act together in order to achieve a common goal (Bass 1990, Stogdill 1950, Bryman 1996, House 1971) and to solve problems together and not to rely on the skills of individuals, therefore the focus of leadership is on empowerment and not on control.

Keywords: leadership, styles, Transformational leadership, Transactional leadership, organizations, full range of leadership.

JEL Classification: C29

Introduction

Leadership is a process of influencing one person in a group on the other members of the group (Wikipedia). This group is a one that is united for the achievement of specific group goals, and it is very important to do it without coercion. Leadership according to Burns' claim "Leadership is one of the most common phenomena, and most incomprehensible on earth." (Popper, 2007). Likewise, James Burns interprets leadership as the ability to influence and bring about change to better moral behavior of the leaders. Another opinion of Micah Popper, he perceives leadership as a relationship, Also, every time there is one leader there is also at least one follower, therefore we have the relationships between them. These informal relationships between the leader and the follower may affect the degree of willingness of a group of people to act and do (Popper, 2007). The leadership also sets long-term strategic goals and conducts a constant examination of their validity (management theory). In continuity to Burns' claim, we witness many and varied definitions of leadership, and on the other hand, there is a lack of consensus regarding the essence of the "leadership" phenomenon. But in the literature that discussed the topic of leadership there is a special emphasis on transformational leadership which is leadership with qualities that lead to achievements and bring efficiency. And good organizational products are even better if we compare it with other leadership styles (Basu and Green 1997, Kahai et al. 2003, Jaussi and Dionne 2003, Zhang et al. 2011, Nederveen et al. 2009).

Review of the Literature

What is leadership: Leadership is a phenomenon that we deal with a lot, but we don't see it and also understand it so little. This is the opinion of American researcher Charles Lindholm, a sociologist from Harvard University. According to the opinion of Micah Popper in his book Formative Leadership, a psychological perspective (2007), he claims that three research approaches to the concept of leadership phenomenon should be pointed out, the first should be focused on the leader, the second focuses on the circumstances of the growth of leadership and the third focus is the one that deals with subjects, in which the creators of the leaders should be seen. There are also those who define leadership as the way of thinking and conduct of the leader whose experience is how to convince a group of people in order to achieve a common goal (Bar Haim, 2017). In the author Bar Haim's 2017 book, he defines the term leadership in several diverse definitions, such as, "Leadership is the behavior of one person, which directs the group's activities to achieve a common goal" in the organization. Another definition, this leadership is a special kind of power relations, these relations are characterized through a perception of people in a group, according

to which another member of it has the right to outline patterns of behavior for them, as members of a group." Another definition is "Leadership is an interpersonal influence aimed at achieving common goals for a group of people". Also, an opinion that says leadership is a process of influencing the activity of a certain organized group in achieving common goals for that group. So, from these definitions it must be understood that in leadership there is a leader and those who are led, it is also a phenomenon that occurs in a group of people, friends, who have a purpose to achieve goals (Bar Haim, 2017). The first empirical study that dealt with the phenomenon of leadership was based on the "great person" approach or (the traits approach), that the leader is a person with exceptional qualities. It is these qualities that explain his influence on the subjects. Another explanation for leadership is that leadership is a dynamic relationship, this observation assumes that leaders and followers are the ones who together create effective leadership. This relationship is a tripartite model of dynamic interaction between circumstances, leaders and the subjects (Poper, 2007). It should be added that the rational aspect of the relationship between a leader and the led are in an "exchange" manner, in other words that they or between them have a deal that still exists as long as they are satisfied with it. In the moment of the lack of mutual satisfaction between them or any change in the terms of the deal, something that will put an end to the relationship or require them to be redefined.

Leader
The leader is the one responsible for the effectiveness of the organization and the success of the organization which depends on him and the quality of the leader (Oplatka, 2015). Another opinion about this leader is, a leader is a charismatic person, this person also has the ability to lead a group of people for a certain action (management theory in the organization). According to Yizhar Oplatka (2015), he writes and defines the leader in the organization who is seen as a kind of mediator between the desires and abilities of his subordinates and the goals and requirements of the organization. According to this mediation, it is intended to obtain satisfied employees and also to have high organizational outputs. There are definitions that claim that there is a connection between leadership and the processes of social influence in which one individual has the ability to exert a deliberate influence on others in order to understand activities and relationships in a group or organization (Oplatka, 2015). It is also necessary to find from the Greek period a systematic discussion of leadership (Popper 2007), according to the Greek philosopher Plato that the true captain is not in his physical strength, Rather, it is he "who must give his opinion about the seasons of the year and the hours of the day, about the sky, stars and winds, that is the man who deserves to rule the ship" and the head of the

state must know the idea of the state. Leadership is meant to serve justice and the good of the followers and that the leader be free of private property and that he seeks the achievement of the goal for the benefit of the group. According to the claim of the philosopher Plato that the leaders will come from among "the wise". The philosopher Plato and the philosopher Thomas Carlyle from the 19th century both agree that the role of the leader is to "do good" and contribute to society (Poper, 2007). On the opposite side, there is the opinion of the Italian thinker Niccolò Machiavelli, his attitude towards his leader, The task assigned to his leader is to achieve the goals he has set for himself, but not to achieve moral ideals, he also says that morality does not dictate rules of conduct to him, but on the contrary, morality is a tool he uses to achieve his goals as a ruler (Poper, 2007). Leaders with a character of tolerance for peers, these qualities claim the researcher Jackson (Jackson, 2000) and they are prominently present in and among leaders with a character of a formative leadership style. These are leaders who tend to drive processes and practices and improve and change the existing rather than preserve it.

Transformational leadership

Leaders who are characterized by a formative leadership style are the leaders who encourage the search for creative solutions. Leaders in this style are also boundary breakers, so this style must be distinguished from the others. From this point of view, it should be noted that literature dealing with leadership especially emphasizes the transformational leadership style, which is of character and quality leading to the achievement of achievements. and emphasizes efficiency and better organizational products compared to other leadership styles (Nederveen et al., 2009, Zhang et al., 2011, Basu and Green, 1997, Kahai et al., 2003, Jaussi and Dionne, 2003). The formative leadership style is reflected in changing values and perceptions, and in the ideals and personal beliefs of the group of employees (Bass, 1985, Yukal, 1999). In a formative leadership style, they motivate the employees and their subordinates by empowering them, due to the increase in their motivation and the change in their attitude (Bass, 1985).

The designer leader encourages his subordinates to examine every subject and every occurrence, from several different points of view and this is how the message is carried out and received "learning and development are an integral part of the processes of execution and achievement of goals" (Hetland et al., 2011). It is important to note and emphasize that leaders shape their style and succeed in encouraging the personal development of their subordinates (Bass, 1985) but on the other side of the parallel it is important to note that they bring their subordinates as a collective, and act in accordance with the vision and values they share in order to

achieve them (Barbuto 1997, Bass and Avolio, 1994). This formative leadership style is a leader who encourages his group of leaders and brings them to high performances that are beyond what they have already defined for themselves and that is before they started their mission,

This leader does this by introducing the importance and value of the desired goals in the minds of the employees, and also, he emphasizes the relation of their need for self-realization to their realization and achievement of the organizational goals (Oplatka, 2015). The full range model presents the five elements of formative leadership:

- Intellectual stimulation - This leader is the one who encourages his people to think in new and creative ways and challenges the existing ways of thinking.
- Personal consideration (individual)- Here the leader must provide his employees with a supportive climate, the leader often and maintains personal relationships with each of his employees.
- inspirational motivation - works how the leader expresses a vision to his group and he encourages teamwork in them, brings optimism in achieving the goals, this is a motive, and the result is that the employees are strengthened, and their self-confidence increases.
- personal impact - is that the leader has a significant interaction with each of his followers privately, something that brings and shapes their consciousness.
- charismatic influence - Here the leader serves as a role model for his subordinates, and he makes them identify with him and his ideas.

This formative leadership style always strives to change the leaders and subordinates of the leader and also to cause them to change their feelings, and their values, morality and standards and goals, this leads them to strive for higher goals than expected (Bar-Haim, 2017). A formative leadership style has been researched and developed in the "full range of leadership" model by the two researchers Bass and Avolio (this leadership creates a continuous sequence of the terms effectiveness and the activity of the leader).

Business leadership and rewarding

The rewarding leader style is a leader who works to achieve his goals through reward and punishment. This leader believes that his workers or his team in the organization are working from the utilitarian approach, and so they always try to achieve their interest at any price. A business leader is the one who makes deals with his people. Therefore, he does not focus on the personal needs of each of his group of people, but rather he relies on a personal appeal to the interests of each of the group. Bass and Avolio 1994 (apud Bar-Haim, 2017) they describe the rewarding leader as

someone who operates in the existing organizational culture system, therefore this leader tends to avoid risks, he is aware of the limitations of time and efficiency, and he also prefers control and control through processes and procedures over formulating goals and a management philosophy (Bar-Haim, 2017).

According to the full range model for leadership, it is based on three components:

- Conditioned reinforcement- This type is built and based on defined exchange relations, between the leader and his subordinates, they are rewarded by their leader in a variety of ways such as, salary increase, improved working conditions. Leaders who adopt this style make sure to set a clear goal and on the other hand, they explain to their people what is expected of them and what is the reward they will receive for carrying out the task and achieving the goals set for them (Bar-Haim, 2017).
- Exception management, active- The leader looks for and locates faults and mistakes from the standard ones and then he takes preventive action.
- Passive - In this style, the leader does not intervene unless his subordinates do not meet the standards and rules that have been established, therefore this employee is active and tends to maintain the existing and manage closely to the status quo.

Conclusions

It is the style of formative employees that make their subordinates and their leaders act "above and beyond expectations" according to Bass's claim. These leaders work above the norms accepted in the given environment, formative leaders also invest efforts that are not expected of them, they are above the norm, formative leaders cause their followers to be more and more than they expected of themselves and to be more empowered in the psychological sense and bring them to more faith in self-sufficiency (Poper, 2007).

On the other hand, there is the rewarding leader who, in his best case, makes the subordinates cooperate with the leader, and this is out of considerations of feasibility in order to reach the required level of performance, But at the same time, this leadership style does not encourage creativity and innovation, nor does it cause an internal and deep commitment among the followers like the designer employees does (Bar-Haim, 2017). According to the author Meir Lirz, 2013 in his book The Manager as a Leader, he agrees that "a leader is the one who strives and works to get people to act to achieve goals, And he must achieve cooperation out of desire and not coercion, and that he must build the morale of his team so that they feel that they are achieving something together that is worth striving for" (Meir Lirz, 2013).

References

1. Bass, B. M. (1985). Leadership and performance beyond expectations. New York: The Free Press.
2. Bass, B. M. (1990). Bass and Stogdill's handbook of leadership: Theory, research, and managerial applications (3rd ed.). New York: Free Press.
3. Bass, B. M., & Avolio. B. J. (1994). Improving organizational effectiveness through transformational leadership. Thousand Oaks, CA: Sage.
4. Barbuto, J. R. (1997). Taking the charisma out of transformational leadership, Journal of Social Behavior and Personality, 12, 689–697.
5. Bar-Haim, Aviad (2017). Organizational Behavior - Macro, Unit 11, The Open University, Ra'anana.
6. Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. Journal of Applied Social Psychology, 27, 477–499.
7. Bryman, A. (1996). Leadership in organizations. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), Handbook of organization studies (pp. 9–39). Thousand Oaks, CA: Sage Publications, Inc.
8. Burns, J. M. (1978). Leadership. New York: Harper and Row.
9. Hetland, H., Skogstad, A., Hetland, J., & Mikkelsen, A. (2011). Leadership and learning climate in a work setting. European Psychologist, 16, 163–173.
10. House, R. J. (1971). A path-goal theory of leader effectiveness, Administrative Science Quarterly, 16, 321–338.
11. Jackson, D. (2000) The school improvement journey: perspectives on leadership, School Leadership & Management, 20 (1), 61–78.
12. Jaussi, K. S., & Dionne, S. D. (2003). Leading for creativity: The role of unconventional leader behavior. The Leadership Quarterly, 14, 475–498.
13. Kahai, S. S., Sosik, J. J., & Avolio, B. J. (2003). Effects of leadership style, anonymity, and rewards on creativity relevant processes and outcomes in an electronic meeting system context. The Leadership Quarterly, 14, 499–524.
14. Nederveen Pieterse A., van Knippenberg D., Schippers M., & Stam D. (2009). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. Journal of Organizational Behavior. 31 (4,) 609-623.
15. Meir Liraz, 2013. The manager as a leader - a practical guide to improving your leadership skills.
16. Oplatka, Yizhar (2015). Foundations of educational administration: leadership and management in the educational organization, Pardes, Haifa.
17. Popper, Micah (2007). Formative leadership: a psychological perspective, Tel Aviv University.
18. Stogdill, R. M. (1950). Leadership, membership, and organization. Psychological Bulletin, 47, 1–14.

19. Yukl, G. A. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. The Leadership Quarterly, 10, 285–305.
20. Zhang A.Y., Tsui A. S. & Wang D. X. (2011). Leadership behaviours and group creativity in Chinese organizations: The role of group processes. Leadership Quarterly, 22, 851-862.
21. Effective leadership - Wikipedia.
https://sites.google.com/site/torathanihul/home/nyhwl-whnhgh-brgwn