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CONTENTS

ECONOMICS, BUSINESS ADMINISTRATION, TOURISM AND STATISTICS

GASTRONOMIC TOURISM IN ROMANIA

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Abstract: *Gastronomy, a fundamental component of culture, has become a significant criterion in choosing a tourist destination, playing a crucial role in the development of local economies. By exploring the gastronomy of a region or a country, one can travel through time and space, uncovering the cultural identity of the place. Thus, there is increasing talk of gastronomic destinations that offer tourists dishes with authentic and traditional flavors. Usually, each dish has its own story, describing both the traditional cooking techniques passed down through generations and the use of local ingredients that have defined a community's cuisine over centuries. These gastronomic experiences are not just about tasting delicious food but also about understanding the history, traditions, and values of a community through its dishes. The connection between tourism and gastronomy is becoming increasingly evident, with tourists eager to taste traditional dishes that provide an authentic perspective on the culture of a tourist destination. Thus, gastronomic tourism involves exploring local cuisine, culinary traditions, markets, and local restaurants to discover and appreciate the diversity and authenticity of the foods and drinks of a region or country. Additionally, culinary tourism may include participating in cooking classes, tastings, culinary festivals, and other gastronomy-related activities, offering travelers the opportunity to gain a deeper understanding of a community's culture and identity through its food.*
Keywords: *gastronomy, gastronomic tourism, gastronomic experiences*

JEL Classification: *Q1, Z32*

1. Introduction

The proverb "The culture of a people can be known through the partially opened window of its kitchen" presents a world full of aromas and experiences that reflect the diversity and cultural richness of peoples. Changes in tourist behavior are evident, with tourist demand being influenced by the increasingly widespread use of digital services and new technologies, the search for personalized travel experiences, and the desire to interact more deeply with communities and local culture (Badulescu, 2022). Food represents a distinctive element of a region's culture, wealth, and heritage. In each area, the history and gastronomic traditions are reflected in the diversity of local products.

2. Literature review

The word "gastronomy" comes from two Ancient Greek words "gastḗr" and "nómos," which forms the basis definition "the laws or rules governing the stomach," or more appropriately "the rules of good eating" (Lee, 2023). While the term can be found in Ancient Greek texts, it was neither prominent nor common until 1801, when it was adopted by a French poet,

Joseph Berchoux, in the poem titled "La Gastronomie ou L'Homme des champs à table" ("Gastronomy or The Man of the Fields at the Table"). This terminology, along with the word "gastronome," became widely known worldwide due to the work of Jean-Anthelm Brillat-Savarin, "Physiologie du goût" ("The Physiology of Taste"), published in 1825 (Călinescu, 2023). Léon Brisse distinguished himself as a gastronomic journalist, presenting readers with a different menu for each day in his work "Les Trois Cent soixante-six menus du Baron Brisse" ("The Three Hundred Sixty-Six Menus of Baron Brisse"), published in 1867. From 1921 to 1928, Maurice Edmond Sailland, together with Marcel Rouff, wrote a series of regional travel guides published under the collective title "La France Gastronomique: Guide des merveilles culinaires et des bonnes auberges françaises" ("Gastronomic France: Guide to culinary wonders and good French inns"), describing over 5,000 culinary recipes. Gastronomic experimentation is an important attraction alongside other tourist activities that could influence the choice of a destination (Kim et al., 2013). Local cuisine has become a fundamental aspect of the tourist experience, being an essential part of the culture of any destination (Tsai, 2016). Local food represents intangible customs and heritages that highlight the unique characteristics of the destination (Chang et al., 2018, and Kozak et al., 2007, cited by Carpio et al., 2020). According to Morales and Cordova (2019), destinations that are aware of the role of local cuisine in their tourism success have begun to use their gastronomic potential in promoting and positioning themselves in the tourism market as a national identity element (Carpio et al., 2020). Recent studies focus on the importance of local gastronomy in strengthening identity, promoting freshness, authenticity, and taste, supporting local producers, and ecological concerns. Thus, traditional dishes have become an integral part of the tourism segment, creating a link between local agriculture and the tourism industry (Richards, 2002; Scarpato, 2002; Rachão et al., 2019; Timothy, 2016; Kuznesof et al., 1997; Bessière, 2013, cited by Woyesa and Kumar 2021).

3. Research methodology

The research methodology consists of bibliographic documentation, analysis of local gastronomic resources and their role in local and national tourism development. Information was selected from specialized sources (WFTA, UNWTO, CTC), scholarly articles focused on gastronomic tourism research, and various blogs (Hotel Marea Neagră, Restaurant Vatra, Via Profi), describing gastronomic experiences encountered in different regions of Romania.

4. Conceptual delimitations

Differences in language and culture have led to the emergence of several concepts that define food-based tourism, such as gastronomic tourism, culinary tourism, tasting tourism and food tourism (C. M. Hall and L. Sharples, 2003, cited by Ningsih and Nuraeni, 2019). According to WFTA, food tourism represents "*The act of traveling for a taste of place in order to get a sense of place.*" For Europeans, "gastronomy" is the term used to explain an area's culinary culture, and for them, it follows that "gastronomy tourism" makes the most sense. For them, the term "food travel" sounds too simple and mundane – almost as if people in ancient times were looking for food or shopping for groceries (according to WFTA). Some authors consider gastronomic tourism as a part of cultural tourism because food and drinks are part of local cultures (Richards, 2003, cited by Nistor and Dezsi, 2022), while others refer to this type of tourism as "tasting tourism" (Vinerean, 2013, cited by Nistor and Dezsi, 2022). The Committee on Tourism and Competitiveness (CTC) of the United Nations World Tourism Organization defines gastronomic tourism "*as a type of tourism activity which is characterized by the visitor's experience linked with food and related products and activities while travelling*". The term "culinary tourism" was first introduced by Long (1998) in the work "Culinary Tourism" to describe the meanings, motivations, and implications of seeking

culinary experiences different from the usual ones (Long, 1998). For Long, culinary tourism is not just a source of food for tourists, but rather intentional participation in exploring gastronomic cultures through consumption, preparation, and presentation of culinary products, traditional cuisine, eating style, all belonging to a different culinary system, other regions, or countries (Long, 2004). Various forms of gastronomic tourism have gained popularity over the years, attracting curious tourists eager to explore the culinary culture of other countries. These forms include visiting food producers, participating in gastronomic festivals, exploring restaurants and places special to certain dishes, tasting special culinary products, observing production and preparation processes, taking part in cooking classes for specific dishes, and other culinary attractions such as fairs, exhibitions, and culinary tours (Hall & Mitchell, 2005, cited by Privitera et al., 2018).

5. Gastronomic experiences in Romania

Gastronomic experiences offer tourists a journey through varied aromas, tastes, and culinary traditions from around the world. From tasting street food in Asia to savoring wines in Europe's wine regions, such as Italy, France, Spain, and exploring local cuisine for example Crete, Tuscany, Sicily, Java, Normandy etc., on organized culinary trips, each experience provides an insight into the culture and history of a destination. These experiences not only delight the taste buds but also create unforgettable memories and authentic connections with the places and people we encounter.

Examples of gastronomic experiences around the world:

- "Discover Italy: The gastronomic journey through Rome, Florence, and Bologna"
- "Exotic Asian Cuisine: From Bangkok to Tokyo";
- "Mediterranean Flavors: From Barcelona to Athens";
- "Journey through South American Cuisine: From Buenos Aires to Lima";
- "Middle Eastern Aromas: From Istanbul to Marrakech";
- "Nordic Cuisine: From Copenhagen to Stockholm";
- "Authentic Tastes of the Far East: From Shanghai to Seoul";
- "Traditional African Cuisine: From Cape Town to Marrakech".

In the article "Hidden gems: hidden restaurants in villages, where you rediscover traditional Romanian cuisine," seven hidden restaurants in villages are described, where dishes are made according to ancient recipes based on ingredients used only from local producers (Udrea, 2023).

In Romania, the most well-known regions for their traditional products are Muntenia, Moldova, Oltenia, Transylvania, and Dobrogea, each having distinct geographical and cultural characteristics that contribute to the diversity of Romanian traditional cuisine

- Muntenia has left its mark on traditional Romanian cuisine through artisanal cheeses, smoked "caș" cheese from Rucăr, the famous Pleșcoi sausages, and the "magiun" from Topoloveni (a product with protected geographical indication), as well as traditional Romanian beverages.
- Moldova cuisine is renowned for its meat products (smoked ham and pastrami, homemade sausages, and traditional "toba" sausage) but also for its variety of preserves (especially green walnut jam and cherry jam with Socola honey).
- Oltenia, one of Romania's regions with unmistakable aromas, stands out with a rich variety of authentic traditional products, such as Oltenian sausages, pickles, authentic sheep pastrami, fir bark cheese, bakery products like wholemeal bread, and traditional Romanian beverages like wine and plum brandy ("țuică"). Additionally, Oltenians are known for their delicious "potroace" soup and pork jelly ("piftie"), considered two of the most important culinary traditions around the holidays.

- Transylvania is one of the regions in Romania where traditional products are true culinary treasures. Transylvanian cuisine stands out not only thanks to authentic traditional products but also due to some of the most popular Romanian recipes. Many of these traditional products from Transylvania (smoked "novac" from Țara Bârsei, "telemea" cheese from Ibănești, and the popular "salam" from Sibiu) also benefit from European recognition, being protected by geographical indications.
- Dobrogea, the region in Romania with fishy aromas, is known for its culinary richness focused on traditional fish products (such as the traditional specialty with carp roe or carp pastrami) and authentic fish-based recipes. Smoked Danube herring, recognized as a product with protected geographical indication, and the variety of wines from local producers in the Dobrogea area are just a few examples that reflect the gastronomic richness of the region.

Each region in Romania has its own culinary treasures and traditional products, each with unique characteristics and flavors. This gastronomic diversity is one of Romania's remarkable treasures, with each region contributing to the country's culinary mosaic, offering a variety of authentic tastes and memorable gastronomic experiences.

5. In conclusion

Gastronomic experiences provide travelers with the opportunity to connect with local cultures through food, drinks, and culinary traditions. Around the world, tourists discover new dishes, exotic flavors, and traditional cooking techniques, enriching their travel experiences. From visits to local markets and authentic restaurants to participating in gastronomic festivals and culinary tours, gastronomic experiences offer travelers a way to explore and understand the culture and identity of a destination more deeply. By engaging in gastronomic tourism, travelers not only enjoy delicious food but can also contribute to supporting the local economy and preserving unique culinary traditions. Thus, gastronomic experiences are not just about taste but also about discovering and sharing stories, values, and cultural richness from around the world.

Gastronomic tourism in Romania is growing, representing a wast source of unique experiences for visitors seeking the country's culinary diversity. By integrating local gastronomy into the tourism offer, Romania can attract travelers from around the world, offering them the opportunity to explore authentic Romanian traditions, products, and dishes. From traditional delights from different regions of the country to exceptional wines and gastronomic festivals, gastronomic tourism contributes to promoting cultural identity and sustainable development of local communities. With an increased focus on its potential, gastronomic tourism can become an essential pillar of Romania's tourism industry, offering travelers authentic and memorable experiences.

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THE IMPACT OF CO2 AND HFCs EMISSIONS ON HUMAN HEALTH IN THE EU27 COUNTRIES

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Abstract: *Human health is an essential pillar of the societal development. Maintaining or increasing the level of human health depends on a number of factors. Among them, nowadays, environmental degradation through GHG emissions represents a crucial factor due to its short- and long-term effects on the quality of peoples' lives. In this relationship an important role is played by economic growth based on the use of non-renewable energy responsible for triggering significant amounts of GHG emissions. In this complex context, this study investigates the relationship between environmental degradation (measured by CO2 and HFCs emissions) and human health (measured by Healthy Life Years - HLY) in EU27 countries in the 2010-2020 period. The countries were classified in two groups depending on their levels of decoupling of economic growth from CO2 and HFCs emissions for observing comparatively the impact of managing the level of air pollution generated by the economic activities on HLY. Using panel data specific methods, the main findings revealed that both GHG emissions had negative influences on the HLY, but their impact is higher in the countries with lower levels of decoupling. Furthermore, for ensuring the robustness of the results, urbanization (URB) and educational attainment (EDA) were added as factors in the models estimated. The results obtained in the developed models were in line with the ones from the initial models, thus sustaining their robustness. In addition, it was found that URB and EDA produced significant effects only in the countries with higher levels of decoupling. The study is relevant for a wide range of stakeholders implicated in finding potential solutions to limit air pollution and enhance humans' health in the EU27 countries.*

Keywords: *Healthy Life Years; GHG emissions; decoupling; EU27 countries; panel data modelling*

JEL Classification: *C33; F64; I15; O44*

1. Introduction

Over the past forty years the world has been characterized by a continuous increasing and fulfilling of the production demands, the main indicators regarding global economy tripling their levels (Knox et al., 2014). Economic growth, although had effects on raising the standards of living in many countries, it was also responsible for devastating traces left in the environment. Degradation of the environment in connection with the production of greenhouse gases (GHG) emissions, climate change, and global warming affects humanity, including its health (Manisalidis et al., 2020). By looking in detail at the impact of air pollution, especially GHG emissions, on human health, both short-term and long-term effects can be identified. Short-term exposure is closely related to Chronic Obstructive Pulmonary Disease, cough, shortness of breath, wheezing, asthma, respiratory disease, and high rates

of hospitalization, while long-term effects may refer to chronic asthma, lung failure, cardiovascular disease, and cardiovascular mortality (Apergis et al., 2020). In addition, there can appear various adverse health effects in early human life as well, such as respiratory, cardiovascular, mental and perinatal disorders, leading to infant mortality or chronic diseases in adulthood (Majeed and Ozturk, 2020).

Intergovernmental Panel on Climate Change emphasized in a report published in 2014 that human activities caused the warming of the Earth in the last 50 years, while GHG emissions represent a very serious concern due to their contribution to this threatening state and it is necessary that they must be monitored in individual countries. In this context, the European Union (EU) brings together countries that share similar objectives regarding health, economic and environmental aspects in order to set effective strategies (Šírá et al., 2021). In this direction, a previous study of Cautisanu and Hatmanu (2023) emphasized the degree to which the concept of decoupling economic growth from two main GHG emissions produced in the economic activities at the EU27 level, Carbon dioxide – CO2 and Hydrofluorocarbons – HFCs, was put to practice in the following two-time intervals when Kyoto Protocols commitments were implemented: 2008-2012 and 2013-2020. Decoupling (or eco-economic decoupling) appears when an economy is able to grow without determining additional environmental pressure or damage. The main results indicated that the EU27 countries revealed different patterns and could be classified in two distinctive groups: (1) the ones which registered decreasing or constant low levels of decoupling, (2) the ones being characterized by increasing or constant high levels of decoupling.

As a continuation of this research, the present paper is meant to highlight the importance of decoupling from the perspective of the relationship between environmental degradation and human health. Therefore, its aim is to observe the impact of the CO2 and HFCs emissions on human health in the EU27 countries in the two groups formed depending on their level of decoupling in the 2010-2020 period. For achieving this aim, the following objectives are established: (1) a grouping of the EU27 countries based on their levels of decoupling obtained in the study of Cautisanu and Hatmanu (2023); (2) an analysis of the CO2 and HFCs emissions' influence on the human health in each of the country groups defined previously; (3) a detailed analysis regarding the importance of decoupling on the results obtained. In order to verify the robustness of the results, there are added two control variables indicating levels of the following social aspects: urbanisation (URB) and education (EDA).

There are several studies in the academic literature (Sillmann et al., 2021; Mahalik et al., 2022; Rahman et al., 2022; Das and Debanth, 2023; Karma, 2023) focusing on the relationship between GHG emissions and various indicators measuring human health, such as life expectancy, healthy life expectancy or health expenditures, in specific groups or individual countries. The expected relationship is a negative and significant one since emissions cause air pollution which is responsible for health hazards. In addition, as a measure of the economic development of the countries analysed, in some of these studies, the link between economic growth and human health is also considered. In this case, a positive sign is expected, explaining the benefits of increased accessibility to consumption of higher quality goods and services, better living conditions, and medical care services on health status. However, the sign could be also negative because, beyond some threshold level of affluence, the people's lifestyle begins to be more stressful and unhealthier, thus leading to a decrease in the health status (Fayissa and Gutema, 2005). Regarding urbanisation, according to Thornton (2002), it is a process important for a collection of both positive and negative potential health related factors: on one side, positive because it provides access to health facilities, on other side, negative due to existing air pollution and congestion. Finally, education is important for better health and, generally, there is expected a positive effect giving that educated people have better health-related information and can avoid risky habits (Khan and Majeed, 2018). However, according to Raghupathi and Raghupathi (2020) and Zajacova and Lawrence (2018), education can also be associated

with poorer human health even in highly developed countries, because lower educational attainment cause large health inequalities.

The first contribution of the present paper to academic knowledge is represented by the use of the indicator "Healthy life years" (HLY) as a proxy for human health in relation to environmental (CO_2 and HFCs) and social (URB and EDA) factors. To the authors' knowledge, there are only a few studies in which HLY is preferred in this context. The motivation of using it is based on the fact that it is a representative measure of human health status in the European Union and, unlike other indicators that measure human health from the perspective of the "quantity" of life, this one reflects the "quality" of life spent in a healthy state. A second contribution is related to the environmental factors chosen. In the literature, CO_2 emissions are widely used. According to Cautisanu and Hatmanu (2023), alongside CO_2 emissions, HFCs emissions (also called "super greenhouse gases") are also frequently generated as a result of economic activities. Both GHG emissions are harmful for human health and the ecosystem wellbeing because of their current and potential impact on global warming. A third contribution refers to the application and adaptation of the theoretical health production function developed by Grossman (1972) from the micro to macro level by using the indicators for the three dimensions of development (i.e., environmental, economic, and social) in the per capita representation. Finally, the last contribution resides in the fact that the current analysis at the EU27 countries level is made taking into consideration their grouping based on decoupling status.

Giving the panel data structure of the database, specific estimation models were performed: Pooled Ordinary Least Square (POLS), Fixed Effects (FE), Random Effects (RE), Feasible Generalised Least Squares (FGLS), and Panel-Corrected Standard Errors (PCSE). The main results revealed that most of the expected signs identified in the literature in regard to the relationship between HLY and the factors considered were validated. However, differences were observed between the two groups of countries in terms of the coefficients' significance in the models estimated, meaning that the decoupling status is responsible for improving the human health. This study could be useful for various stakeholders, such as academics, practitioners, and policymakers in addressing the topic of the relationship between environmental degradation and human health and finding potential solutions to diminish pollution and enhance humans' health.

2. Data and Methods

In the present study, the variables considered were collected from the Eurostat database and covered data available for 2010-2020 period at the level of each EU27 country. Table 1 comprises the description of the variables representing human health and the factors observed.

Table 1: Description of variables

Indicator	Description
Healthy Life Years at birth (HLY)	The number of years that a person at birth is still expected to live in a healthy condition. (Years)
Carbon dioxide per capita (CO2)	The quantity of carbon dioxide emissions per capita. (Kg/capita)
Hydrofluorocarbons per capita (HFCs)	The quantity of hydrofluorocarbons emissions per capita. (Kg/capita)
Urban population (URB)	Percentage of population living in urban areas. (%)
Educational attainment (EDA)	Percentage of population by educational attainment level in the upper secondary, post-secondary non-tertiary and tertiary education (levels 3-8 according to International Standard Classification of Education - ISCED 2011). (%)

Due to the highly variability of the data and the different unit measures, variables were transformed in the logarithmic form. The main analysis focused on the influence of the environmental factors (CO2 and HFCs) on human health (HLY). A secondary analysis was proposed to verify the robustness of the results previously obtained by considering also social factors (URB and EDA). Both analyses were performed at the level of the EU27 countries classified in two groups based on their level of decoupling of GDP from CO2 and HFCs emissions, identified in the study of Cautisanu and Hatmanu (2023). Figure 1 highlights the countries included in each group. Group 1 comprised 7 countries that registered decreasing or constant low levels of decoupling (i.e., economic growth is still strongly related to environmental degradation), while Group 2 included the rest of 20 countries which registered increasing or constant high levels of decoupling (i.e., economic growth no longer exerts significant pressure on the quality of the environment).

In order to study the previous mentioned influences of the factors on HLY, there were applied three specific models of panel data: POLS, FE, and RE. These models are constructed differently based on the assumption established regarding the unobserved effect of the time-invariant country specific factors which were not analyzed but may affect the dependent variable. Specifically, while POLS does not take into account the existence of the unobserved effect, FE and RE consider that it exists. But it is assumed to be correlated with the independent variables in the FE, while uncorrelated in the RE. In order to choose the most suitable model for the data, two statistical tests were performed: Chow test (used for choosing between POLS and FE, the null hypothesis stating that POLS is more appropriate) and Hausman test (applied for choosing between RE and FE, the null hypothesis indicating that RE is the best model fitting the data). For the selected model, the next step in the analysis was represented by its validation using specific tests applied to check the hypotheses formulated on the cross-sectional dependency (Pesaran test) and residuals (T test for zero mean, Jarque-Bera test for normality, Wald test for heteroscedasticity, and Wooldridge test for autocorrelation).
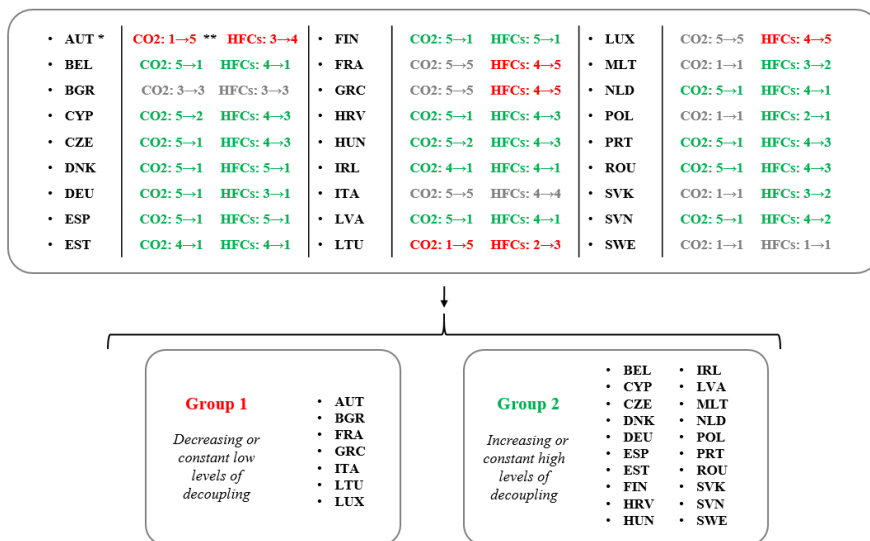
Figure 1: Grouping of the EU27 countries depending on their level of decoupling of economic growth from CO2 and HFCs emissions.

Source: Authors' computations based on the results of Cautisanu and Hatmanu (2023).

Notes: * Each of the EU27 countries is abbreviated with a three-character alpha code defined according to the International Organization for Standardization (ISO). ** The values represent the codes for the Stages in which a country is included in the periods 2008-2012 (Kyoto Protocol 1) and 2013-2020 (Kyoto Protocol 2): 1 - Absolute decoupling (the most desired stage), 2 - Relative

decoupling, 3 - Coupling, 4 - Negative decoupling, and 5 - Negative coupling (the least desired stage). The nature of transition from a period to the other is color coded as follows: red – decreasing; gray – constant, and green – increasing.

As not all of the hypotheses were attained in the last step, corrected models FGLS and PCSE were employed depending on the specific of the country group. Both FGLS and PCSE can effectively deal with major issues of panel data, such as cross-sectional dependency, autocorrelation, and heteroscedasticity in the residuals (Wang et al., 2017; Mahalik et al., 2022). According to Reed and Ye (2011), in panel data sets where the number of cross-sections (N) does not exceed the number of time periods (T), FGLS is more efficient; while when N > T, PCSE is recommended. Therefore, for Group 1 because N (7) < T (11), FGLS was estimated and for Group 2 because N (20) > T (11), PCSE was estimated.

3. Results and Discussions

This section starts with the descriptive statistics of the variables analyzed in the present paper. Next, the process of choosing the most suitable estimated panel model among POLS, FE, and RE is presented for each group of countries alongside the diagnostics regarding cross-sectional dependence and residuals of the selected model. As mentioned previously, because some of these diagnostics were not validated, the estimation of the corrected models FGLS and PCSE was necessary. Thus, the final part of the results is represented by the presentation of these models.
The descriptive statistics included in Table 2 show the main information needed in order to characterize the distributions of the variables in each group of countries.

Table 2: Descriptive statistics

Variable	Mean	St. dev.	Min.	Max.	Obs.
Group 1					
HLY	62.603	3.163	56.500	68.300	77
CO2	6329.360	2899.085	3268.783	14801	77
HFCs	178.308	83.456	27.391	480.475	77
URB	73.780	9.620	57.115	91.453	77
EDA	73.529	8.870	53.700	89.200	77
Group 2					
HLY	61.378	5.144	51.400	73.600	220
CO2	6432.671	2878.823	2753.852	15902	220
HFCs	141.029	67.037	26.745	425.180	220
URB	72.509	13.796	52.658	98.079	220
EDA	74.574	11.573	32.700	87.900	220

Source: Authors' computations using EViews 10

At the level of each group, for all the variables considered, the coefficient of variation was determined as a ratio between the variable's standard deviation and mean, in order to analyze the degree of variability, as well as the representativeness of the variable's mean. The results showed representative means in each case, the coefficients of variation being less than the threshold of 50%. Comparing the means of the variables between the two groups, it was observed that, in general, the ones from Group 1 were slightly higher than the ones from Group 2, except CO2 and EDA where the situation was contrary. In the rest of the paper the variables were used in the logarithmic form.
Table 3 indicates the tests performed in order to choose the "best" estimated model for each group among POLS, FE, and RE. For each of the groups, the results of Chow test revealed that, for a significance level of 5%, the FE model is preferred instead of POLS. Next, Hausman test indicated that RE is more suited than FE in the conditions of a 5% significance

level. The failure to reject H0 could be explained by the fact that the RE and FE estimates are sufficiently close so that it does not matter which model is used (Wooldridge, 2020). Testing the differences between the coefficients of each variable from FE and RE, it was confirmed that they were not significant for a 5% level. Therefore, taking into consideration both the results of Hausman test and difference test comparisons, the FE was selected as the appropriate model for the data in each of the two groups of countries. For the selected models, Table 3 emphasizes information about the diagnostics regarding cross-sectional dependence and the formulated hypotheses on residuals. The model corresponding to Group 1 (M1) and the one to Group 2 (M2) were shown to not be validated in terms of heteroscedasticity and autocorrelation. In this context, it was necessary to estimate some models that deal with such issues, such as: FGLS for Group 1 (efficient in the case of N<T) and PCSE for Group 2 (appropriate in this case of N>T).

Table 3: Choosing the most suited model and its validation

Statistic Test		Group 1 - M1	Group 2 - M2
Chow Test (H0: use POLS vs. H1: use FE)		40.127***	62.118***
First decision		FE	FE
Hausman Test (H0: use RE vs. H1: use FE)		2.355	3.643
Second decision		RE	RE
- difference test comparisons:	CO2	0.480 [a]	0.543
	HFCs	0.466	0.071
Final decision		FE	FE
Diagnostics			
Cross-Dependence: Pesaran		-0.498	-0.184
Zero mean: T		≈ 0.000	≈ 0.000
Normality: Jarque-Bera		0.769	17.316***
Heteroscedasticity: Wald		9973.76***	1232.19***
Autocorrelation: Wooldridge		7.545**	16.445***
Multicollinearity: VIF		4.716	7.751

Source: Authors' computations using EViews 10 and Stata 13
Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. [a] Represent the P-values corresponding to the differences between the values of the coefficients from the fixed and random models.

Table 4 included the results obtained for these models. In addition, for verifying the robustness, there were added two control variables, URB and EDA, resulting the following new models: M1_rc and M2_rc.

Table 4: Regression results (Dependent variable: HLY)

Factor	Group 1 - M1	Group 1 - M1_rc	Group 2 - M2	Group 2 - M2_rc
CO2	-0.054** (0.023)	-0.047* (0.027)	-0.044*** (0.013)	-0.052*** (0.017)
HFCs	-0.031*** (0.007)	-0.032*** (0.009)	-0.007 (0.008)	-0.006 (0.008)
URB		-0.277 (0.311)		0.468* (0.248)
EDA		0.114 (0.108)		0.088* (0.049)
C	4.759*** (0.176)	5.401*** (1.059)	4.535*** (0.124)	2.977*** (0.972)
R Square	0.788	0.790	0.871	0.873
F statistic	31.631***	24.875***	63.799***	58.808***

Source: Authors' computations using EViews 10
Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Values in () parentheses are standard errors.

Model M1 reveals that HLY in the countries from Group 1 is negatively influenced by the two GHG emissions taking into consideration a 1% level of significance. The value of R Square indicates that 78.8% of the HLY variation is explained by the simultaneous variation

of the environmental factors considered in the model. By adding the two control variables, URB and EDA, it can be observed in model M1_rc that the significance of the relationships previously estimated are maintained. Also, URB has a negative influence on HLY, while EDA has a positive one, however none of them are statistically significant. The inclusion of these social factors improved the explained variation of HLY in Group 1 by 0.2%, R Square reaching 79%, this increase being statistically significant according to Fisher test (P-value for F-statistic being lower than 1% level of significance).

Regarding Group 2, model M2 shows that among the environmental factors, only CO2 is significantly influencing HLY for a 1% level of significance. Next, including the two control variables in the developed model, the significance of the initial variables persisted. Moreover, it determined an increase in the explained variation of HLY from 87.1% to 87.3%. Summarizing the results of the estimated models, it can be highlighted that in comparison with the countries that registered decreasing or constant low levels of decoupling of GDP from CO2 and HFCs emissions, the ones that reached an increasing or constant high level of decoupling, revealed that CO2 emissions are still statistically significant in relation to HLY, while HFCs is not significant. In addition, the social factors, URB and EDA are become significant. These differences indicate that, because of its decreasing impact on environmental quality, economic growth determined a weaker relationship between environmental indicators and human health. Also, some social factors have importance in predicting the levels of human health status. Overall, the findings are in line with the expected signs identified in the academic literature: (1) negative influences of the environmental factors on human health; (2) positive influence of economic growth on human health; and (3) mixed influences of social factors on human health.

4. Conclusions

Although the human health quality is a result of global GHG emissions, the global efforts of reducing GHG emissions cannot be achieved without active implications at the country level. In this context, the purpose of the present study was to analyze the impact of environmental degradation, measured through CO2 and HFCs emissions on human health, quantified by Healthy life years in the EU27 countries within the 2010-2020 period. The EU27 countries were grouped taking into consideration their behavior in terms of decoupling GDP from the CO2 and HFCs emissions previously studied in the work of Cautisanu and Hatmanu (2023). Thus, there were obtained two groups: Group 1 containing 7 countries that registered decreasing or constant low levels of decoupling, and Group 2 including 20 countries with increasing or constant high levels of decoupling.

For each of the groups, the following specific panel data models were applied: POLS, FE, and RE. In order to identify the most suited model for the data in each group, Chow and Hausman tests were performed, and FE model was selected in each group of countries. However, due to some issues regarding the hypotheses verified in the idea of validating the model were observed, it was necessary to estimate the following corrected models: FGLS and PCSE. Some of the results showed that CO2 and HFCs had negative influence on the HLY, but with a high impact in the case of the countries from Group 1. In both groups the GDP had a positive influence on HLY. In order to check the robustness of these results, two social factors were included in the models: URB and EDA. It was observed that the signs and level of significance remained the same for the initial variables in both groups of countries. The two new added variables had significant influences on the dependent variable only in Group 2. Overall, in the models estimated, HLY variation was explained in a percentage ranging between 78.8 and 87.3 by the explanatory variables.

All these findings infer that the strategies and policies of the policymakers should be revised in order to maintain, at least, or even improve the sustainability of the relationship between economic growth and environmental degradation, so as to ensure the protection of human health. Some policy recommendations could be related to implementation of green and

ecological mechanisms that would have the role of reducing carbon footprint and improve energy efficiency. In the same line, budgetary allocations to science and technology should be stimulated for increasing technological capabilities, making possible the transition from consumption of non-renewable energy that is triggering significant amounts of GHG emissions to renewable energy sources. In addition, the financial allocations to the health sector should be higher so that the health-related challenges which could appear from the environmental hazards to be limited. The quality of human health in a long-term perspective can also be related to upgrading indicators referring to a balanced and sustainable urbanization and education. For instance, programs aimed at educating people about the ways in which they can protect the environment and reduce GHG emissions in their daily life plays an important role. In this perspective, environmental literacy should not be underestimated because awareness and concern regarding environment and its related problems, as well as knowledge, skills and motivations could lead to potential solutions to environmental degradation and, on the long-term preserve the longevity of the human health.

This study has some limitations. Firstly, the period analyzed does not comprise data up to date in order to cover the period of the COVID-19 pandemic which may generate more interesting findings. Secondly, the panel methods performed did not take into account some advanced issues such as heterogeneity over time, cross-sectional heterogeneity, and dynamic relationships between variables of interest. Another limitation is represented by the fact that the causalities between the variables were not considered.

Starting from these limitations, the following future directions of research are proposed. Firstly, the extension of the period analyzed in order to consider also the COVID-19 years. The second direction is related to the use of advanced panel methods for obtaining additional information. A third direction implies using other measures of human health and environmental, economic, and social factors for emphasizing other facets of the relationships already established. Finally, an ambition for future research could be to expand the sample of countries by involving some from other continents or international communities in order to ensure valuable comparisons.

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DIGITALIZATION A NECESSITY FOR SUSTAINABLE BUSINESS

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Abstract: *Digitization, with its profound impact on business, manifests itself in increased efficiency, innovation and competitiveness. This transformation process requires comprehensive readiness assessments and improvement plans. Digitization is essential in driving value creation, operational efficiency and driving innovation, thereby shaping sustainable business practices. The adoption of digital technologies is essential for strengthening economic performance, mitigating the impact on the environment and promoting societal sustainability goals.*

This research proposes to analyse the ramifications of digitization in the field of sustainable business. Its main objective is to analyse how digital technologies have influenced and shaped businesses that adopt economic, social and environmental sustainability. To achieve this objective, a methodological review, based on academic research articles, was undertaken to elucidate how the conceptualization of digitization as a catalyst for changing sustainable business paradigms has evolved. This effort involved delineating digital technologies, discerning prevailing trends, and identifying best practices to drive sustainability goals within business operations. In addition, the review encapsulated the challenges and risks inherent in digitization in relation to sustainable business, encompassing concerns such as cyber security, regulatory compliance and ethical considerations. Finally, the research provided a forecast of the digital trajectory of sustainable business, highlighting emerging trends and potential development trajectories. The research findings underscore the imperative for sustainable businesses to adopt a strategic and meticulously planned approach. This involves investing in robust cyber security measures, upskilling the workforce in digital skills, conscientiously assessing the environmental footprint of technology and formulating robust ethical frameworks. By deftly navigating these challenges, businesses can optimize the dividends of digitization while maintaining their commitment to sustainability.

While certain sustainable solutions may demonstrate effectiveness on a smaller scale, their scalability is essential to making a substantial impact on sustainability goals. Addressing the scalability issue requires concerted efforts by government bodies, businesses, communities and individuals, augmented by investments in education, technology and research. These innovative efforts hold promise for addressing global challenges such as climate change, biodiversity loss and socio-economic disparities, while fostering economic prosperity and societal well-being.

As businesses delve deeper into the realms of digitization, the concomitant risks associated with data security and privacy escalate proportionately. Therefore, adopting strict cyber security protocols becomes of paramount importance. In conclusion, the digital frontier of sustainable business presents fertile ground for innovation and expansion. Combining digital talent with sustainability imperatives can generate business models that not only thrive economically, but also contribute significantly to social well-being and environmental conservation.

Keywords: *digitization; sustainable business; digital technologies; cyber security; scalability; innovation.*

JEL Classification: *O33; M15; Q55; L86.*

1. Introduction

In the current context marked by an accelerated transition towards digitalization, specialized literature reflects a growing interest in exploring the impact of this phenomenon on business models. Caputo (2021) emphasizes that digitalization has become a predominant research topic, highlighting its essential role in increasing operational efficiency and access to data and analytics, which, in turn, can enhance customer experience, innovation, adaptability, and market competitiveness. This trend underscores an imperative necessity for companies to adapt to the new realities of the business environment.

Machado (2019) highlights the importance of assessing the digital readiness of companies and developing concrete improvement plans. This is a vital preliminary measure for any organization aiming to successfully navigate the challenges of digitalization. In this regard, Martínez-Caro (2020) suggests that access to a vast amount of digitized data represents a new and valuable source of value generation for companies, involving a revaluation of how they conduct their operations and shape their business strategies.

An essential aspect, as evidenced by the works of Kraus (2021) and Bouwman (2019), is digital transformation, which requires constant renewal and innovation of business models to remain competitive. This includes the automation and optimization of processes, which not only increase efficiency and reduce costs but also enable rapid adaptation to market changes. Kamalaldin (2020) adds that digitalization is also a source of future competitiveness, unlocking new opportunities for value creation and revenue generation.

In addition to streamlining administrative processes and reducing human errors, as emphasized by Matarazzo (2021), digitalization also enhances customer experience through digital channels such as websites, mobile applications, and social media platforms. This allows for more efficient and personalized interactions with customers, providing quick responses to their needs. Furthermore, Niaz (2022) emphasizes the importance of integrating digital supply chain data as a foundation for operational excellence and competitive advantage in an ever-changing business environment.

Digitalization also encourages innovation and adaptability, essential for quickly responding to market changes and customer requirements, as mentioned by Lokuge (2019). Adopting emerging technologies such as artificial intelligence, the Internet of Things, or blockchain opens the door to new business opportunities, reinforcing Hasan's argument (2022) that digitalization is vital for the long-term viability of small enterprises.

Moreover, digitalization plays a key role in reducing production costs and service delivery, according to Buck (2018), highlighting its cross-cutting importance in nearly all industrial sectors. This underscores digital transformation not only as a necessity but also as a catalyst for innovation and market success.

An additional important aspect is the contribution of digitalization to sustainability. Demartini (2019) explains how digital technologies can help develop a more resource-efficient industrial base, reducing environmental impact and promoting a sustainable business model. This emphasizes the role of digital technologies not only in economic performance but also in building a more sustainable society.

The current research landscape reflects a widespread recognition of the importance of digitalization for the future of businesses. By improving efficiency, innovating business models, and supporting sustainability, digitalization emerges as a strategic necessity for any company seeking to ensure success and long-term viability in an increasingly digital world.

2. Research methodology

The research objective is to analyse the impact of digitalization within the context of sustainable businesses. It aims to examine how digital technologies influence and shape businesses striving to be sustainable economically, socially, and environmentally.

To achieve the research objective, a methodological review based on research paper articles was conducted, presenting how the understanding of digitalization as a force of change in terms of sustainable business models is deepened. It involves identifying digital technologies, trends, and practical examples that contribute to achieving sustainability objectives in business. The analysis also covers the challenges and risks associated with digitalization in the context of sustainable businesses, such as cybersecurity, regulation, and ethical considerations. Finally, we will present an outlook on the digital future of sustainable businesses, identifying emerging trends and potential directions for development.

3. Results
3.1. Addressing risks of digitization in sustainable business

Digitalization and sustainability represent two major trends shaping contemporary paradigms in the realms of business and technological development. Digital transformation, while paving the way for efficiency and innovation, calls for a precise and honest value foundation, adding value to sustainability (Arnold, 2021). It is widely recognized as a transformative force for sustainable development, with Sustainable Development Goals (SDGs) globally acknowledged as crucial for inclusive and holistic sustainable development in the digital era (Gupta, 2022).

Digitalization alters the way businesses operate in industrial value chains, through the utilization of Internet of Things (IoT) technologies, intensive data sharing, and predictive analytics (Parida, 2019). State-of-the-art technologies such as IoT and artificial intelligence (AI) have significantly fuelled the development of smart manufacturing, with IoT technologies becoming increasingly prevalent across diverse sectors due to their capability to provide connectivity and intelligence to physical objects (Tao, 2019). This interconnectivity and information exchange capability among devices bring significant benefits in multiple domains, including Industry 4.0, where IoT facilitates real-time automation and monitoring of production processes (Hariharasudan, 2018).

Most businesses are undergoing digitalization in the context of the fourth industrial revolution, termed Industry 4.0 (Kayikci, 2018). The concept of "Industry 4.0" brings numerous benefits for industrial value enhancement, yet associated risks complicate its implementation, with a comprehensive overview lacking (Birkel, 2019). The digital revolution is altering the way people live and work, with the public remaining optimistic about the opportunities Industry 4.0 can offer for sustainability (Ghobakhloo, 2020).

Another area of interest is smart agriculture, where IoT devices are employed for monitoring soil conditions, humidity, temperature, and other critical variables, enabling farmers to make informed decisions for irrigation, fertilization, and harvesting, resulting in increased productivity and sustainability (Xu, 2022). Additionally, in energy management, smart energy management systems utilize IoT to monitor and control energy consumption in buildings and homes, identifying energy-saving opportunities and optimizing the use of energy resources (Pawar, 2020).

In healthcare, IoT contributes to the development of digital health through remote patient monitoring, real-time health data collection, and facilitating communication between patients and healthcare providers (Selvaraj, 2020). The energy sector is closely intertwined with the construction sector, and integrated Information and Communication Technologies (ICT) solutions for efficient energy management that support decision-making at the building, neighbourhood, and city levels are fundamental to creating a smart city (Marinakis, 2018).

The implementation of IoT technologies presents challenges, including issues related to data security, privacy, and the need for interoperability standards among devices (Kumar, 2018). However, advancements in IoT continue to open new possibilities for innovation and efficiency across a wide range of sectors.

Identifying the challenges and risks associated with digitalization in the context of sustainable businesses is crucial for successfully navigating the transition towards greener and more efficient business practices. Digitalization offers many advantages, such as improving operational efficiency and better access to data for decision-making, but it also comes with a host of specific challenges and risks that need to be managed. Thus, cybersecurity and data protection, technology dependency, cost and accessibility, impact on the workforce, ethical and privacy issues, technological sustainability, cybersecurity, and privacy become key elements supporting the integrated development of technological solutions such as the Internet of Things, artificial intelligence, big data, and robotics (Almeida, 2020).

To address these challenges and risks, sustainable businesses must adopt a strategic and well-planned approach, which includes investments in cybersecurity, employee training in digital skills, careful assessment of the technological impact on the environment, and the development of robust ethical policies and practices. By carefully navigating these challenges, businesses can maximize the benefits of digitalization while maintaining their commitment to sustainability.

3.3 Difficulties in implementing sustainable solutions

Integrating sustainability into business development, in a landscape marked by digital advancements, is a central theme in recent research, underscoring the essential role of organizational culture, environmental sustainability, and digitization (Isensee, 2020). However, this journey is not without obstacles, given the variety of difficulties organizations face in implementing sustainable solutions, which can significantly vary depending on the industry, scale, and specific context. Nonetheless, common challenges include high initial costs, limited awareness and education, resistance to change, as well as insufficient legislative and policy frameworks.

Barbosa (2020) emphasizes the need for organizations to exert considerable efforts to navigate this ongoing struggle to maintain or enhance competitiveness, while simultaneously embracing a leadership role in improving the social and environmental impact of human activities. Investing in sustainable solutions, although it may be substantial, especially in the initial phases, represents a fundamental pillar in this direction. Green technologies, such as renewable energies or energy efficiency, although requiring considerable initial capital, promise long-term benefits that surpass initial financial barriers.

A key element in this process is education and increasing awareness. Inadequate stakeholder awareness of the long-term benefits of sustainability constitutes a major barrier, highlighting the need for robust education and awareness campaigns. In this context, resistance to change emerges as another major obstacle, given human predisposition to adhere to traditional ways of operation. Adopting new approaches, which may entail initial efforts or behavioural changes, may thus be met with reluctance.

In the absence of a solid legislative and policy framework that supports and promotes sustainable practices, organizations may find few reasons to deviate from existing approaches. This context is further complicated by technical limitations present in certain areas, requiring innovation and research to overcome existing barriers and make sustainable solutions more accessible and efficient.

Access to resources represents another significant challenge, especially for small and medium-sized enterprises, which may face difficulties in obtaining the funding, technology, and specialized expertise required. Additionally, short-term interests of certain stakeholders may conflict with long-term sustainability objectives, putting pressure on organizations to prioritize short-term profits over investments in sustainable solutions with long-term benefits. A crucial aspect is the scalability of sustainable solutions, which may encounter difficulties in expanding on a larger scale. This highlights the need for an approach that allows for the adaptation and application of sustainable solutions on a wide scale, to have a significant impact on sustainability.

Overcoming these difficulties requires a concerted effort from governments, businesses, communities, and individuals, accompanied by substantial investments in education, technology, and research. By carefully navigating these challenges, organizations can maximize the benefits of integrating sustainability into their business strategies, thereby contributing to a more equitable and sustainable development of society.

3.3. Innovative strategies for mainstreaming sustainability

Sustainable innovation has emerged as an essential catalyst for directing societal changes towards sustainability, as emphasized by Xie (2022). This paradigm shift highlights the crucial role of disruptive technologies and innovations in promoting the evolution of enterprises, as detailed by Fusko (2021). At the core of discussions about innovative strategies for incorporating sustainability into the operational ethos of organizations lies the development and execution of solutions that have the potential to propel societies and organizations towards a state of prosperity. This ambition is aligned with the imperative to protect and manage resources for the benefit of future generations. Among the strategies that exemplify this orientation towards sustainability are circular economy initiatives and renewable energy initiatives. Particularly, strategies related to renewable energy promote the adoption of sustainable energy sources such as solar, wind, and hydro energy as means to reduce dependence on fossil fuels and limit greenhouse gas emissions.

However, achieving these objectives requires companies to focus not only on waste reduction but also on improving their capabilities in waste recovery, recycling, and disposal. An essential component of this effort involves educating end-users, as emphasized by Farooq (2022). Additionally, optimizing resource utilization through the deployment of innovative technologies and processes that enhance efficiency and minimize waste is imperative. This may include adopting advanced technologies for energy efficiency in buildings and industries, along with implementing agricultural practices that are resource-conserving, eco-friendly, and ensure food security, through approaches such as precision agriculture, agroecology, and permaculture.

The successful implementation of these strategies requires collaborative efforts among governments, businesses, non-governmental organizations (NGOs), and citizens to facilitate a smooth and effective transition towards a more sustainable society. These innovative pathways offer promising avenues to confront and mitigate global challenges such as climate change, biodiversity loss, and inequality, while also promoting economic growth and social welfare.

3.4. The digital future of sustainable business

Digitization emerges as a pivotal force driving progress towards the Sustainable Development Goals (SDGs) outlined by the United Nations. Bican (2020) emphasizes its necessity for enterprises to tackle future economic and environmental challenges effectively. However, digitization entails more than technological advancement; it demands a fundamental shift in business operations, as noted by Maffei (2019), who sees it as a catalyst for sustainable production.

Trzaska (2021) expands on this, highlighting the need for strategic approaches to navigate uncertainties in implementing Industry 4.0. Thus, the digital future of sustainable business unfolds as a complex landscape, integrating advanced technologies to promote sustainability.

Moreover, digitization facilitates the integration of sustainable innovations like renewable energy, enhancing their management within business frameworks. Ada (2021) and Velenturf (2020) showcase how digital tools like blockchain support circular energy models, driving the transition towards circular economies.

Digital platforms also play a crucial role, enabling transparent communication on sustainability efforts and fostering stakeholder engagement, as advocated by various

scholars. This accessibility to information, enabled by digitization, contributes to building a more inclusive and sustainable future.

Nevertheless, the risks associated with digitization, notably data security and privacy concerns, must be addressed. Robust cybersecurity measures are essential to mitigate potential vulnerabilities arising from increased digitization.

Overall, the fusion of digitization with sustainability principles presents an arena ripe for innovation and growth in sustainable business. This integration not only promises economic prosperity but also signifies a commitment to social well-being and environmental stewardship.

5. Conclusion

Sustainable businesses must strategically integrate robust cybersecurity measures, digital upskilling, and ethical frameworks to optimize the benefits of digitization while ensuring sustainability. Scalability of sustainable solutions is crucial for substantial impact, requiring collaborative efforts across government, businesses, communities, and individuals, supported by investments in education, technology, and research. These initiatives offer promise in addressing global challenges like climate change and socio-economic disparities while fostering prosperity. However, as businesses embrace digitization, the risks of data security and privacy escalate, necessitating stringent cybersecurity protocols. So, the digital frontier offers opportunities for innovation and growth in sustainable business, aligning economic success with societal well-being and environmental conservation through the synergy of digital expertise and sustainability imperatives.

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THE DEVELOPMENT POSSIBILITIES OF ENVIRONMENTALLY CONSCIOUS OPERATION THROUGH THE EXAMPLE OF THE CITY OF DEBRECEN

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Abstract: *In this research material, I review the energy policy of the municipality of Debrecen today and its impact on the future. Compliance with the Environmental Protection Programs is important for the municipality of Debrecen, in which a new environmental protection policy was developed for the city in addition to the existing ones. At the end of 2023, the city of Debrecen established the Green Working Group, the task of which is to operate an environment-conscious, climate-friendly and family-friendly environment in addition to the structure and operation of companies settling in Debrecen. Recently, the Green Code was created in the city of Debrecen, which envisages a livable environment for the residents so that economic development goals can also be achieved. In my research, I cover the Civaqua program, green urban mobility, the topic of carbon neutrality, and the development of a green approach in Debrecen city management. Since several well-known foreign companies have settled in Debrecen in the past short period (battery factory and its subcontractor groups, automotive factories, etc.), I think it is appropriate to examine the role of the Debrecen Municipality in remedying the situation. The topics mentioned in my presentation regarding Debrecen are the following: waste collection, water use, climate, industrial water supply, air cleanliness, and the examination of the concentration of carbon monoxide in the air.*

1. Introduction

Debrecen, as one of Hungary's most important county seats, created a collection of objectives called the Debrecen Green Code in 2023, which refers to the regulation of the environmental policy of the city of Debrecen (Press Center – KSzD (2024); Profitline, 2024). The basis of the environmental protection program contained in the code was adopted by the government on the meeting of 12.07.2022, and it is also due to this that companies came to Debrecen last year and in 2024, for which it is important to observe/enforce the highest level of environmental protection, and ensuring an environmentally conscious lifestyle in the case of companies. The municipal government of the city of Debrecen was able to implement its current environmental protection measures from its own resources, from funds provided by the European Union and the government.

Since the idea of an environmentally conscious and sustainable city has become stronger by 2024, in this research I would like to review in detail the topic of green energy in the city of Debrecen in the light of climate change and economic development. In order to present the topic in as much detail as possible, I will touch on the Civaqua program, the Debrecen Green Code, the needs and expectations of the companies setting up for environmental protection and environmental awareness.

2. Beginnings

The basis of the environmental protection code of the city of Debrecen was the Green Working Group, which began its operation in 2019 (their first public appearance was in 2020) (EDC, 2024). Even then, the goal of the professionals and researchers participating in the

Working Group was to ensure that the city of Debrecen achieves the application of the green vision as much as possible, and that a safe and healthy environment for the residents of Debrecen is given as much priority as possible. The Green Working Group was also the initiator of the "Future of Debrecen" movement (Dehir, 2021), who undertook to coordinate the environmental protection issues of the city of Debrecen and to organize programs for the people living in Debrecen and its surroundings, with which they can better convey environmental awareness. The Working Group devoted a lot of attention to reaching all age groups of Debrecen residents in some form through events (Nature of Debrecen, etc.) and being able to inform them about current developments. In my opinion, this was an appropriate procedure for the residents to feel the care of the city administration. The municipality also received great recognition during the Civaqua program's idea competition (Debrecen, 2021), as the public's opinion was sought on the developments related to the topic. More than 270 people from Debrecen took part in this idea competition.

Debrecen's accession to the LIFE IP HungAIRy program, which aimed to improve environmental protection and air quality in the region, showed great progress. As part of this series of programs, the "COMPOSTold" campaign (where the residents of Debrecen were drawn to the correct composting options), the distribution of compost bins (where the municipality distributed 7,000 compost bins in 2019) and the "car-free" day (where they asked residents to change cars to public transport, bicycles or walking) (Ökomenedzser, 2022).

3. An overview of greening projects

In the following, I summarize the most significant projects related to greening:

1. "10,000 trees to Debrecen!" In the case of the program called "Future of Debrecen", the municipality announces community tree plantings with the participation of the population of Debrecen, where anyone can go and plant a tree as a result of joint work (Future of Debrecen, 2023). The locations of tree planting are around public areas, residential areas, and institutions in Debrecen. The goal of tree planting is to create a greener Debrecen, and to bind pollution, reduce temperature, optimize humidity, improve air cleanliness, and provide a habitat for birds and insects in terms of shading. So, in my opinion, the goal is to ensure a healthier environment alongside the large companies that settle here. "10,000 trees to Debrecen!" after the project, there are additional goals for tree planting, as the fruit tree planting program also has a beneficial effect on air quality.

2. In the case of the "Community protective afforestation" project, afforestation processes are and have been carried out near the Vértessy manor (Debrecen 2022).

3. The "Civaqua program" was established with great success in the western part of Debrecen, since water is invaluable and indispensable for everyone, and therefore every Debrecen resident considered the realization of this objective a matter of heart (Civaqua Debrecen, 2022). Within the framework of this program, the distribution of residential rainwater collection barrels distributed during the "water is our common treasure" rainwater collection campaign was realized (Dehir, 2023). Within the framework of the program, an inland water reservoir with a water surface of 1.5 hectares was also created in Debrecen.

4. The program is of nature conservation significance, as the water of the Tisza has been successfully diverted to the Tócó River, with which Debrecen's water management can be improved, and Debrecen can make better use of the potential inherent in natural waters.

5. The second phase of the Civaqua program will be the "Water Forest" program, which will greatly contribute to the maintenance of the deployed defense forces (Civishir, 2024). With the continuous water replenishment of the Great Forest, the aim is to restore the original natural flora and fauna, and to increase the groundwater level.

6. "DO NOT mess with the people of Debrecen!" by announcing community garbage collection with the slogan, you eradicated illegal waste disposal sites with the help of community cooperation (Szűcs – Hameczm, 2024).

7. Residents of Újkert, Vénkert and Tócoskert enjoyed the creation of "Community gardens". These gardens give the local residents the opportunity to grow plots of vegetables, fruits and herbs and spices (Debrecen, 2023).

8. In 2023, the LED exchange program was considered an important movement throughout Hungary, which also arrived in Debrecen in the spring of 2023 (Piros, 2023). Within the framework of the program, the population of the city of Debrecen was able to get the required amount of LED lamps for their apartment/house free of charge, which can be used to save energy. In addition to energy savings, the fact that costs can be reduced in households where these LED burners are used cannot be neglected. In the LED replacement program, which will be successfully completed in the spring of 2023, 76,000 LED light bulbs were allocated based on the municipality's database, which will help the energy management of approximately 6,000 households in the future.

9. By using ZÖLD Mozi, they want to achieve the widest possible awareness among the residents of Debrecen by watching movies free of charge. The main focus of each screening is environmental protection, efficient energy management, and the prevention of air pollution (Dehir, 2024).

10. The "Green City Program" has been operating in the city for almost 5 years, where the parks of the housing estates are renovated, the major parks are reconstructed, new public spaces are created, and grassy areas of the housing estates are given new functions for use (Future of Debrecen, 2024). Based on the news reports, 290,000 square meters of green space were renovated, 900 trees were planted as parks, 7 new playgrounds were created in addition to the renovation of the 27 previous playgrounds, and street furniture was installed or renovated where necessary.

4. The importance of the Environmental Control System in the city of Debrecen

To solve the problems, an Environmental Control System (ECS) was created, in which the University of Debrecen helps the city to develop an appropriate environmental policy and draws attention to the preservation of natural values among residents (d2023.hu, 2023). The system examines 4 main environmental factors individually or together. These factors are air, water, soil and biodiversity. The system has 16 measuring stations, which continuously provide data for the system. As can be read in the Urban Environmental Protection Program 2023-2026 of the City of Debrecen County, the monitoring system was established with a center in Debrecen and examines the environmental effects at a regional level, especially in the areas of air quality, water quality, soil, farmland and biodiversity (Szűcs – Hamecz, 2024). One of its key points is maintaining and improving air quality. Since the city of Debrecen is constantly improving road traffic, developing various investments, and changes in the energy structure, the city of Debrecen must constantly pay attention to changes in the structure of air pollution sources.

The KER's objectives include outlining and measuring the factors that play a role in improving the quality of life. The main goal is to exclude negative effects and strengthen positive effects (unideb.hu, 2023).

5. Elements of the implementation of a livable environment

JövőMűhely podium discussions were started by the Future of Debrecen, where a presenter always discusses the environmental protection and technology topics with experts relevant to the given topic. This was aimed at informing the residents and passing on information (haon.hu, 2024). In addition to the University of Debrecen, the Hajdú-Bihar County Chamber of Commerce and Industry and the Hajdú-Bihar County Chapter of VOSZ also participate in the podium discussions and help entrepreneurs and residents understand the topic.

In the area of environmental awareness, the city has introduced a lot of innovations in the past period, with which they intend to reduce the environmental burden. The most important of these are the following (Debrecen2023, 2024):

- introduction of electrical devices into the operation of the settlement: An environmentally conscious approach is also important when carrying out works in public spaces. The city is constantly using newer and newer electronic devices for the maintenance of public green areas. The tools that are still in operation in the settlement operation are, for example, litter collection, grass cutting, park care and park maintenance work, etc. The amount of harmful emissions, air pollution and noise pollution can also be reduced by using these devices.
- installation of waste containers with sensors: The garbage collection process can be optimized with this waste collection. By installing the sensors, the waste handlers can monitor the saturation of the bins, and if necessary, the amount of emptying of the bins can be changed. With the help of the sensors, the frequency of emptying can be optimized, and the transport routes can also be redesigned (this can also reduce air load and energy consumption).
- paperless administration in the case of park maintenance and public cleaning works: The e-Papír application was introduced to manage general matters, where customers can manage their affairs online with the relevant bodies. During the internal case management of the office, the biggest task is the documentation and administration of the cases. Electronic processing takes place automatically in the electronic case initiation system. Of course, based on the law on electronic administration, customers must also be given the option of paper-based administration if required (EDC, 2023). As a result, full electronic case management is not possible in the offices (it is only possible to introduce partial case management)
- creating a green cadastre: The establishment of the green cadastre helps the administration of the life course of trees and their care. The future goal with the cadastre is to create a geospatial register of the city's green space.
- urban afforestation and protective afforestation: Based on the planning plan, the afforestation of areas belonging to the protection zone or the supply of trees to public parks is currently being implemented. With this urban tree planting, they were able to create "green corridors". With the establishment of protective afforestation, approximately 4,000 horticultural trees and 50,000 shrubs were planted in the north-western and southern parts of Debrecen in 2023 and in the first half of 2024, with the possibility of sequestering 76 tons of carbon dioxide and approximately 356 tons of dust based on calculations. (Szűcs – Hamecz, 2024). Of course, with the planting of trees, based on calculations, it is also possible to produce an additional 51 tons of oxygen.
- In order to create a livable environment, the "10,000 trees to Debrecen" program was also established in 2019, where 10,000 trees will be planted in different parts of Debrecen over 5 years with the involvement of the population.
- continuous replacement of the local bus fleet: In 2009, the entire bus fleet will be replaced with more modern (EURO 5) buses. 10% of the replaced buses were already converted to electric buses, while the remaining 90% remained in diesel operation. As a result of the development, in 2022 buses with an environmental protection classification of EURO6 were purchased. In 2022, 40 low-floor buses were put into service, and in 2023, 39, with this development the entire solo bus fleet was renewed (dkv.hu, 2024).. According to plans, another 40 full-floor articulated buses will be replaced in 2024. The innovations reduced fuel consumption by almost a quarter (900,000 liters of fuel were saved in 2023), which reduced carbon dioxide emissions by 2,500 tons, according to calculations. This value can be considered good, since 230,000 tons of carbon dioxide emissions come from Debrecen's traffic, which must be continuously reduced not only by Hungary, but by the entire European Union member states. Based on European Union regulations, the goal is to phase out traditional cars/buses/vehicles with internal combustion engines and replace them with more environmentally friendly solutions, naturally at an affordable price. These efforts are also supported by the fact that one of the parts manufacturing groups of BMW has settled in the city of Debrecen, which will produce batteries, electric cars, and the parts necessary for cars (sensors, electrical housings, battery parts, automotive parts, etc.) in the future. The greater

penetration of electric cars in transport would also be more important, as electric cars play a relevant role in reducing greenhouse gas emissions (Europar, 2019).
- development of residential communities with the help of panel programs: Since there are continuous regulations regarding the use of gas boilers in the European Union, continuous development is also necessary in the case of panel houses. According to EU regulations, gas boilers can no longer be installed in 2030, while all gas boilers will be taken out of operation by 2040.
- The replacement of windows and the thermal insulation of the facade and slab can also help optimize the energy management of panel buildings and save energy (based on calculations, the energy savings of panel buildings can be reduced by 18-20%).
- improving the energy efficiency of public lighting: Based on data from the Debrecen Municipality, approximately 25,000 lamps provide public lighting, with an energy consumption of around 8.4 million kW (Table 1).

Table 1: Electricity consumers in Debrecen in 2022

Designation	The year is 2023
All lamps (pcs)	25 113
Annual burning time (hours/year)	3 990
Built-in power (kW)	1 612
Street lighting energy demand (kWh/year)	6 432 846

Source: Own editing based on data from the Debrecen municipality

Since an environmentally friendly solution is also necessary in this area, it is also necessary to modernize the entire street lighting. Within the framework of the LED replacement program, it is expected that 6,000 lamps will be replaced with LED designs, which will achieve a reduction of 700 tons of carbon dioxide emissions per year (material savings can be HUF 800 million, which can be considered good in the case of the current HUF 2.43 billion expenditure). In the summer of 2023, nearly 3,000 LEDs were already replaced, which has already reduced the amount of maintenance costs.
- LED replacement program for the public: The organization of energy management is also important for Debrecen households, in which the city can and was able to help by participating and participating in the Residential LED replacement program after 2023 and in 2024 (Debrecen, 2024). Within the framework of the program, in order to improve the energy efficiency of households, traditional light bulbs can be replaced with LED light sources, which can lead to significant energy savings (thereby also reducing the amount of the residential electricity bill).
The plan to minimize the emission of harmful substances in traffic can also be considered a major milestone, where the environment is improved by the introduction of green transport. The goal with the introduction of green city mobility is to reduce the emissions of transport pollutants throughout the entire life cycle of transport elements. The goal in the future is to involve as many residents as possible in public transport in their daily lives. In order to achieve this goal, the city continuously expands the length of bicycle paths and improves their quality. The smart creation and operation of city bicycle storage facilities facilitates the storage of bicycles.
In the case of businesses settling in Debrecen, it is also expected that they burden their environment as little as possible. The BMW factory, which is currently still in the installation phase, is paying attention to meeting international and, of course, Debrecen expectations, as it plans to operate in a carbon-neutral manner. The factory plans to operate with the introduction of fully renewable energy sources into energy management, for which purpose the construction of a solar park is underway in the factory area. As a future goal, the factory also plans to use geothermal energy, but research is only now being conducted in this regard.

It is important for both Hungary and Debrecen that energy dependence on external energy players is minimal. The aim should be to rely on the potential of renewable energy sources in the case of energy sources necessary for maintenance. A shift towards local energy sources can lead to a reduction in the amount of dependence. The city of Debrecen also sees the possibilities of solar energy, and to this end, it has created a 24 megawatt solar park next to the Debrecen airport (on 52 hectares). This amount can cover the annual electricity needs of approximately 15,000 households, which can reduce carbon dioxide emissions by 33,000 tons annually in the future.

By studying current electricity consumers, it can be seen that in 2022 residential consumers accounted for nearly 90% of the amount of electricity, while industry accounted for 2% (Table 2).

Table 2: Electricity consumers in Debrecen in 2022

Type of consumers	Quantity (pieces)	Share (%)
Residential	116 931	92,25%
Communal	862	0,68%
Industrial	2 527	1,99%
Agricultural	177	0,14%
Other	6 251	4,93%
Altogether	**126 748**	**100,00%**

Source: My own editing based on the KSH – OSAP 1058 report

Table 3: Electricity consumers in Debrecen in 2022

Type of consumers	Electricity provided (1000 kWh)
Residential	216 012
Communal	45 938
Industrial	324 480
Agricultural	2 589
Public lighting	8 282
Other	159 683
Altogether	**756 984**

- Residential
- Communal
- Industrial
- Agricultural
- Public lighting
- Other

21,09% 28,54%
0,34% 1,09%
6,07%
42,86%
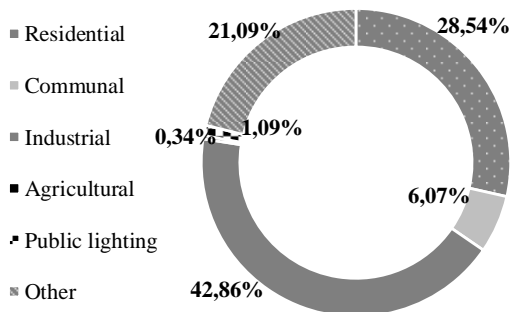
Source: My own editing based on the KSH – OSAP 1058 report

In Table 3, I collected the quantities supplied from electricity according to the types of consumers.

These rates remained the same for 2023, with the difference that industrial electricity consumption increased from 2% to nearly 3.5%. According to forecasts, by 2024 this value may rise to 5% thanks to the large companies that are moving in.

It can be seen that, in the case of examining the quantities, we get different ratios compared to Table 2 as a result. Industry accounted for 43%, while the population accounted for nearly 30% of the amount of electricity supplied in 2022.

6. Future actions

In the next phase of the Civaqua program, the applicants want to implement a solar park and the associated operation management system.

In order to improve water management, the management also targeted the replenishment of water in the Mézeshegy lake system and Lake Vekeri, as this would enable safer operation. With this effort, it will be possible to create a sustainable situation even in extreme weather situations.

Future plans also include the creation of another green corridor, which would play a major role in the water ring surrounding the city.

One of the key elements of creating a green Debrecen is the development of bicycle paths, and the partial or complete transfer of car traffic to bicycle (or other alternative) options. In order to achieve this goal, the city aimed to create "Green Váltók", which means that a parking space will be created for cars, where it would be possible to reach the destination in several ways: transfer to public transport, bicycle rental, electric car charging points provision for an additional cost, placement of parcel pick-up points, and other services.

In order to identify sources of air pollution and to reduce the level of air pollution, the city intends to establish an air quality measurement network in the near future. The reason for this is that there are continuous investments in the city (which create a cloud of dust during construction), road transport and industrial investments, which increase the concentration of dust in the air. Residential burning, traffic and agricultural work also play a significant role in the emission of air pollutants. The release of air pollutants from traffic into the air can be reduced by traffic organization measures and the introduction of changes to the traffic order, which can be considered continuous in the city (reduction of traffic through the city by creating a ring road, modernization of public transport, efficient development of sustainable public transport, expansion of cycle paths, etc.). Of course, air cleanliness is also helped by the previously mentioned urban afforestation and protective afforestation

In order to improve air quality, the Sustainable City Mobility Plan 2.0 was created in Debrecen in 2023, which was named SUMP. In the framework of this program, the sustainable development of the transport system of the city and surrounding settlements was targeted. The aim of this program is to create a more efficient transport organization while taking into account the needs of companies settling in Debrecen. The SUMP program is a great help in reducing noise pollution and air pollution, reducing traffic jams, and improving the quality of urban traffic.

In order to improve air quality, the city of Debrecen is also working on setting up the complex system "LevegŐr", which helps the Environmental Control System by making the composition and source of air pollutants identifiable. This system aims to measure air quality as the main point, with which they want to help improve the quality of life of the population and organize the maintenance of a more livable environment.

Transformations involving the introduction of renewable energy sources in energy production and residential heating can also result in significant changes. By establishing an air quality measurement network, it is possible to control the increase in the amount of pollutants entering the air.

By providing free bicycle racks, the city is waiting for the arrival of the cycling enthusiast. However, it is important to take into account that car transport can only be persuaded to achieve a greener workplace if
- while charging the electric car, you can reach your workplace with a bicycle or some other means of public transport (so while the car is being charged, you can reach your destination by bicycle or public transport),
- near the parking space, it is possible to use public transport at a discounted rate,
- the parking lot is controlled and safe,
- etc.

Future improvements can also be expected in public transport, as the replacement of the bus fleet has been ongoing in recent years, and the goal for the introduction of new buses is to have a more favorable environmental classification. It must be taken into account that public transport can only improve by increasing the proportion of vehicles with alternative drives. Their operation takes place from the energy produced by the recently established solar parks for the electric buses.

The fact that they want to establish a solar park in two places in the western part of Debrecen with the support of the government can also be considered an additional development project. In order to partially cover the energy needs of the South Industrial Park, a solar park with a capacity of 10.85 MW and 19.18 MW is planned. Part of the energy produced is also intended to cover the charging of electric buses and trolleybuses. Of course, the amount of

energy produced will be stored in batteries. These solar parks will have an environmentally friendly design, which will fit into the urban environment, and since it will be realized by increasing green space, the air quality will also improve.

7. In conclusion

It can also be seen in this summary study that the main goal of the Debrecen city government is to maintain the existing green areas in Debrecen, to create new green areas, and by organizing various programs (events), they want to help the residents of Debrecen to think about efficient energy and environmental management. All of the greening programs aimed to preserve the environment of the city of Debrecen and further green it. As a result of greening, the green landscaped area at the Bear statue in downtown Debrecen was born in 2023 after the construction of an underground parking lot. The greening has been greatly advanced to 2023-2024. annual community tree plantings, in which 10,000 trees are/were planted in Debrecen with community cooperation.

By processing environmental protection problems and raising environmental awareness, the municipality aims to create a community in Debrecen that has sufficient knowledge and infrastructure to solve Debrecen's problems.

The city of Debrecen also played an important role in environmental education by creating environmentally friendly infrastructure, bicycle paths, nature trails, and recreation parks.

The material also summarizes the programs that can help create a healthy environment in the city of Debrecen. In order to achieve this goal, continuous recreational and infrastructural development of public areas, housing estates and busy roads is needed in Debrecen, which the current Debrecen administration is trying to solve as efficiently as possible. All of the currently ongoing programs aim to create a more environmentally conscious, climate-friendly environment and a higher quality of life. All of the businesses that settle in the city of Debrecen support the economic development goals defined/formulated by the municipality and the Future of Debrecen.

By implementing future plans, it will be possible to create a higher quality of life and a healthy environment.

Based on the information described in the research material, it can be concluded that the Sustainable Urban Mobility Plan (SUMP) of the County City of Debrecen is leading Debrecen on the right path towards development. The material of this plan is the first in Hungary to contain a series of measures that comply with European Union directives and best reflect the implementation of the transport strategy.

It is also clear from the measures taken by the city of Debrecen that the city is developing in accordance with the environmental protection program in Hungary. With the thinking and actions represented by the city of Debrecen, the city contributes to the reduction of air pollution, the optimal use of fuel in public transport, and the achievement of climate, energy and environmental goals.

We can also see the application of an improvement strategy in the energy management of the city of Debrecen, as the city of Debrecen, in cooperation with the MVM, developed a solar power park on the outskirts of Debrecen last year. With the built-up solar park, the carbon dioxide emissions of Hungary and Debrecen can be reduced, environmental benefits can be created and thus we contribute to the continuation of the green approach, and the energy dependence of the city of Debrecen is also reduced.

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THE HUNGARIAN TOURISM AND HOSPITALITY SECTOR IN THE MIRROR OF THE CRISES

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Abstract: *The economic impact of the tourism and hospitality sector as an economic system is partly general, similar to other sectors of the economy, and partly specific. At the same time, the sector is a major driving force for macro-economies, with positive effects on various sectors of the economy. Based on an analysis of current statistical data, the study formulates the characteristics of the sector: the share of hotels and restaurants in GDP, the revenue from accommodation fees of commercial accommodation establishments, the evolution of the turnover of guests in commercial accommodation establishments, the average gross monthly earnings of employed persons, etc. Analysing the data for the period under review, 2008-2021, we can see that Hungary started to see some growth in employment and average gross earnings after 2010, but still lagging behind the targets set in 2005. In line with international trends, tourism in Hungary has developed positively in several areas by 2019, reaching or exceeding pre-2008 crisis levels, with overall growth in the sector exceeding the national economy average. However, the sector's performance was also significantly affected by the sharp decline caused by Covid-19 and the war situation in 2022. The aim of the analysis is to present the impact of the international financial crisis starting in 2008 and the Covid-19 epidemic in March 2020, to compare the effects of the two crises on GDP, labour market factors, with a special focus on the accommodation and food services sector.*

Keywords: crisis, tourism and hospitality, GDP, employment, COVID-19

JEL Classification: G12, G15, G32

1. Introduction

Tourism has been a dominant and dynamically growing economic sector worldwide in recent decades. Its importance is recognised and supported by an increasing number of governments. It is also at the heart of EU support policies, such as rural conservation, rural tourism development, environmental measures, etc. The sector is of strategic importance for the Hungarian economy in terms of GDP generation, balance of payments and employment.

The performance of the tourism sector is influenced by a combination of factors. The change is positive if the regular personal income in society increases, if the currency of the country is stable, if employment increases and if the economy grows. On the negative side, tourism growth is affected by a decline in production, stagnating wages, a fluctuating exchange rate, the declining purchasing power of the currency, and various force majeure events (war, natural disasters, etc.).

The study presents the impact of the international financial crisis that started in 2008 and the Covid 19 epidemic that started in March 2020, the evolution of the main economic indicators such as GDP, balance of payments, inflation, employment and wages, the exchange rate of the forint, and in particular the indicators of the accommodation and food

services sector, such as the number of nights spent, the number of commercial accommodation establishments, the revenue from accommodation fees, in both crises.

The important differences between the two crises should also be highlighted. While the 2008 global economic crisis mainly affected the economy, living standards and credit, the Covid-19 epidemic first drastically restricted people's freedom of movement - within a short period of time - and then spread to almost all areas of life. From the outset, the accommodation and catering sector was hardest hit, with entrepreneurs making redundancies and taking forced leave to cushion the significant fall in demand.

The crisis caused by the coronavirus will be behind us by the summer of 2023, but there are still serious repercussions in many areas of the economy, such as an increase in the budget deficit, a fall in industrial production, inflation that is still very high by European standards, a significant weakening of the forint (even if it strengthens for a short period), a fall in consumption, etc. However, we do not wish to go into a deeper analysis of the causal links between the economic situation, which is still ongoing today, and the extent to which the economic situation is a result of the virus and the extent to which it is the result of internal economic processes, measures or external events.

2. Material and method

The international financial crisis has affected all European countries and has also affected the performance of the tourism and hospitality sector, so the statistical data from 2007 to 2022 are used as the database for this research. We have not sought to interpret the concepts related to the subject, but have adopted the terms and categories used in the literature, e.g. tourism-catering, accommodation-catering, tourism, etc.

In addition to the literature on the subject, the main sources used in the research were statistical data published by the Central Statistical Office and the publicly available database of the MNB.

3. Crises and their characteristics

Economic crises and recessions have been a natural part of economic processes for centuries. During economic crises, there is a decline in many areas of the economy, but mainly in macroeconomic indicators such as GDP, employment and industrial production.

The 2008 crisis has had a major impact on the economy and hence on changes in the living standards of the population. The crisis in the US credit and real estate markets was transformed first into a global financial crisis and then into a global economic crisis (Losonczi, 2008). Starting in the United States, the events led to a globalisation-induced economic interdependence, which resulted in a recession that spread, with some delay, throughout the world (Losoncz, 2008).

The Covid-19 epidemic broke out in China at the end of 2019, and by spring 2020 it had spread to almost all countries, plunging the world into an unprecedented health, social and economic 'emergency', with Hungary also experiencing serious disruption. The travel and tourism sector is one of the most affected, with demand globally, regionally and even locally significantly reduced, sometimes completely halted, due to extremely strict travel restrictions such as border closures, closure of restaurants, hotels and entertainment venues. The main features of the two crises are summarised in Table 1.

Table 1: Crises and their effects in Hungary

2008-2009	2020-2021
Trigger: the US credit crisis **Consequence:** global financial crisis, then global economic crisis, economic recession	**Trigger:** outbreak of Covid-19 **Consequence:** restrictions on free movement of people, closure of borders
- Increase in the cost of credit, rise in interest rates, collapse of foreign currency loans - Fall in real estate prices - Decline in economic growth (Hungary 3.4%, 7th worst in EU) - Increase in unemployment - Fall in living standards, by income groups - Weakening of the forint exchange rate ***Tourism and hospitality:*** - Reducing service prices (e.g. accommodation) - Decrease in inbound tourism, already in 2008 - Low wages - Tourism and catering sector only moderately affected ***General:*** - Measures vary by country, region, slow growth	- Panic buying initially - Serious disruption to health care - Inflation (food, real estate, etc.), interest rate freeze - Labour shortages in several sectors - Despite rising wage costs, real wages fall - Drastic weakening of the forint exchange rate ***Tourism and hospitality:*** - Price increase - Non-payment of wage subsidies - Closures for a few months, even permanently - Drastic wave of redundancies, migration to other sectors ***General*** - Sharp downturn, recession, slow economic growth

Source: based on own research data, edited by the authors.

4. Results and their evaluation (for example)

One important measure of the impact of the crisis on economic performance is the change in GDP. The data in Table 1 show a significant fall in GDP in 2009 and an increase from 2010 onwards. The performance of hotels and restaurants shows a continuous decline from 2008 to 2013. While GDP growth slowed down in 2020 to only 2%, the performance of hotels and restaurants fell dramatically to 65% of the previous year's level. In 2021, it reached its pre-crisis level of 2019. The sector's share of GDP fell from 1.9% in 2009 to 1.3% in 2020.

Table 2: Performance of hotels and restaurants, GDP share, GDP growth rate (2007-2022)

Year	Accommodation and food service activities at current prices, HUF million	Accommodation and food service activities previous year=100%	GDP at current prices, million HUF	GDP growth rate previous year=100%	Share of GDP
2007	450 829		22 142		2,0
2008	*446 373*	0,99	23 346	1,05	1,9
2009	*437 836*	0,98	22 548	0,97	1,9
2010	*414 280*	0,95	23 332	1,03	1,8
2011	*401 150*	0,97	24 285	1,04	1,7
2012	*378 408*	0,94	24 409	1,01	1,6

2013	***379 477***	1,00	25 632	1,05	1,5
2014	456 892	1,20	27 718	1,08	1,6
2015	482 965	1,06	29 459	1,06	1,6
2016	501 282	1,04	30 714	1,04	1,6
2017	599 937	1,20	33 309	1,08	1,8
2018	698 230	1,16	36 642	1,10	1,9
2019	791 514	1,13	40 267	1,10	2,0
2020	***513 397***	***0,65***	40 886	1,02	**1,3**
2021	748 642	1,46	**46 716**	1,14	1,6
2022	1 126 492	1,50	56 053	1,20	2,0

Source: KSH, 2024

At the economy-wide level, employment increased from 3.83 million in 2008 to 4.63 million in 2023, with a small decrease in 2020 and 2021(Table 2). The global economic crisis that started in 2008 left its mark on unemployment for almost 5 years, fluctuating around 416-470 thousand people. This negative increase was halted from 2013. Overall, the number of unemployed fell from 416.6 thousand in 2009 to 157.9 thousand in 2019, with a renewed increase in the period of the Covid19 crisis. Employment in the accommodation and food services sector grew slowly between 2009 and 2016, but has been falling steadily since 2017. Nearly 182 thousand people were employed in 2022, 12.4 thousand more than a year earlier, but down from 193.4 thousand before the epidemic. Although the number and proportion of vacancies has decreased somewhat, the shortage of skilled labour remains a serious problem in the sector. An emigration process has started in these years, with many people looking for work abroad or in other sectors due to low wages (Ms Béres, 2021). In 2023, employment levels will not reach the pre-crisis levels of 2019.

Table 3: Economic activity of the working age population

Year	Employed, thousand thousand persons	Unemployed, thousand persons	Unemployme nt rate, %	Employmen t rate, %	Accommodati on and food service activities thousand persons	Change previous year=100 %
2009	3 831,4	416,6	9,8	59,8	157,2	1,0
2010	3 811,4	468,4	10,9	59,6	154,2	0,98
2011	3 833,0	464,5	10,8	60,3	165,2	1,07
2012	3 886,8	470,3	10,8	61,6	168,0	1,02
2013	3 963,8	438,2	10,0	63,3	164,7	0,98
2014	4 155,1	341,1	7,6	67,2	173,2	1,05
2015	4 275,8	306,4	6,7	68,3	189,0	1,09
2016	4 403,7	232,7	5,0	70,9	200,8	1,06
2017	4 489,3	190,6	4,1	71,5	195,5	0,97

2018	4 527,7	171,0	3,6	72,8	185,9	0,95
2019	4 568,5	157,9	3,3	72,2	193,4	1,04
2020	4 518,6	196,1	4,2	71,9	176,9	0,91
2021	4 535,4	192,6	4,1	73,1	169,4	0,96
2022	4 609,1	174,0	3,6	73,3	181,8	1,07
2023	4 626,2	199,9	4,1	73,8	179,5	0,99

Source: KSH, 2023

According to Fekete-Fábián and colleagues (2022), after the prolonged crisis of 2008, the prolonged decline in the number of registered jobseekers was largely due to market developments and to public policies (e.g. the expansion of public employment, large public investments, etc.), and this positive process lasted practically until the outbreak of the epidemic.

The reduction in employment caused by quarantine would also have been greater if workers in certain occupations and sectors had not been able to switch to remote, usually home-based, work. According to research by Köllő and colleagues (2021), most jobs were lost in services including hospitality and tourism, despite the fact that the number of workers not actually working but not laid off was much higher than average and the number of workers working from home was very high. If this option had not been available to workers, it would certainly have resulted in double-digit employment losses.

The crisis has significantly increased already high income inequalities (Köllő et al., 2021; Barizsné et al., 2021). The job loss rate was much higher among lower educated groups, who were more likely to be exposed to deep poverty, than among graduates.

Average gross earnings in the national economy increased by nearly 2.6 times between 2009 and 2022, to 2.62 times in the accommodation services sector. In 2022, wages in this sector will still be 62.3% of the national average, below the pre-crisis level of 2019 (65.1%). While the annual increase in the average gross wage in the national economy (297,017 HUF) is slightly above 10% from 2017 onwards, the sector will see a 14% increase, but the dynamics will slow down in the following years, with wage growth exceeding 20% only in 2022, which will mean a gross monthly wage in the sector of 321,462 HUF.
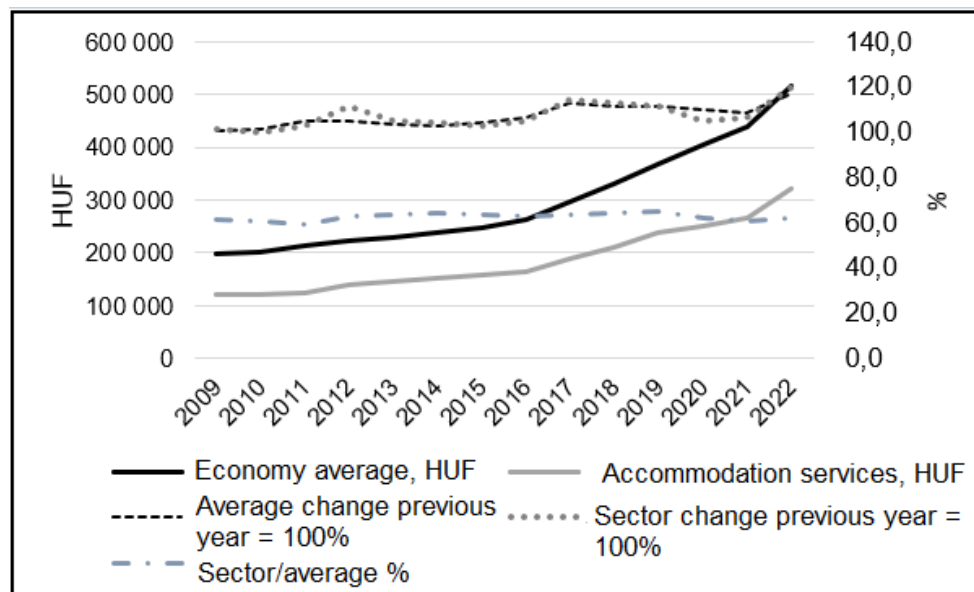
Figure 1: Evolution and share of average gross earnings in the national economy and in the accommodation and food services sector

Source: KSH, 2023

The data in Figure 2 show that the number of nights spent in accommodation fell by only a few percent during the global economic crisis, and after 2010 it has steadily increased to pre-crisis levels. The tourism balance has been rising steadily, with minor bumps, between 2011 and 2019. At the same time, the number of overnight stays has increased significantly year on year, and the epidemic has caused a major disruption in this process.

Looking separately at the number of nights spent by foreign and domestic visitors, again there was a decline in both by 2009, with a larger decline for foreign nights. In 2020, both domestic and foreign nights show a significant decline, due to travel and hosting restrictions. The decline was much larger for nights spent by foreign guests.
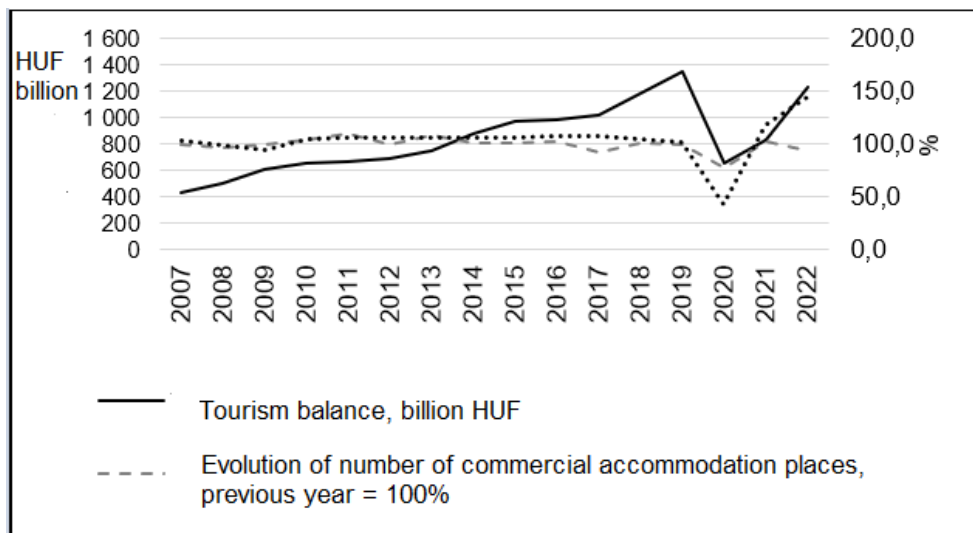
Figure 2: Main data of accommodation and food services
Source: KSH, 2023

In addition to the increase in the number of overnight stays and the number of guests, the continuous weakening of the HUF also played a role in the steady rise in accommodation revenues. In 2020, the performance of the accommodation and hospitality sector declined dramatically due to the already known restrictive measures.

5.Conclusions

Both crises caused a downturn in the sector, but the impact of the measures to control the epidemic, which also restricted free movement, was much greater than that of the global economic crisis. In addition, the two crisis periods affected domestic and foreign tourist travel differently. The 2008 crisis hit Hungary later, so the fall in foreign tourism occurred earlier than the fall in domestic tourism, but the decline was similar.

The 2020 crisis affected foreign tourism almost immediately and to a much greater extent. From a territorial perspective, while the global economic crisis did not have any major losers in tourism, Budapest was the biggest loser in the Covid crisis.

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THE IMPACT OF THE AGE OF THE OF TRANSPORT TRUCKS ON THE LEVEL OF POLLUTION. A STUDY CASE ON THE DEVELOPMENT REGIONS OF ROMANIA

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Abstract: *Efforts made by the European Commission to reduce the consumption of fossil fuels and implicitly the dependence on the import from Russia in the context of the current war in Ukraine, are becoming more and more significant. Road freight transport is among the sectors that use a significant amount of fossil fuel and which implicitly also release a large amount of greenhouse gases into the atmosphere. The purpose of the research is to analyze using a generous sample of 9167 cars that only carry out road transport of goods, the willingness of transport companies to reduce fossil fuel consumption through voluntary measures and to align with industry regulations.*

Keywords: renewable energy, road freight transport, economic efficiency

JEL Classification: *R12, R41, Q52, Q42*

1. Introduction

Global warming, climate change, the depletion of fossil fuel reserves and recently, the war in Ukraine, have determined the development of various strategies at the global, European, and national level to reduce consumption and implicitly the dependence on such resources. The road freight transport is an economic sector that is deeply dependent on conventional fuels. If in the case of small passenger cars, there is an alternative: hybrid or electric engines, in the case of vehicles for the road freight transport these alternatives have not yet proven their feasibility on a large scale. Today, when reducing dependence on imported energy resources is a well-defined goal for each country, an in-depth analysis of this situation is paramount.

Our paper aims to find and review the main factors that determine the reduction of the consumption of fossil fuels in the field of road freight transport. Given the large number of factors exerting an influence on global demand side, our analysis will be limited to only those we consider the most important.

The premise we start from is the following: a freight transport vehicle, the newer it is, the less fuel it will consume and, implicitly, it will have lower gas emissions (Duan, S et al., 2023), but at the same time, the company that purchased it will be able to adapt more easily to any restrictive regulations aiming to reduce the level of pollution.

As part of the Paris Agreement, the EC proposed the reduction of greenhouse gas emissions by up to 55% by 2030. It its worth mentioning that the transport activity is responsible for 29% of the total CO_2 emissions results as well as the fact that, in most EU member states (European Commission, 2019), these emissions have decreased in almost all sectors, the exception being made by the transport sector which shows increases, even

twice as high in some countries (European Parliament, Revision on the Eurovignette Directive).

In early '70s, along with the intensification of globalization, the transport sector began to play an increasingly important role in the economy (Kovac, I. et al., 2020). The European Parliament together with the European Council, as co-legislator, through Directive 1999/62/EC (European Parlament, Transport CO_2 emissions in focus) introduced a charging system for heavy-duty vehicles for the use of certain infrastructures, called Euro vignette. This directive was part of the environmental policies (Kovac, I. et al., 2020), (Moliner, E. et. al., 2013), being established according to the level of atmospheric and noise pollution generated by the motor vehicle (Moliner, E. et. al., 2013). One of the criteria based on which such taxes are established is the year of manufacture of the motor vehicle.

Over the last decades, technology has evolved so much that even alternative fuel vehicles appeared on the market and their production and commercialization are highly supported by financial incentives and regulations. For example, the European Union (EU) adopted and is implementing the European Green Deal (EGD) - a strategy concerning "the ecological transition, focusing on climate protection and biodiversity conservation, towards a sustainable development" (Florea A.G. et al., 2022). One of the directions towards reaching green transition and climate neutrality concern transports duet to the greener mobility aim: by 2030 the carbon emissions have to be lowered by 55% for cars and 50% for vans, with a target of zero emissions for new cars and vans by 2035 (European Commission, 2019). The need to replace old vehicles, with high consumption of used fuels, with newer, less polluting ones is given primarily by the high greenhouse gases emissions and air pollution, which this sector is responsible for (Alali, L. et al., 2022); (Zhang, R. et al., 2022), but also the predictable risk of exhausting the resources of such fuels.

The fast changing economic, technological and environmental conditions imposed the businesses to adapt, and the current paper's concern regards the influential factors implied in fleet renewal decision making across the road freight transport companies. These aspects are largely researched (Yang, QP. Et al., 2009); (Loxton, R. et al., 2912); (Feng, Y. et. Al., 2014); (Sierzchula,W. et al., 2014); (Jaller, M. et al., 2020) due to the interest for fleet renewal of various stakeholders: suppliers who are interested in promoting and selling their products; regulators and public institutions interested in meeting the goals set by public institutions; environmentalists interested in protecting the environment by lowering carbon emissions and finding more harmless alternatives; economists interested in reducing the limited resources' depletion and also in stabilizing general prices which are directly impacted by fuel prices; but innovation in this field is usually more expensive, and even more, it is not always appealing, and easy to accept and implement. Therefore, since the possibility to replace the internal combustion engine vehicles with more ecological alternatives became more available, the interest shift to the main reasons determining the purchase of electric car (Mau, D. et al., 2018), and to the willingness to replace the transport fleet with alternative fuel vehicles (Nesbitt, K. et al., 1998); (Pelletier, S. et al., 2019); (Zhang, Y.et. al., 2019) – proving that the main drivers for purchasing electric vehicles were the curiosity of testing new technologies, the aim to lower the negative impact on the environment, governmental incentives and grants, and also improving s public image of electric car buyers (Sierzchula,W. et al., 2014).

2. Materials and Methods

The first objective aims to review the number of new vehicles purchased in each development region of Romania in the timeframe 2001-2022.

Through the second objective, we propose to analyze a sample of 9,167 vehicles intended exclusively for road freight transport, whose maximum permissible laden weigh exceeds 7.5 tons, divided by the eight development regions of Romania. Thus, we propose to highlight how old the Romanian freight vehicle fleet is by each development region: Bucharest-Ilfov, Center, North-East, North-West, South-East, South-Muntenia, South-West Oltenia, and

West. The purpose of this stage of the re-search is to validate the hypothesis according to which the older the cars are, the high-er their fuel consumption, therefore resulting in a major negative impact primarily on the environment and on dependence on fossil fuels.

3. Results

In the period of reference (2002-2021), there were 671,221 new registrations of road freight vehicles at national level. The largest share, i.e. 49.42% of the total number of new registrations, was in Bucharest-Ilfov development region, followed by the Center development region (9.64%), almost similar to North-West development region share (9.49%). The South-Muntenia region is middle-ranked with a share of 7.37% of the total number of new vehicle registrations. The lowest rates in terms of new freight vehicle registrations in Romania in the period 2002-2021 (31,447 vehicles) is recorded in the South-West Oltenia with a share of 4.68%.

According to Figure 1, most acquisitions of road freight vehicles over the reference period, i.e. 2002-2021, took place in the Bucharest-Ilfov development region. It is worth mentioning that most purchases were made in 2007 and 2008, and after the onset of the economic crisis, the number decreased. As from 2013, freight vehicle purchase trend went upward, with the exception of 2020, but even in 2021 the number of vehicle acquisitions did not reach the sales peak year 2007. As for the other development regions of Romania, one can notice that the purchase of such vehicles is significantly lower in all the years reviewed, with no significant increases over the years.
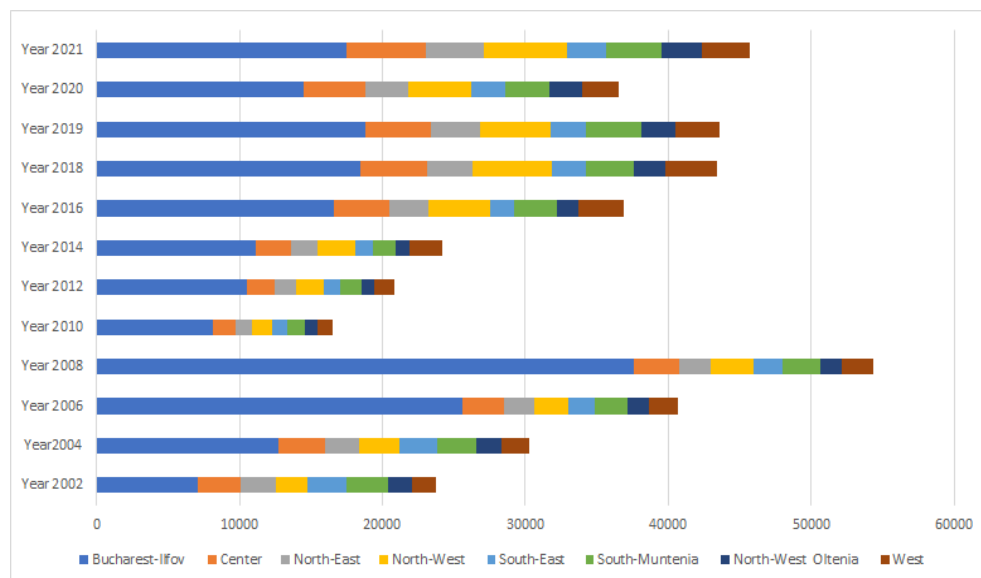
Figure 1. Evolution of new freight vehicle registrations in macro-regions in Romania over the period 2002-2021
Source: Chart developed by the authors based on the data provided by INSSE

As one can notice in the Figure 2 below, most vehicles intended for road freight transport in Romania were manufactured in the period 2007-2016. At a closer look at the state of play in the South-East, South-Muntenia or South-Oltenia region, we can even state that most were manufactured in 2007, therefore being 16 years old. Another aspect resulting from the analysis is the large fluctuation in terms of manufacturing year, except for the North-West region, which registers the newest vehicles of all regions.

The increased transport tariffs in EU MS applied for road freight services become attractive for Romanian companies, which is why those transport companies located in the vicinity the

Romanian borders tend to provide most of their transport services to foreign companies. Of course, such EU MS also have high standards that Romanian transport companies should meet.

We can also notice the same phenomenon in the case of freight vehicles in the North East development region, these being vehicles that perform freight road transport services to and from countries such as Poland, Slovenia, and Slovakia.
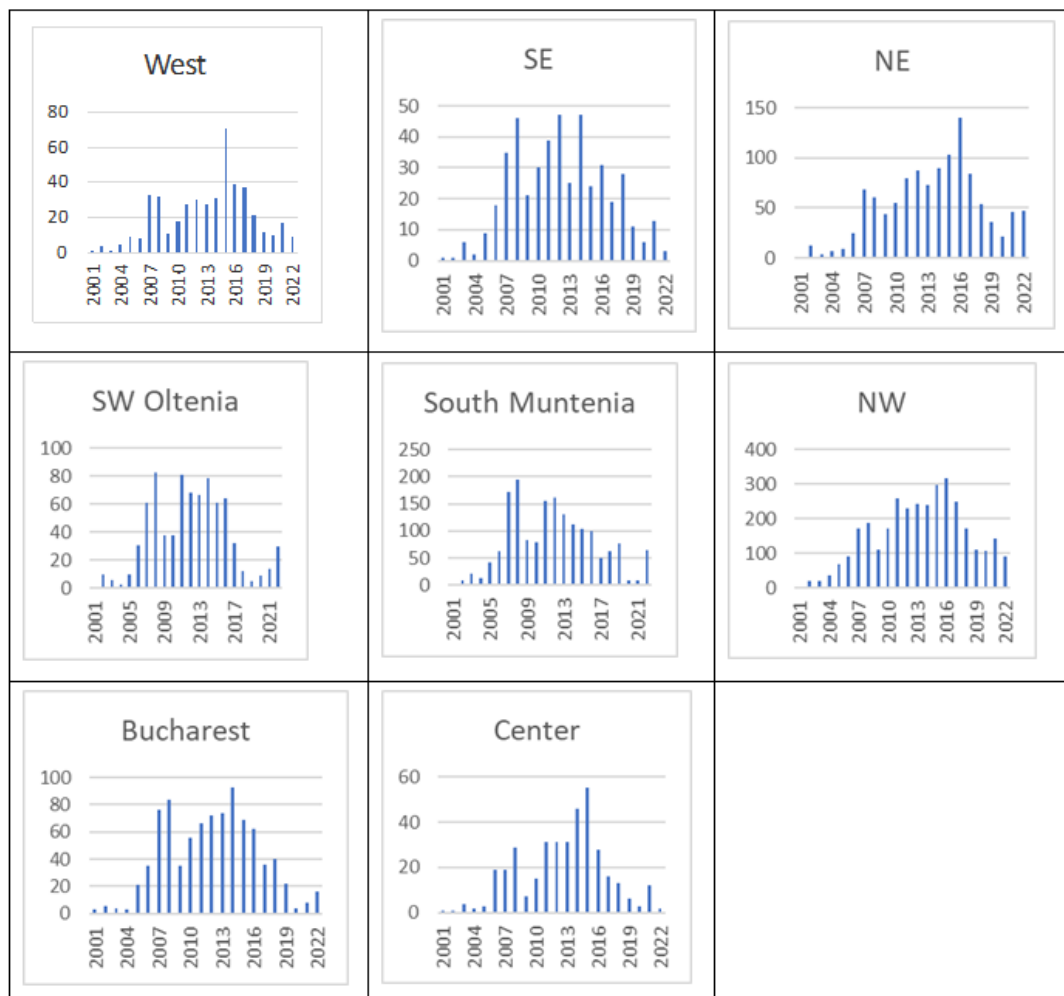
Figure 2. Analysis of the road freight transport vehicle fleet in Romania in the eight development regions, by year of manufacture.
Source: Authors' calculations based on a sample of 9,167 road freight vehicles with maximum permissible laden weigh of > 7.5 tons

Following the analysis, we carried out, this paper presents the state of play of freight transport vehicles in Romania, distributed among the eight development regions, and exposes how the evolution of selected factors determined the decision to renew the freight vehicle fleet, in the transport sector in Romania. Thus, the aim of this paper was achieved by analyzing the availability of transport companies to reduce fossil fuels consumption through voluntary measures, and to align with the new regulations in this domain.

Therefore, the results of our research based on the previously set objectives are the following:

With regard the analysis of the evolution of the purchase of new road freight vehicles in Romania, one can notice that most purchases of road freight transport vehicles in the timeframe concerned i.e. 2002-2021, took place in the Bucharest-Ilfov development region, with a share of 49.42% of the total number of new vehicle registrations. By opposition, the South-West Oltenia region recorded a share of only 4.68% of the total registrations. It should be noted that, overall, most vehicles were purchased in 2007 and 2008, and after the onset of the economic crisis, the registration number decreased.

4. Conclusion

While reviewing the situation in a case of a sample of 9,167 road freight vehicles whose maximum permissible laden weigh exceeds 7.5 tons and which, one can state the fact that the condition of the current road freight vehicle fleet in Romania, from the point of view of the year of manufacture, distributed by development region is specific to an ageing fleet. The working hypothesis according to which the older the vehicles are, the higher their fuel consumption has been validated, being substantiated by the fact that, should one looks at the condition of vehicles in the South-East, South-Muntenia or South-Oltenia region, one can even say that most vehicles were manufactured in 2007, so they are approximately 16 years old. This trigger a major negative impact, primarily on the environment, as well as in terms of the dependence on fossil fuels.

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TRANSPORT INFRASTRUCTURE DEVELOPMENT AND ECONOMIC GROWTH IN THE EUROPEAN UNION

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Abstract: *Transport infrastructure has a strategic importance in the social and economic development of countries. From Antiquity to the present day, transport infrastructure has aimed to facilitate freedom of movement, and access to goods, services, and information. Investments in the development of transport infrastructure led to economic growth, the development of trade, the increase of national and regional competitiveness, as well as the increase of the well-being of the population. The purpose of this article is to analyze the contribution that transport infrastructure manifests to the economic growth of European Union countries. Through this article we aim to explore the correlation between public expenditures on transport infrastructure and economic growth, using the data available in the Eurostat database. The obtained results confirm the hypothesis that, indeed, public spending on transport infrastructure contributes significantly to the economic growth of EU states. The main conclusion of the study carried out in this article supports the need for investments in the modernization and maintenance of the transport infrastructure to enhance sustainable economic growth and the well-being of the population.*

Keywords: *transport infrastructure; economic development; transport policies.*

JEL Classification: *F63; F68; L92*.

1. Introduction

Transport infrastructure is an essential element of economic activities by increasing the movement of goods, training the workforce, encouraging private investment and trade, increasing the mobility of people, and facilitating access to education, jobs, and health services. Investments in the development of transport infrastructure have been a key point in all stages of the socio-economic development of countries, with each government establishing a policy related to the development of the transport sector.

Since the transport system is seen as an essential social and economic asset, investments in the development of transport infrastructure represent an important share of public expenditure. It is thus noted that the transport infrastructure does not only have a macroeconomic, commercial, and competitive impact but has a much wider important contribution, being correlated and influencing multiple economic sectors, from public administration and budget policy to the educational system and the labor market, to the real estate sector and the business environment, to environmental policy and inclusion, even redefining the social role of the population.

The result of investments in the development of transport infrastructure has been economic growth, the development of trade, an increase in national and regional competitiveness, as

well as an increase in the well-being of the population. The purpose of this article is to analyze the contribution that transport infrastructure has made to the economic growth of European Union (EU) countries.

In this article we aim to expand the existing literature on this subject, our objective being to explore the correlation that is established between public spending on transport infrastructure and economic growth in EU states. Using the data available in the Eurostat database, we started with the hypothesis that public expenditures in the transport sector determine the economic growth of EU countries.

The paper is structured as follows. After the introduction of the topic, the paper presents the literature review related to the impact of the transport infrastructure on economic development. The third section presents the data and methodology used in the empirical study. The next section presents the results, and the final part of this paper is dedicated to the conclusions of our research.

2. Literature review

The importance of investments in the transport sector and their influence on the economy has been debated in multiple studies over the years, their conclusions suggesting the existence of a link between the development of transport infrastructure and regional and national economic growth.

Investments in infrastructure represent an important category of national budgets, affecting the distribution of national financial resources. From this point of view, Barro (1990) and Myrdal (1969) evaluate investments in public services as productive government spending and a boost to economic growth. On the other hand, other researchers refer to the crowding-out effect and indicate in their works the idea that increasing government spending could slow down the economy by reducing private sector investment (Mahmoudzadeh, Sadeghi & Sadeghi, 2013; Landau, 1983; Cameron, 1982; Buiter, 1976).

Herranz-Loncan (2007) studies infrastructure in Spain, his results confirming the existence of a positive correlation between transport infrastructure and economic development, and Cascetta et al. (2020) report an Italian GDP growth of 2.6% over 10 years. Similar results were obtained by Saidi, Shahbaz, and Akhtar (2018) for countries in the Middle East and North Africa Region. Also, Alotaibi et al. (2022) observe that the accessibility of transport infrastructure has positive and significant effects on Saudi Arabia's GDP growth.

Several authors have turned their attention to the case of China, which has registered impressive economic development in recent decades (Morrison, 2019), determined by the multiple economic reforms adopted, but also by investments in transport infrastructure (Wang, Kim & Kim, 2021). The results obtained from the research carried out support the hypothesis that the infrastructure in the transport sector is a determining factor of economic development and growth in China (D´emurger, 2001; Zhou et al., 2007; Song & van Geenhuizen, 2014; Li et al., 2018). However, Yu et al. (2012) show that China's transport infrastructure does not independently drive economic growth in underdeveloped regions, thus suggesting the need for collaboration between different economic sectors and the need to adopt congruent policies to ensure economic growth.

The causal relationship between transport infrastructure and economic development has been studied in various specialist works, the results reflecting the fact that transport stimulates economic growth (Pradhan, 2010; Pradhan & Bagchi, 2013; Bahrami, 2012; Sahoo et al., 2012), while other authors have found that economic development promotes the growth of transport (Keho & Echui, 2011; Maparu, & Mazumder, 2017), and other studies conclude that there is a mutual influence, i.e. there is a reciprocal cause-effect interaction between transport and economic development (Njoku, et al., 2015; Saidi & Hammami, 2017).

However, in the literature, some authors contradict the previously mentioned studies through the results they obtained in their research. Kustepeli et al. (2012) observed that

there are no long-run relationships between investment in transport infrastructure, economic growth, and international trade in Turkey. The results obtained by Bhunia (2011) reflect an insignificant positive influence on transport infrastructure and economic growth in India.

The study by Park et al. (2019) on the role of transport in the economic development of OECD and non-OECD states shows the increased importance of maritime transport in ensuring economic growth compared to air and land transport, and the fact that air and land transport are often irrelevant or negatively affect economic growth, especially in developing countries. Also, the results obtained by Crescenzi and Rodriguez-Pose (2012) support the existence of a low correlation between transport infrastructure and regional growth in the EU.

Studies by Munnell (1992), Ghosh & Meagher (2004), and Liu & Zhou (2006) conclude that infrastructure significantly influences the economic performance of countries. The influence of transport infrastructure on economic growth is realized in expanding labor productivity, reducing transport costs and increasing efficiency, industrial concentration, and changing aggregate market demand (Pradhan & Bagchi, 2013; Gunasekera et al., 2008; Baldwin & Forslid, 2000). These results are confirmed by Meersman & Nazemzadeh (2017) in the case of Belgium, and Zhang & Cheng (2023) in the case of Great Britain. Agnusdei (2022) argues the importance of transport infrastructure for food security in the agri-food sector in Italy, as well as in improving the economic performance of companies, also emphasizing the importance of regional economic desolation.

At the same time, Serven & Calderon (2004) show that underinvestment in infrastructure is correlated with recession in developed European states, such as Greece, Spain, Portugal, and Ireland, but also with poverty in developing states. However, Virag et al. (2022) studied the relationship between transport infrastructure and well-being in a sample of 172 countries and found that high mobility expressed in terms of distances traveled, and transport infrastructure increases well-being, but only up to a certain point.

Jacobs-Crisioni et al. (2016) analyze the impact of transport infrastructure on the reduction of territorial disparities in Austria, the Czech Republic, Germany, and Poland, the results obtained reflect the influence of urbanization and changes in population numbers and the role of infrastructure in territorial cohesion.

Limani (2018) studies the contribution of transport to GDP growth in developed economies (USA, EU-27, Canada, New Zealand, Russia, China, and Japan), the results obtained reflect the fact that infrastructure investments are not the main cause of economic development. Bottasso & Conti (2010) analyze the impact of transport infrastructure on industrial production and note that regulatory barriers can reduce the productive impact of transport infrastructure, especially in industries that depend on logistics and transport services.

Maciulyte-Sniukiene & Butkus (2022) the impact of different types of infrastructure on the economic growth of EU countries, the results obtained reflecting the positive correlation between transport infrastructure, ICT infrastructure, public utility infrastructure, and economic growth. However, only ICT infrastructure and electricity generation infrastructure have a significant influence on economic growth.

Alvarez-San Jaime et al. (2021) study the effects of cooperation and coordination of rail and air infrastructure in the case of Spain and show that cooperation has positive effects on welfare by reducing transport costs, increasing traffic, reducing congestion and transport time, developing competitiveness, and increasing welfare.

Rehman et al. (2022) investigate the impact of the BRI project and demonstrate that transport infrastructure, along with institutional quality, human capital quality, trade intensity, domestic investment, foreign aid, and GDP per capita, lead to an increase in foreign direct investment in regions from Asia, Europe, Africa, and the Middle East. However, Chen & Li (2021) obtained different results, showing that Central and West Asian countries had a significant increase in GDP, employment, and economic welfare, while the economic impact

of transport infrastructure in the countries of Central and Western Europe was relatively minor.

From the previously mentioned studies, a divergence of the results obtained by the authors can be noted. It is clear that there is a causal relationship between transport infrastructure and economic growth, but the degree of correlation and its intensity differ depending on pre-existing economic conditions. Results identified in the specialized literature suggest the importance of adopting congruent socio-economic policies to ensure sustainable, resilient, and inclusive economic growth, especially in underdeveloped regions (Sehleanu et al., 2021).

Based on the bibliography presented above, our study starts from the idea that in EU countries investments in transport infrastructure influence economic growth. The formulated research hypothesis is presented as follows:

H1: Public spending in the transport sector determines the economic growth of EU countries.

3. Research methodology

In this article, we aimed to empirically investigate the relationship between public spending in the transport sector and the economic growth of EU countries. In this sense, we have collected the data published by Eurostat regarding the public expenditures in the transport sector (CHt) and the Gross Domestic Product per inhabitant (GDPc) for the period 2002-2022. Public expenditure in the transport sector (CHt) was determined by summing it up for each country and is expressed in millions of euros, and the Gross Domestic Product per capita (GDPpc) was considered the average of the 27 countries and is expressed in euros/resident in current prices.

We aim to analyze the influence that CHt has on EU economic growth, expressed by GDPpc. As a result, we studied the correlation that is established between the two variables by calculating both the Pearson and the Spearman coefficient which is much more relevant in the case of smaller data samples. The econometric analysis was carried out using SPSS software.

In the next step, we set out to see if CHt represents a significant predictor for the evolution of GDPpc. In this sense, we considered GDPpc as the dependent variable and CHt as the independent variable in the following regression equation:

$$GDPpc_t = \alpha + \beta * CH_t \qquad (1)$$

Where:
GDPpc = Gross Domestic Product per capita
α = the intercept
β = coefficient of the independent variable
CH = public expenditures in the transport sector
t=time

4. Empirical results

Descriptive statistics (Table 1) show a homogeneous sample, with each variable having 21 entries for each year considered in the analysis. The median value of GDPpc is 25990.2833 with a standard deviation of 5023.69301 and a normal distribution (the values of skewness and kurtosis are less than ± 1.0). In the case of CHt, the median value is 250354.0095, and the standard deviation is 44339.49075, presenting an approximately normal distribution (the values of Skewness and Kurtosis are less than ± 1.0).

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
GDPpc	21	18071.85	37458.00	25990.2833	5023.69301	.459	.501	-.037	.972
CHt	21	171806.60	353348.50	250354.0095	44339.49075	.466	.501	.723	.972
Valid N (listwise)	21								

Source: authors's own computation by using SPSS software

The results obtained after determining the Person and Spearman coefficient support the existence of a strong and significant correlation (p < 1%) between the two variables (Table 2 and Table 3).

Table 2. Person Correlation

		PIBc	CHt
PIBc	Pearson Correlation	1	.960[**]
	Sig. (2-tailed)		.000
	N	21	21
CHt	Pearson Correlation	.960[**]	1
	Sig. (2-tailed)	.000	
	N	21	21

[**]. Correlation is significant at the 0.01 level (2-tailed).
Source: authors's own computation by using SPSS software

Table 3. Spearman Correlation

			PIBc	CHt
Spearman's rho	PIBc	Correlation Coefficient	1.000	.918[**]
		Sig. (2-tailed)	.	.000
		N	21	21
	CHt	Correlation Coefficient	.918[**]	1.000
		Sig. (2-tailed)	.000	.
		N	21	21

[**]. Correlation is significant at the 0.01 level (2-tailed).
Source: authors's own computation by using SPSS software

The results of the econometric modeling of the hypothesis that CHt represents a significant predictor for the evolution of GDPpc reflect the fact that the model is valid and partially significant, with R Square = 92.10% and adjusted R Square = 91.70% (Table 4). However, CHt are a significant predictor for EU economic growth (p value is less than 1%) (Table 5).

Table 5. Empirical results [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1236.792	1851.958		-.668	.512
	CHt	.109	.007	.960	14.920	.000

a. Dependent Variable: PIBc

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.960ᵃ	.921	.917	1445.40785

a. Predictors: (Constant), CHt

Source: authors's own computation by using SPSS software

The analysis of the evolution of public expenditures made in the period 2002-2022 by the EU countries reflects their growth, especially in the Eastern European countries and the Baltic countries of the European Union. The upward trend is also noted in the case of the evolution of GDP per capita, with the largest increases also being recorded in the Baltic and Eastern EU countries.

The econometric study carried out to determine how public spending in the transport sector influences economic growth in EU countries reflects the significant correlation between the two variables. It was demonstrated that public expenditures in the transport sector are significant predictors of the Gross Domestic Product per inhabitant in the case of the EU. The results obtained are similar to those presented in the specialized literature and support the importance of transport infrastructure in ensuring economic growth and increasing the well-being of the population.

5. Conclusion

Numerous studies in the literature show that transport infrastructure contributes to economic development and the well-being of the population. Given the liberalization of the market, transport infrastructure plays an important role in stimulating international trade and thereby increasing a country's competitiveness. These results can be a starting point for decision-makers, who need to understand the "big picture" of the importance of transport infrastructure investments.

The increase in transport infrastructure is the result of questionable investments, because the decision to develop infrastructure usually falls under the responsibility of the public administration, and therefore the allocation of public funds is always subject to controversial discussions. Therefore, there will always be debate over the spending of public funds and how they further an economic or social purpose.

The empirical results reflect the importance of transport infrastructure in the economic growth of the EU and the development of transport infrastructure significantly influences the gross domestic product per inhabitant. These results support the importance of investments in the modernization and maintenance of the existing transport infrastructure to support the free movement of goods, services, and people, an aspect that facilitates the development of the business environment and implicitly can also increase the influence and economy of countries.

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THE IMPACT OF SOCIO-ECONOMIC FACTORS AND INEQUALITIES ON LABOUR MARKET OPPORTUNITIES

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Abstract: *In both developing and developed countries of the world, including Hungary, there are significant inequalities in both health status and the spatial distribution of the health system. Regional inequalities are a major challenge, as areas and regions that are disadvantaged are less able to develop and the people living there have fewer opportunities for economic advancement and better living conditions. Widely discussed in the literature that socio-economic status has a significant impact on the health status of a society. Economic and territorial disparities can be found within a municipality, a county, a region, a country, or even across Europe. In our study, we examine territorial and social inequalities in Hungary, with a special focus on economic, educational and health inequalities. We wanted to answer the question of how these factors might affect the lifestyle and labour market opportunities of the population. In this study, we use data from various sources and databases to illustrate the socio-economic differences and their effects in different regions. Research shows that the demographic situation, together with the ageing of societies, has a significant impact on countries' social security systems, pension systems and health care. Projections in the more advanced EU Member States show an increase in the proportion of people aged eighty-five and over by 2020. Higher educational attainment enhances an individual's social skills, abilities and capabilities and promotes a healthier lifestyle by managing risks more consciously. Various surveys show that only 50% of high school graduates rate their health as good or particularly good, while for those with tertiary education the figure is close to 75%. There is a direct correlation between income and health status. In poor countries in particular, there is a clear link between income levels and mortality rates. Higher income is often associated with better health. In most EU countries, poor people are much more likely to have poor or extremely poor health.*

Keywords: *regional inequalities; lifestyle; equal opportunities;*

Introduction

In Both developing and developed countries of the world, including Hungary, there are significant inequalities in both health status and the spatial distribution of the health system (Horkai, 2021).
Territorial inequalities are a major challenge, as areas and regions that are disadvantaged find it harder to develop and the people living there have fewer opportunities and chances for economic advancement and better living conditions.
These differences can arise from a variety of causes, including economic structure, the labour market, the education system, employment, industrial investment, other infrastructure and policy choices. This makes the study of regional inequalities an essential and important question of where, when and in what direction inequalities are changing. (Dusek, Lukács & Rácz, I. 2014).
Economic and territorial disparities can be found within a municipality, a county, a region, a country, or even across Europe. (Nagy, 2009; Nemes, 2017). Table 1 shows the two poles of the settlement system in the spatial inequality dimension system. The columns of the table

show the dimensions of inequality and the rows the characteristics of the settlement systems. These dimensions help to understand and distinguish the differences between large cities and small villages in terms of territorial disparities.

Table 1: Two poles of the settlement system in the territorial inequality dimension

Inequality dimension	Big city	Tiny village
Location	Central	Peripheral location
Quantities	People	Small
Qualities	Advanced	Retrieved from
Structure	Tagged	Homogeneous
Role	Multifunctional	Lack of functionality
Contacts	Contact	Isolated
Relationships	Managing	Dependent

Source: Nemes N. J. (2017). Spaces, places, regions

The European economic and social space is highly fragmented. Data published by the European Commission (Figure 1) show that there are significant differences in unemployment rates between European countries. The perception of the health status of the low-educated (Figure 2) may also be an important factor in the differences between countries.
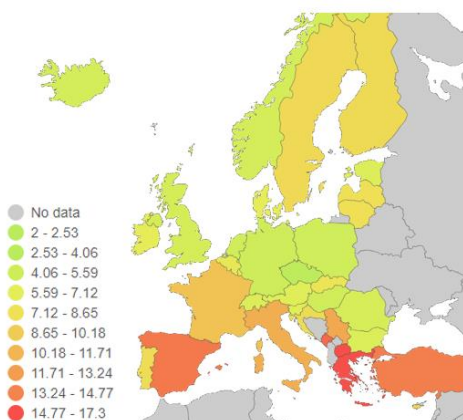
Figure 1: Unemployment rate (15-74 years)
Source : https://webgate.ec.europa.eu/dyna/echi/
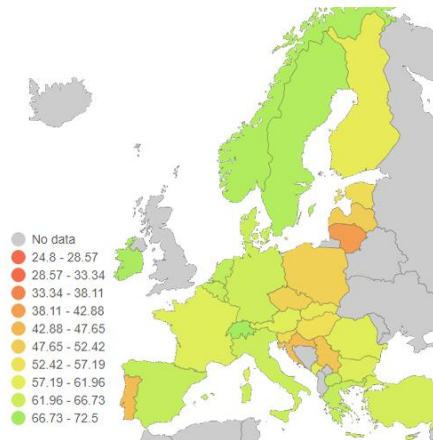
Figure 2: Percentage of people with low educational attainment who rate their health as very good or good
Source : https://webgate.ec.europa.eu/dyna/echi/

Table 2 shows life expectancy at birth for the total population with low, medium and high education in the EU average, Hungary and Romania in 2017.

Table 2: Life expectancy at birth by educational attainment

	EU average	Hungary	Romania
Life expectancy at birth - Total population with low educational attainment	76,5	72	72,6
Life expectancy at birth - Total population with secondary education	79	76,3	74,9
Life expectancy at birth - Highly educated total population	81,2	79,1	76,2

Source: https://webgate.ec.europa.eu/dyna/echi/

The results show that there is a strong correlation between educational attainment and health status, with the health status of those with low educational attainment generally being worse than that of those with higher attainment, mainly because the higher the level of education and the wider the range of convertible skills, the more options individuals have in shaping their lifestyle.

Territorial health inequalities

The links between health and social well-being are widely studied in the international and national literature. The 1980 Black Report highlighted factors that influence health, such as income, housing, employment, gender and ethnicity. Health and the socio-economic environment are constantly changing, so it is important to monitor changes in health determinants. At the 6th World Conference on Health Promotion in Bangkok in 2005, other factors such as inequalities within and between countries, global environmental change and urbanisation were highlighted (Garaj & Novák, 2020).
Effective population-based interventions that reduce spatial health inequalities are being tried worldwide (Frohlich & Potvin, 2008). Adler and Stewart (2010), in their study on socio-economic status and health, have shown the links between poverty and health and the evidence of the relationship between socio-economic and health. Their results show that improvements in education, income, occupation or wealth are associated with better health outcomes. Spatial disparities in health can be examined between countries, between regions or counties within a country, or even within a municipality/city. In their research, Cutler and Lleras-Muney (2010) investigated possible explanations for the relationship between educational attainment and health behaviour using data from two different countries. The main reason for the differences in health outcomes is differences in health behaviour. Health behaviour is the subject of a number of studies. Their research used data from the National Health Interview Survey (NHIS) database. The results show that more educated people earn more than less educated people, and that these differences in earnings can affect their health. In the surveys, people with lower incomes regularly report that time and money are the main barriers to accessing medical care. Our health is determined by our macro- and micro-environment, the social structure and social sensitivity of our society, as well as our personal relationships and inherited traits. Most research has focused on the relationship between social status and health. The reason for this is that social class provides information about an individual's lifestyle and standard of living, as well as other aspects of their social position in society (education, housing, income, home and work environment) (Garaj & Novák, 2020).

Economic and social differences in Hungary

The most significant territorial disparities in Hungary are between the eastern and western regions. In general, the western parts, especially Budapest and its surroundings, are economically more developed, with higher living standards and better labour market opportunities. In contrast, people living in the East face higher unemployment, lower wages and less developed infrastructure. Within Hungary, the Northern Great Plain region, and within it the Szabolcs-Szatmár-Bereg county, have the worst indicators. Over the last decade and a half, Hungary has also tried to improve the level of development and the income situation of individuals in different regions and counties through a number of programmes and initiatives (Pintér & Dobó, 2023).

Despite territorial disparities and existing centre-periphery differences, the indicators of Hungarian regions have improved in many respects over the past few years (Sági & Engelberth, 2018).

It is widely discussed in the literature that socio-economic status has a significant impact on the health status of a society. This suggests that those living in more favourable socio-economic circumstances are more likely to achieve better health. This is also true from the other perspective, health status also affects the social position of individuals. It can be argued that higher levels of education are often associated with a better quality of life and a healthier lifestyle.

Győri's (2022) results show that there is a close relationship between different dimensions of socioeconomic status and health statusin Hungarian society, as previous international research has shown elsewhere. Generally speaking, wealth and highest level of educational attainment alone have a significant influence on lifestyle, and thus on health status. The fact that people with a better socio-economic situation and higher education levels are less likely to suffer from long-lasting diseases confirms the importance of human capital's pursuit of healthy lifestyles.

The first of the economic indicators that radically influence lifestyle is the unemployment rate, which varies significantly between regions. The central and western regions have lower unemployment rates, while the eastern regions have higher rates. As shown in Figure 3, the Northern Plain region has had the highest employment rates in all years since 2013, i.e. the worst employment rate.
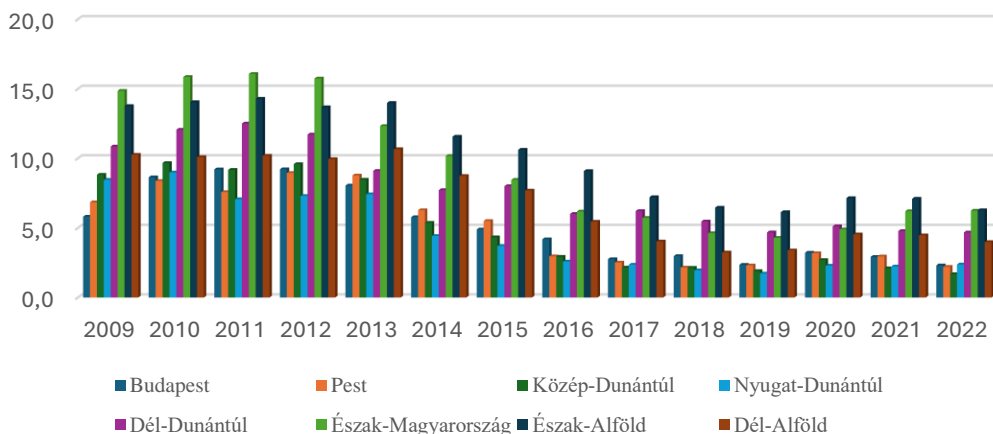
Figure 3: Unemployment rate by region
Source: Labour Force Survey, KSH

Looking further at the data (Figure 4), we can see that there are significant differences in unemployment rates within the Northern Great Plain region and, as a result, a stagnation in the regions' unemployment rates. It can be said that the county of Szabolcs-Szatmár-Bereg has consistently had the highest unemployment rate.
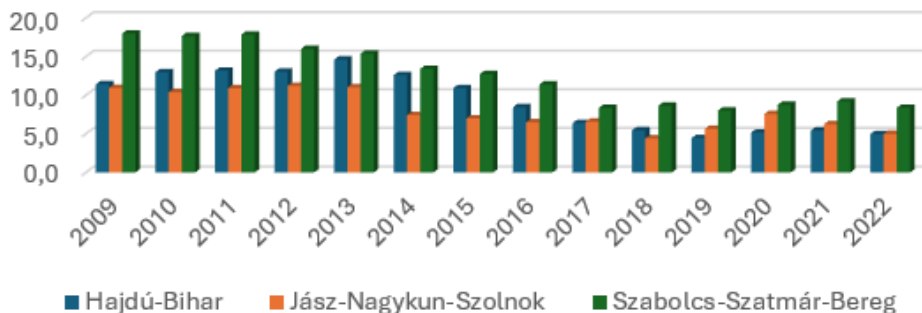
Figure 4: Unemployment rate in the Northern Great Plain region
Source: Labour Force Survey, KSH

Education is another important determinant of territorial development, so it is also worth monitoring inequality trends here (János et al. 2018). The education level of the population is linked to a number of demographic and health factors, which causes significant inequalities between social and territorial groups, which are marked in some regions (Graetz et al., 2018). Research shows that levels of educational attainment are closely linked to the economic growth, competitiveness and productivity performance of countries and regions, as well as to regional disparities (Krueger–Lindahl, 2001; Sahlberg, 2006; Czaller, 2016). Data from Hungary show that although education indicators show a reduction in inequalities (János et al. 2018; Sánta, 2015), inequalities are still significant. The KSH data on school enrolment show that there are significant differences between the national average and the school enrolment indicators of Szabolcs-Szatmár-Bereg county, which justify and predict the disadvantaged situation. In Szabolcs county, the number of women and men with both school-leaving qualifications and higher education is lower than the national average. These differences in educational attainment can play an important role not only in the economic opportunities and social development of the regions concerned, but also in the personal lives of the people concerned. Beyond the issue of educational inequalities, the spatial distribution of disadvantaged pupils is an important issue. The study of disadvantaged children is a priority area in both education and health (Kovács & Mercz-Madarassy, 2022). According to the pedagogical approach, socio-culturally disadvantaged refers to "the economic, social and cultural conditions that place a certain proportion of pupils in a disadvantaged position in relation to the majority in terms of progress at school" (Fejes, 2006). A number of reasons and circumstances are used to classify a region, a community or an individual as disadvantaged. The causes of disadvantage include parental education and existential security, family stability, number of dependants, minority ethnicity and differences in residence (Páskunné, 2010), the extent of which and the means to address them are defined by legislation.

Demographic data

Statistical data from recent years show that life expectancy at birth is increasing in developed countries, including Hungary (Figure 5), and the number of older people in the population is also increasing. This suggests that we are part of a society whose age structure is increasingly shifting towards older age groups. Social ageing, which is the increase in the proportion of older people in the population and the decrease in the proportion of younger people in the population, is a generally prominent demographic phenomenon in developing countries in the 21st century. The recent demographic literature draws attention to the fact that traditional demographic indicators are limited and do not adequately reflect the extent and dynamics of ageing and its social and economic consequences. Traditional calculations do not take sufficient account of improvements in mortality and health; the relationship

between age and employment; or changes in the age structure of income generation and consumption, all of which influence the consequences of ageing (Vargha, 2015).

This demographic trend has also created a number of challenges in Hungary, particularly in the functioning of health and social care systems. The growing number of older people means an increased burden and need for development. This is true for health services, in particular for the treatment of age-related diseases and long-term care, which requires on the one hand the expansion of the capacity of health and social care systems and the adaptation of policies to the needs of an ageing population. In addition, population ageing poses challenges for labour markets and economic sustainability as the working-age population declines.

Characteristics of the health status of the Hungarian population

The European Core Health Indicators database provides the results of population health surveys, providing relevant and comparable information on health at European level. An analysis of the survey indicators shows where we rank in terms of regional health inequalities in Europe.
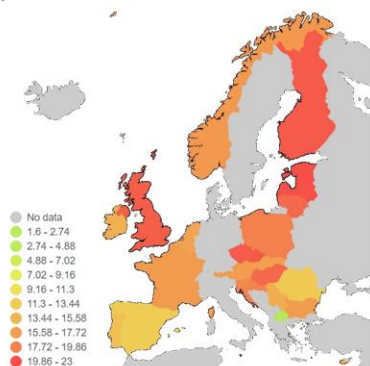
Figure 5: Proportion of adults (18+) with secondary education who are obese, i.e. have a body mass index (BMI) >= 30 kg/m
Source :
https://webgate.ec.europa.eu/dyna/echi/?indlist=52

Figure 6: Proportion of adults with a high level of education (18+) who are obese, i.e. have a body mass index (BMI) >= 30 kg/m²
Source :
https://webgate.ec.europa.eu/dyna/echi/?indlist=52

The health of the population is influenced by several factors. According to the WHO, health determinants are the set of personal, social, economic and environmental factors that influence the expected healthy life expectancy of individuals and populations. The determinants of health are multiple and interrelated (Vitrai & Borenszki-Gutási, 2022).

The health status of the Hungarian population is nowadays rather poor by international standards, even though the statistics of recent years show some encouraging changes. It is clear that the health status of the population is below the level that would be possible given our general level of social and economic development. This is due to a number of historical, social, economic and cultural factors, but is directly and decisively linked to the lifestyle of the population.

The growing range of diseases is a cross-cutting problem for society as a whole. Lifestyle, habits, harmful addictions, etc. play a major role in their development, which is why prevention is very important, not only as a health issue but also as a social issue.

Garaj and Novák (2020) summarise the main determinants of health policy as life expectancy, education, employment and income.

In their study, Varga and Karner (2008:25) summarised the challenges that a person's health status can pose in different areas of life and how it affects other people.

1. **Effect of illness on the sick individual:** when sick, the individual's quality of life deteriorates and he/she cannot perform his/her job as efficiently.
2. **Impact of illness on the patient's environment:**

– **Impact on the family:** the family may be seriously challenged by a significant reduction or even loss of income due to the illness, especially if the patient is the breadwinner. In addition, family members often have to mobilise considerable financial resources to recover.
– **Impact on the workplace:** caring for the patient takes time and energy away from their working hours. This also reduces their income. For the employer, the lack of staff will lead to a loss of productivity, which is likely to contribute to increased costs.
– **Impact on the State:** for the State, the patient is no longer a potential contributor and taxpayer, but rather a care recipient, a social cost.

In the following, we can highlight research findings that have explored the subjective perception of the individuals' own health status, but still examined the social impact. Previous research has found a positive correlation between income and subjective well-being. Research suggests that supporting those in lower socio-economic positions can improve subjective well-being (Kraft & Brage Kraft, 2023).

The study of subjective well-being as a task has become a current topic in social research, aiming to provide a subjective assessment of an individual's own health status and a subjective evaluation of their own physical, mental and social well-being based on personal experiences, values and lifestyle factors.

In the European Health Interview Survey, the definition of perceived health status is based on individuals' self-assessment. This means that people assess their own health status, taking into account how they perceive their own health. This perception is not closely linked to medically confirmed diagnoses; rather, it depends on the social, economic and cultural situation of individuals. Although it is not closely linked to actual medical diagnoses, it is an accepted and regularly used method in international practice to assess the health status of the population (Jávorné, R. Fedor, Madácsi 2014).

A survey conducted by the Hungarian Central Statistical Office (KSH) between 2010 and 2021 examined how people aged 16 and over rate their own health. The results of the survey show that the proportion of individuals who consider themselves to be in good or very good health in Hungary has increased over the period.

In 2010, 59% of men and 51% of women surveyed considered themselves to be in good or very good health. In 2021, 68% of men and 62% of women rated their health as positive, i.e. good or very good. It can be seen that Hungarian society is becoming increasingly satisfied with the state of health of individuals.

In another approach, the data also suggest that the mental state and mental health of individuals is a motivating force for carrying out everyday tasks and managing stress, which interacts with healthy lifestyles and the success of changes undertaken to maintain health. Preventive programmes for health promotion have become increasingly accepted, with health tourism offering both recreation, a family/friendship programme and medically supervised medical treatment that offers a range of fitness and activity activities from prevention to recreation that older people can regularly take part in.

Summary

Research on social and territorial inequalities is proving to be a rather complex task, despite the fact that a number of international and national studies and databases have been carried out. Nowadays, crises and strategies are being developed at global and national level, which obviously have an impact on the life of smaller communities and regions. In this paper, we analyse the relationship between lifestyles and labour market opportunities, analysing national and regional contexts, and pointing out the links between several areas that have

evolved over generations and determine the life chances, problems and opportunities of the population of a region. In Hungary today, improving health, and thus the quality of life of society, is a declared state objective, and since the fall of communism, a number of reforms have sought to improve the conditions of access to health care. (Uzzolli, 2020)

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SHORT-STAY ACCOMMODATION OFFERED VIA ONLINE COLLABORATIVE PLATFORMS IN ROMANIA. A PRE- AND POST-PANDEMIC COMPARISON

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Abstract: *The tourism industry has experienced significant growth in recent years, except for the COVID-19 pandemic. The pre-pandemic period was quite favorable for accommodation platforms, but the COVID-19 pandemic had a significant impact on them between 2020 and 2021, which however were able to recover in the post-pandemic period. Once the travel restrictions were imposed in 2020, the possibilities for international travel were also limited, both in terms of the legal regulations imposed by the authorities and the desire of people to avoid unnecessary exposure to health risks. However, in 2021, some countries have lifted restrictions, which has led to a gradual recovery. In this article we want to analyze some statistics on short-stay accommodation in Romania in the period 2018 - 2022. The article is based on data provided to Eurostat by four international platforms (Airbnb, Booking, Expedia Group and Tripadvisor). Following the analysis of the data at the Romanian level, we could observe that in the pre-pandemic period the number of nights spent via collaborative platforms registered an increase, after which the pandemic period determined a significant decrease in the number of nights spent. After the pandemic period the number of nights spent was again on an upward trend, even exceeding the pre-pandemic period. However, the ratio of domestic to foreign overnight stays changed in the post-pandemic period. In Romania, the share of domestic guest nights has increased.*

Keywords: short-stay accommodation; Romania; pre- and post-pandemic

JEL Classification: L83; Z31

1. Introduction and background

The collaborative economy is present in many fields of activity and is constantly developing both at European level but also in Romania, especially in the field of tourism (Stiubea, 2018; Stiubea, 2020; Badulescu et al., 2022a, Badulesct et al., 2022b). It is interesting to follow how bookings through the main collaborative platforms have evolved in the pre-pandemic, pandemic and post-pandemic periods. Accommodations through these platforms are an option for many who are looking to rent accommodation on a short-term basis and do not want to stay in a hotel. The COVID-19 pandemic has had a significant impact on tourism and therefore on the accommodations that can be booked through these collaborative platforms. This caused in the first half of 2020 a drop of more than 65% in global tourist arrivals and threatened 100 million jobs, especially in small and medium-sized businesses, including short-term accommodation businesses (International Monetary Fund, 2020). At European level, the pandemic has caused a 52% decrease in the number of nights spent at accommodation establishments in the EU (Eurostat, 2021), which has also had implications for short-term accommodation. Due to the restrictions imposed by most

European countries, but also due to the health risks they might have been exposed to, many tourists limited or even cancelled their trips. The accommodations provided through collaborative platforms were thus affected by the measures implemented by the authorities (Liang et al., 2021; Xu et al., 2021). A consequence of the measures taken by the authorities resulted in making renting through these platforms difficult or in some cases even impossible (Farmaki et al., 2020). For example, short-term bookings through the Airbnb platform registered a steady decline almost to the bottom in the first three months of 2020 compared to the same period of the previous year (Jang et al., 2021). In 2021, many countries began to lift their travel restrictions for tourists, which led to a slight improvement in the number of tourists booking accommodation through collaborative platforms. However, tourists' behaviour tended to be cautious, seeking safety first and foremost when it came to renting short-term accommodation (Jang et al., 2021). Even though international mobility was again allowed in 2021, tourism anxiety associated with international travel, uncertainty about future regulations and public policies aimed at supporting domestic tourism contributed to a more persistent shift towards domestic tourism (Arbulú et al., 2021; Gyimóthy et al., 2022; UNWTO, 2020).

2. Short-stay accommodation offered via collaborative economy platforms in Romania

2.1. Data

The tourism market in Romania had an upward trend before the COVID-19 pandemic. Thus, in 2019, 13.3 million tourists were registered, while in 2018, 12.8 million tourists were recorded, with an increase of 4% (INS, Statistical Brief, 2020). In 2020, the number of Romanian and foreign tourists arriving in tourist accommodation facilities in Romania was 6.4 million. This decrease, compared to 2019, can be attributed to travel restrictions imposed in the context of the COVID-19 pandemic. Therefore, the number of international arrivals decreased by 83% from 2.68 million (in 2019) to 0.45 million (in 2020) incoming foreign tourists, while the number of incoming Romanian tourists decreased by 44% from 10.7 million (in 2019) to 5.9 million (in 2020) (INS, Tempo Online, n. d.).

The AirDna.co website presents a series of data on Airbnb accommodation in the main cities in Romania. This demonstrates a rapid evolution in the number of listings in these cities. In Bucharest, in 2013, 312 accommodations were listed for rent, in 2016 there were 3,541 accommodations available for rent, and in 2018 this figure reached 4,234. There has been a considerable increase in the number of Airbnb accommodation units in Romania over the past few years. According to the AirDna.co website, the average annual increase has been approximately 69% over the past five years. The majority of Airbnb offerings are two-bedroom apartments, with 1,557 (53%) available, followed by three-bedroom apartments with 692 (24%) and then studios with 472 (16%) (AirDna.co, 2019). The average rating of accommodation offered through Airbnb, based on over 145,000 reviews, is 4.7 out of a maximum of five stars. Occupancy varies throughout the year, with a high of 66% in September and a low of 37% in January. Daily rates remain stable at €35 (AirDna.co, 2019).

The article is based on data provided to Eurostat by four international platforms (Airbnb, Booking, Expedia Group and Tripadvisor) following data exchange agreements concluded in early 2020. The data cover short-stay accommodation in the EU and EFTA countries offered by service providers through one of these four online collaborative economy platforms.

In Romania, short-term accommodation through collaborative platforms had an upward trend in the pre-pandemic period, followed by a steep decline with the outbreak of the COVID-19 pandemic, but recovered after the pandemic period to pre-2020 levels and even exceeded them.

2.2. Analysis

City destinations were impacted particularly hard by the pandemic, but have recovered much in 2022. Figure 1 shows the number of guest nights for the six most popular cities in Romania in the period 2018 – 2022 by residence of the guest.
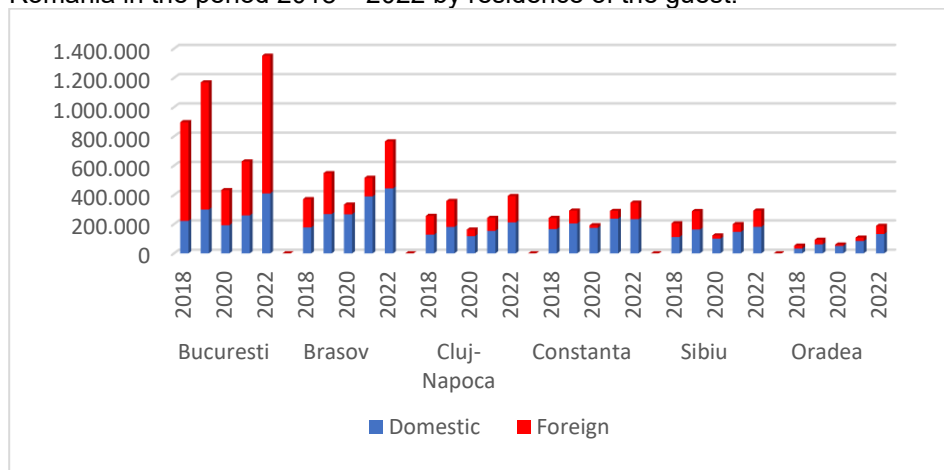
Figure 1: Nights spent in short-stay accommodation offered via online platforms by residence of the guest
Source: own elaboration based on data collected from Eurostat

In the pre-pandemic years there is an increasing trend in the number of nights spent by domestic guests as well as nights spent by foreign guests. In 2020, the year in which the COVID-19 pandemic started, there was a decrease in the number of nights spent by tourists, the most significant decrease being among foreign visitors. In 2021 there is a slight increase in nights spent compared to 2020 in all 6 cities. The slight increase in the number of nights spent is due to the fact that travel restrictions were not as drastic as in 2020. In the year 2022 there is a strong increase compared to the pandemic period. For the cities analysed, the year 2022 brought a complete recovery in the number of nights spent in short-stay accommodation, even surpassing the number of nights spent in pre-pandemic years. This increase is mainly due to domestic guests.
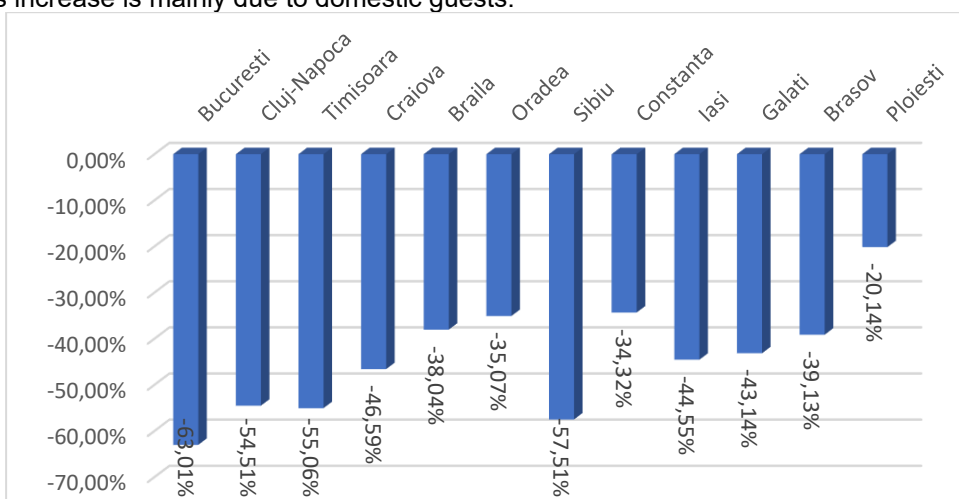
Figure 2: Decrease in nights spent by city, 2020 compared with 2019
Source: own elaboration based on data collected from Eurostat

Figure 2 shows the percentage decrease in the number of overnight stays in 12 representative cities in Romania. The impact on short-stay accommodation offered through online platforms was not uniform across the cities analyzed. The cities with the largest decreases in the number of nights spent were Bucharest (- 63.01%), Sibiu (- 57.51%), Timisoara (- 55.06%). At the opposite pole, the smallest decreases in the number of nights spent were recorded in Ploiesti (- 20.14%), Constanta (- 34.32%) and Oradea (- 35.07%).

	Bucuresti	Brasov	Cluj-Napoca	Constanta	Sibiu	Timisoara	Oradea	Iasi	Craiova	Galati	Ploiesti	Braila
Domestic	-35.9%	-0.6%	-34.9%	-14.8%	-38.0%	-35.8%	-17.6%	-31.6%	-7.0%	-31.7%	4.8%	-22.8%
Foreign	-72.4%	-76.1%	-74.3%	-79.3%	-82.8%	-70.6%	-69.7%	-61.9%	-71.9%	-58.4%	-42.9%	-54.1%
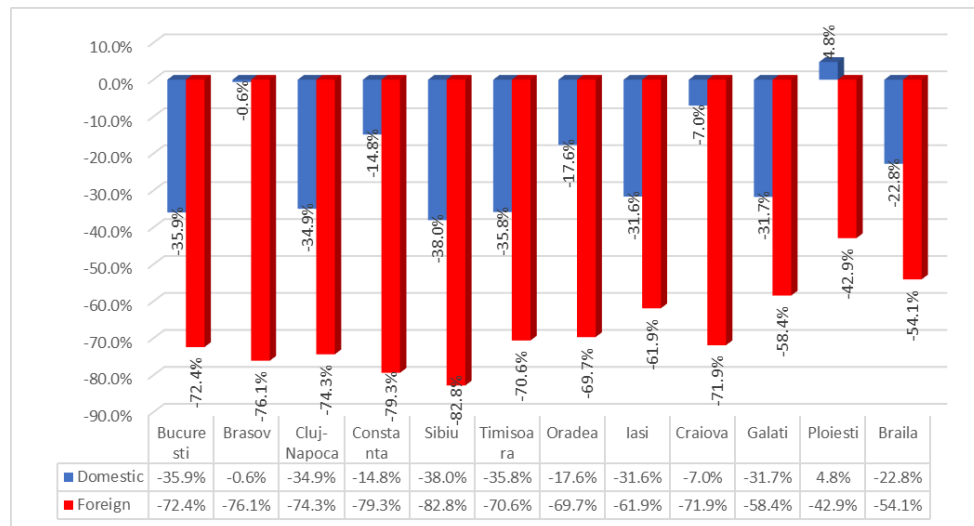
Figure 3: Decrease in nights spent by origin of the guest, 2020 compared with 2019
Source: own elaboration based on data collected from Eurostat

Figure 3 shows the percentage decrease in nights spent in 2020 compared to 2019 according to the origin of the visitors (domestic/foreign). It can be seen that the biggest decrease in the 12 cities in Romania was registered by foreign tourists. This decrease is mainly due to international travel restrictions during the pandemic period. The biggest decrease was recorded by Sibiu where the number of nights spent by foreign guests decreased by 82.8% compared to the previous year (2019). Domestic tourism suffered less as many tourists opted to spend their holidays in the country due to the risks associated with foreign travel.
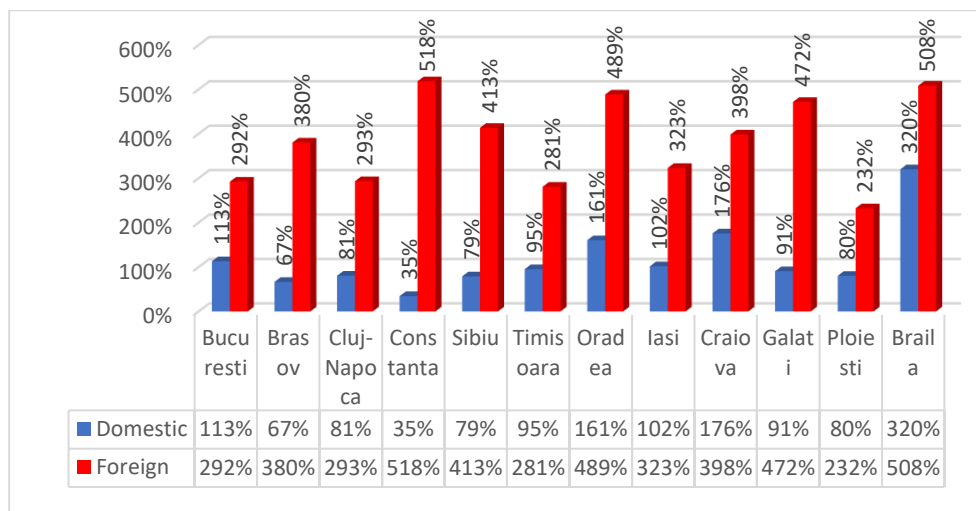
Figure 4: Increase in nights spent by origin of the guest, 2022 compared with 2020
Source: own elaboration based on data collected from Eurostat

Figure 4 illustrates the recovery of short-stay accommodation through online platforms in the post-pandemic period. It can be seen that the increase is much higher for foreign tourists, which is understandable considering that international tourism suffered most during the pandemic period.
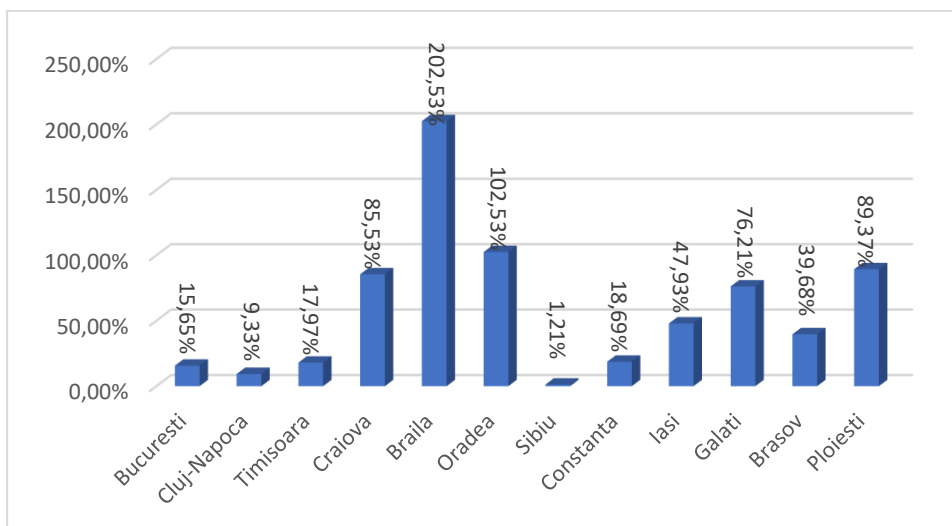
Figure 5: Change in nights spent in short-stay accommodation offered via collaborative economy platforms by city, 2022 (post-pandemic) compared with 2019 (pre-pandemic)
Source: own elaboration based on data collected from Eurostat

In Figure 5 we can see the percentage increase in the number of nights spent in the post-pandemic period compared to the pre-pandemic period. Although in the pandemic period there was a decrease in the number of nights spent (see Figure 5), in the post-pandemic period nights spent increased, even surpassing the 2019 level. One of the possible reasons for these increases is that people are more open and willing to travel since they were not able to travel much during the pandemic restrictions.
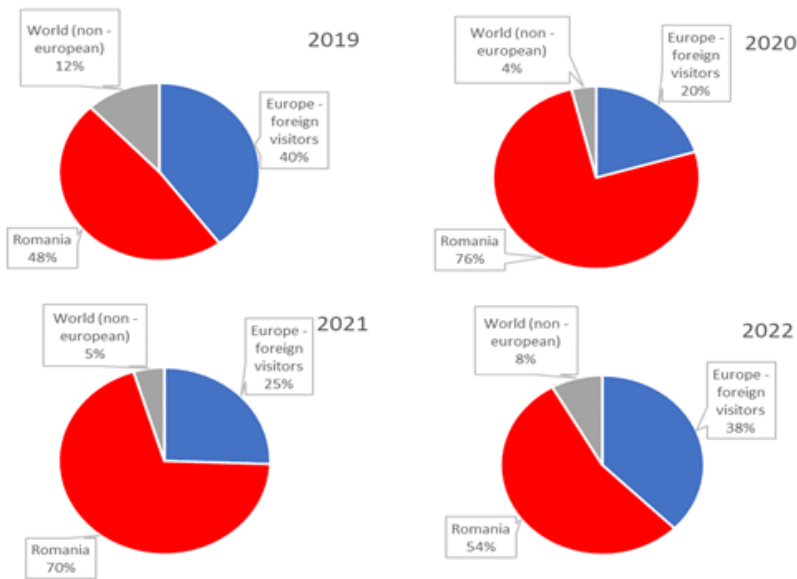
Figure 6: Guest nights spent in short-stay accommodation offered via collaborative economy platforms by origin of the guest
Source: own elaboration based on data collected from Eurostat

In 2019, domestic tourism (which refers to overnight stays spent by tourists in their country of residence) was responsible for about half of the total number of overnight stays. Tourists from EU countries other than Romania accounted for around 40% of guest overnight stays, while 12% of travellers came from outside Europe. In 2020, the year the COVID-19 pandemic began as international travel became increasingly restricted, the share of domestic tourists increased to 76%. Travel within the EU had a smaller share of only 20%, unchanged from the previous year. Travel from outside Europe fell sharply to just 4%.

In 2021, the total number of nights spent by tourists from Romania accounted for 70% of guest overnight stays, the inflow of travellers from outside Europe remained low compared to pre-pandemic levels, accounting for only 25% of guest overnight stays. A very small share is represented by tourists from outside Europe, 5%. In 2022, the share of Romanian tourists shows a decreasing trend compared to the pandemic period, representing 54% of the total number of nights spent by tourists and an increase in the share of foreign tourists is observed, now representing 38% of the total number of nights spent by tourists. Tourists from outside Europe staying in Romania represent 8% of the number of overnight stays.

In the pre-pandemic period, the share of Romanian tourists accounted for about half of the number of overnight stays spent by tourists, while in the pandemic period (2020 - 2021), the share of domestic tourists remained at a very high level (about 70%) and the number of overnight stays by foreign tourists remained relatively low compared to the pre-pandemic situation. If we make a comparison of the data from 2022 with those from 2019, we can see that the biggest decrease was recorded for tourists from outside Europe. The number of foreign tourists from Europe registered a slight decrease, dropping to 38% of total overnight stays (Figure 6), while the number of domestic guest nights increased to 54% of total overnight stays (Figure 6).

Table 1. Guest nights spent at short-stay accommodation offered via collaborative economy platforms by mode of accommodation

Time	2018	2019	2020	2021	2022
Total	2,992,968	4,191,792	2,312,171	3,601,903	5,732,807
Shared accommodation	123,179	147,859	60,041	77,135	105,877
Entire accommodation	2,869,789	4,043,933	2,252,130	3,524,768	5,626,930

Source: own elaboration based on data collected from Eurostat

Table 1 illustrates the preferences of the tourists that have stayed in Romania regarding the type of accommodation they preferred. Therefore, the majority of tourists preferred whole accommodation, not shared accommodation. In the pre-pandemic period, the number of nights spent at short-stay accommodation offered via collaborative economy platforms had an increasing trend, decreasing sharply in the year of the outbreak of the COVID-19 pandemic (from 4,191,792 guest nights spent in 2019 to 2,312,171 guest nights spent in 2020). Even though there were still some travel restrictions, still the number of guest nights spent increased in 2021 by 55.8% compared to 2020 (Table 1). In 2022 the number of guest nights spent at short-stay accommodation offered via collaborative economy platforms by mode of accommodation exceeded the pre-pandemic level by 36.7% (from 4,191,792 guest nights spent in 2019 to 5,732,807 guest nights spent in 2022) (Table 1).

Table 2. Guest nights spent at short-stay accommodation offered via collaborative economy platforms by size class of accommodation

Time	2018	2019	2020	2021	2022
Total	2,992,968	4,191,792	2,312,171	3,601,903	5,732,807
Less than 10 bedplaces	2,779,947	3,894,548	2,143,273	3,327,266	5,333,194
10 bedplaces or more	213,021	297,244	168,898	274,637	399,613

Source: own elaboration based on data collected from Eurostat

Table 2 above provides data on the evolution of the number of guest nights spent at short-stay accommodation offered via collaborative economy platforms by size class of accommodation. Analysing this data we observe that during the pandemic period, in 2020 compared to 2019, the number of overnight stays in accommodation with less than 10 bedplaces decreased by approximately 45%, a percentage very close to the decrease in the number of overnight stays in accommodation with 10 bedplaces or more, which was 43% (Table 2). After the end of the pandemic, in 2022, both the number of overnight stays in accommodation with less than 10 bedplaces and the number of overnight stays in accommodation with 10 bedplaces or more managed to recover and even exceed the number of pre-pandemic nights by 37% and 34.4% respectively (Table 2). The number of guest nights spent at short-stay accommodation with less than 10 bedplaces accounted for 93% of all guest nights in 2022.

3. Conclusions

The tourism sector has been strongly influenced by the COVID-19 pandemic. Thus, nights spent at short-stay accommodation offered via collaborative economy platforms have also suffered as a result of measures taken by the authorities to combat and stop the spread of the virus. If the pre-pandemic period was favourable for accommodation via collaborative platforms, 2020 brought a dramatic drop in bookings with border closures, flight cancellations and other measures. In 2020 only 272 million guest nights were spent in accommodation booked through online platforms, compared to 512 million in 2019 (Eurostat, 2023).

In Romania, the pre-pandemic period was favourable for accommodation via collaborative platforms. As at European level, during the COVID-19 pandemic, the number of bookings decreased drastically, especially the number of bookings made by foreign tourists. These platforms were kept afloat by domestic tourists. The post-pandemic period has brought a rebound in bookings made through collaborative platforms. All the cities analysed in Romania have reached or even surpassed the pre-pandemic level.

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NEW PERSPECTIVES ON ECONOMIC DEVELOPMENT

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Abstract: *In the first decades of the 21st century, in a period characterized by turbulent, liberalized economic environment, in a world marked by a strong demographic growth, depletion of natural resources, climate change and destruction of ecosystems, we are more concerned than ever about the issues related to economic growth and development. In the first part of the paper, we presented the result of an overview study, based on which we synthesized the dynamics of the determinants of economic growth, after which we carried out a comparative study of economic growth and development. The second part of this paper presents a review of those economic indicators that are considered to be the most relevant in measuring economic development.* The conclusions of the paper converge on the idea that, despite controversies regarding the importance of GDP as an indicator of economic development, it continues to remain the most present and important reference indicator in economic statistics. *However, in order to obtain an accurate and more complex image of the economic and social performance, it is recommended to use several indicators in combination with GDP.*

Keywords: *development, development indicators,* economic growth determinants

JEL Classification: A12, B20, N10, O10

1. Introduction

As of 1960, we can talk about "development" as an academic discipline (Potter, 2014), the foundations being laid by economists and social scientists. The importance of this field also reveals the establishment of the Institute for Development Studies in 1966 within the University of Sussex (England).
According to Robert B. Potter (2013), studying development is an interdisciplinary activity, as it unites knowledge of several fields of science with the purpose of studying inequalities and poverty. This interdisciplinary character of development is represented in Figure 1.
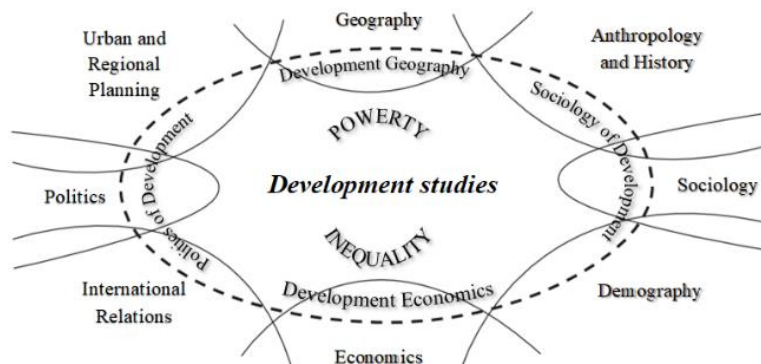
Figure 1 Disciplines contributing to the interdisciplinary character of the Development Study
Source: created by the author based on Potter, R. B. (2013). The various disciplines contributing to the cross-disciplinary field of development Studies, p. 17

2. Growth, development and economic progress

Economic growth and development represent an important and interesting field to study for several reasons. Despite the relevance and importance of the topic, there are still so many unknown aspects and so many major challenges that this area of research has attracted intense intellectual activity and will probably continue to do so in the future. Secondly, economic growth has many facets, which requires a holistic approach to the entire process, requiring a detailed analysis of both economic, political, social, and demographic elements, combining micro- and macroeconomic levels.

In common words, the terms growth, development and progress are frequently used as if they were synonymous. Figure 2 shows the differences but also the overlaps in terms of meanings of the three terms.
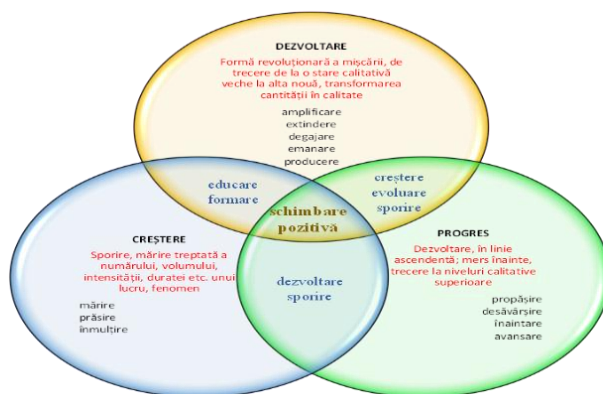
Figure 2 Semantic similarity of concepts: growth, development, progress
Source: created by the author based on dexonline.ro

According to the Online Synonym Dictionary, the three concepts have similar meaning. It is pertinent to note the terms inserted in the common fields of the Venn diagram. Development and growth occur in the common field of progress, suggesting the inseparability of the three concepts. Training and education appearing as a common sphere of growth and development describes the interdependence of these concepts. Analysing Figure 1, it can be noted as a common feature of the discussed terms that each produces a positive change that contributes to achieving the set objectives.

Although in Figure 1 we presented the semantic similarity of the three concepts, it has been proven that growth, development and progress cannot be equated despite the fact that their interdependence has been demonstrated many times. From a scientific point of view, and especially in economics, it is imperative to distinguish between them, even if there is no unanimity regarding the clear definition of these terms. Several well-known authors draw attention to this need: Kindleberger, 1977; Román, 1977; Bronfenbrenner-Sichel-Gardner, 1984; Camaron, 1990, 1994; Bartelmus, 1994; Lombardini, 1996; Daly, 1994; Dabóczi, 1998.

Understanding these concepts is not only interesting and important in itself, but also holds the key to understanding the causes of differences between countries in respect to the current per capita income and the stage of development at which a given country and nation is situated.

In order to cover the determinants of economic growth and different approaches over time, we created an overview of the specialised literature combined with a tabular, chronological representation.

Table 1 summarizes the dynamics of the determinants of economic growth following the specialised literature selected

Table 1 Summary of the dynamics of economic growth determinants

Authors	Publications	Factors of economic growth
Adam Smith (1723 -1790)	Smith, 1776 (1959)	- division of labour - saving
David Ricardo (1772 -1823)	Ricardo in Cypher, (2014)	- technology - free trade
Friedrich List (1789 -1846)	List, in Olah (1997)	- all branches of activity represent the force to create wealth
Karl Marx (1818 - 1883)	Marx, 1867 (1955)	- production expansion - investments - capital accumulation
John Maynard Keynes (1883 - 1946)	Keynes (1970)	- avoiding crises or unemployment - stimulating consumption and demand - capital accumulation - State
Joseph Schumpeter (1883 - 1950)	Schumpeter, (1947)	- innovations - entrepreneurship
Roy Harrod (1900-1978)	Harrod (in Olah, 1997)	- capital accumulation - saving and investment rate - State
Paul Samuelson (1915-2009) William Dawbney Nordhaus (1941-)	Samuelson, Nordhaus, 1948 (2009)	- "general welfare state": budgetary policy, monetary policy - market mechanisms
Simon Kuznets (1901-1985)	Kuznets (1961, 1973)	- advancement of technology - institutional and ideological adjustments - human resource development
Robert Solow (1924 - 2023)	Solow (1956)	- efficient combination of factors of production - saving - investments
Gheorghe Olah (1941-2022)	Olah (1997)	- investments - economies - external loans
Constantin Anghelache (1946 -)	Anghelache (2022)	- investment in factors of production - cutting-edge technology
Leszek Balcerowicz (1947-)	Balcerowicz (Ed) (2014)	- innovations - institutional reforms
Jeffrey Sachs (1954-)	Sachs (2001)	- geographical factors
Philippe Aghion (1956-)	Aghion (2004)	- technological innovations
Paul Marer (1961-)	Marer (2013)	- innovation - productivity increase - government investment
Daron Acemoglu (1967-)	Acemoglu (2008, 2012)	- investments - average years of schooling - human resource competences - innovations - standardisation
Cosmin Marinescu (1976-)	Marinescu (2007)	- institutional structures

António Afonso, Juan González Alegre (1977-)	Afonso, Alegre (2008)	- State investment - investment in education
Alina-Petronela Haller (1978-)	Haller (2012)	- efficient use of available resources
Florin Teodor Boldeanu, (1989-) Liliana Constantinescu	Boldeanu, Constantinescu (2015).	- government efficiency and institutions, - political and administrative systems, corruption - cultural and social factors - geographical factors and natural resources - human resources and technology.

Source: created by the author

Table 1 shows that the determinants of economic growth are multiple and vary according to the approaches of different authors, the concrete conditions of the market economy and its dynamics. However, it can be noted that material and human resources, and later institutions are found in the development models of all economists.

The complexity of economic development makes it difficult to find a widely accepted definition. It can be noted the inclination of most economists to talk about economic growth as a predominantly quantitative process and about economic development as a predominantly qualitative one. The essential differences and similarities between the two concepts are presented in Table 2.

Table 2 – Comparison between economic growth and economic development

SIMILARITIES	DIFFERENCES	
	Growth	**Economic development**
- represent the basic objectives of any economy - are continuous processes with stimulating effects in the economy - involve both the allocation and use of resources and increase of efficiency - their purpose is to improve the standard and quality of life - growth and development are the cause and result of the general trend, influencing its pace and ensuring the transitions from one level to another - the most widely used and accepted measurement indicator is GDP - are interdependent phenomena	refers to the quantitative side of economic activity	development is a qualitatively higher stage of macroeconomic evolution.
	a purely economic concept	shows interdisciplinary interference
	discussions about growth are often centred around developed countries	addresses economic problems that are specific to developing or less developed countries
	measurable	a complex phenomenon, it cannot be described with a single indicator
	an objective phenomenon	a phenomenon with a high degree of subjectivity
	can be accelerated through various measures	a process with its own pace, (slower) but can be sustained or facilitated
	a reversible process, with a situation of economic decline	there is no reverse process, in the worst case one can speak of stagnation
	refers to the increase in various aggregated macroeconomic indicators	involves many more cognitive dimensions

Source: created by the author based on Haller (2012)

Following the analysis and comparison of the two concepts we can formulate the following statements:
- against the background of economic development, economic growth is achieved in time and space;

- investment and technological progress are the most important sources of growth;
- economic growth is not the only important and necessary factor for increasing human well-being;
- economic development can be considered only that growth that is also associated with a structural-qualitative change in the national economy and in the people's quality of life.
- economic progress is a complex phenomenon determined by economic growth and development, which actually refers to the progressive evolution of society, which implies an improvement of the human condition, a higher rung of the standard of the human being.

3. Indicators for measuring economic development

Indicators for measuring economic development are essential tools used to:
- provide an overview of economic health;
- evaluate and quantify the economic progress and pace of development of a country or region;
- provide an image of the stage and direction taken by the economy;
- determine the extent of the population's economic and social well-being, without which future development plans cannot be achieved;
- analyse and evaluate economic performance, providing essential information for economic, social, political and investment decisions;
- monitor, evaluate and control implemented development programmes;
- facilitate spatial and temporal comparison of development;
- identify trends, opportunities and imminent risks.

There is common agreement on the need to measure development, but in terms of the method and tool used for this purpose, it divides specialists into several groups, especially in the works published in our century.

The most relevant indicators, widely accepted and used by most established economists for measuring economic development are: Gross Domestic Product, Gross Domestic Product per capita, Industrial production, Agricultural production, Net national income, Consumer price index, External trade indicators, Trade balance, Public debt, Foreign direct investment, Innovation and technology, Distribution of income and wealth, Gini coefficient, Quality of life indicators, Environmental indicators and Human development index.

Gross domestic product (GDP) is already, by inertia, considered as a measure of progress, prosperity, frequently used in comparative analyses of well-being and as an indicator of living standards, although it was not designed for this purpose.

In the specialised literature, one can note a break in the appreciation and acceptance of GDP as the most important indicator of the level of economic growth and development. On the one hand, there are those specialists who are firmly convinced that GDP and GDP per capita, namely economic and income growth are reasonable measures to gauge and compare the level of development of nations.

On the other hand, more and more scientists believe that increasing production and income is not enough to ensure development and progress, and GDP does not reflect the well-being and happiness of a nation, as Kuznets himself pointed out (Kuznets 1934, 1962, Tinbergen 1971, Nordhaus and Tobin 1972, Cobb-Halstead-Rowe 1997, Görbe – Nemcsicsné 1998, Dabóczi 1998, Abdallah and others. 2009, Jacobs, G., Šlaus, I. 2010, Ivković 2016).

Starting from these ideas and based on the work of Henderson (1996), Cobb-Halstead-Rowe (1997) Table 3 highlights the advantages and disadvantages of GDP as an indicator of economic development:

Table 3: Advantages and disadvantages of GDP as an indicator of economic development

Advantages	Disadvantages
➢ **Indicator of global economic activity:** - provides an objective overview of a country's economic activity over a given period of time; - can provide hints about the direction of an economy; - shows everything in monetary terms – thus, ensuring the avoidance of the uncomfortable problem of moral position; - widely used, it offers the possibility of conducting extensive studies and comparisons. ➢ **Ease of measurement:** - uses up-to-date and accessible data; - the basic formula of GDP is simple and ensures consistency in measurement at worldwide level; - useful for monitoring short-term economic changes, such as economic cycles and fluctuations in economic activity. ➢ **International standardisation and comparability:** - the data can be converted into a common currency; - allows macroeconomic comparisons both in terms of time and studied field; - is calculated using the same methodology in each reporting period, so it is possible to compare the evolution of the economy in the long term. ➢ **Use in public policies:** - summarises a range of economic information helping to determine the strengths and weaknesses of different sectors; - facilitates decision-makers and analysts to easily guide, adjust and implement economic, fiscal and public policies; - can provide clues about the effectiveness of economic and social policies and serve as a basis for decisions; - as a barometer of the economic climate, it provides the public and private sectors with useful information in order to adapt to emerging macroeconomic opportunities and threats. ➢ **Setting economic priorities:** - can help identify key sectors of the economy, be useful for guiding economic policies and investment in sectors that can generate the greatest impact in terms of growth and development. ➢ **Information for investors and businesses:** - can provide clues about the market size, growth potential and economic stability of a country or region, so investors and businesses use GDP to evaluate investment opportunities and make strategic decisions. ➢ **Recognition and familiarity**	➢ GDP includes only intra-market transactions; ➢ reflects only activities involving the movement of money, barter transactions are largely omitted, although the decrease in their frequency is clearly a negative economic process; ➢ when calculating GDP, unpaid work is completely ignored, for example domestic work, caring for the sick, elderly by family members and volunteering; ➢ never takes into account environmental damage during the growth process ➢ natural resources are not considered as capital, so their amortisation is not recorded. ➢ all transactions are accounted for as positive values and are seen as economic benefits, although not each contributes to a better life for individuals ➢ public goods and services provided by the State represent costs for society. ➢ is an aggregate indicator, so it does not consider inequalities in income distribution. ➢ can also be augmented by increasing public debt, which can lead to economic instability; ➢ the family is loss-making and does not contribute to GDP growth, as it provides free services and performs activities outside the market; ➢ according to GDP data, only work represents a value. If better productivity contributes to an increase in the number of products, GDP increases, but if it contributes to an increase in the employee's time off (because the same number of products is produced in a shorter time), GDP does not change; ➢ can be manipulated by the government.

Source: created and processed by the author based on Dabóczi (1998, 2013), Henderson (1996) and Cobb-Halstead-Rowe (1997)

GDP measures the marketed economic activity, without taking into account the wider impact of this off-market activity that can have both positive and negative impact on GDP levels, such as: ignoring social costs or environmental costs, ignoring many valuable activities of the economy, which exist outside the market (volunteering, housework).

In Table 4 we highlight, for guidance purposes, alternative indicators considered by specialists to be relevant in measuring economic development.

Table 4: Main alternative indicators considered to be relevant in measuring economic development and population's well-being

Indicator/Author	Characteristics
Measured Economic Welfare – *MEW* (Nordhaus, Tobin, 1972)	Obtained by subtracting from GDP those activities that are not a source of direct utility for consumers.
Social Welfare Function – *SWF* (Sen, 1976)	A measure of both equality and efficiency because it reflects both overall economic performance and income distribution.
Economic Aspects of Welfare -*EAW* (Zolotas,1981)	Based on private consumption.
Green GDP (80s Boyd, 2007)	Measures nature's contribution to human well-being by valuing environmental degradation and gradual resource depletion.
Net Economic Welfare – *NEW* (Henderson, 1985, Samuelson, Nordhaus, 1990)	Improved version of MEW.
Sustainable Economic Welfare *ISEW* (Daly, Cobb, 1989)	Developed and supported by environmental economists. A composite that adjusts economic growth measured by GDP, with its associated positive and negative effects.
Genuine Progress Indicator – *GPI* (Cobb, Halstead, Rowe, 1995)	
Sustainable Net Benefit Index *SNBI* (Lawn, Sanders, 1999; Lawn, 2000)	
World Database of Happiness (Veenhoven, 1995)	An archive of research results on happiness. Access to the archive is free of charge.
Human Development Index *HDI* (Mahbubul Haq, used by the UN since 1990)	Widely used on the basis of which a comparative ranking of world states according to three main indicators - income, health and education - is carried out using easily available data.
Environmentally Sustainable National Income *eSNI* (Tinbergen, Hueting 1991)	Represents the level of production that does not threaten future generations.
Economic Welfare Index – *EWI* (Jacobs, Šlaus, 2010)	Reflects the part of inequality that negatively impacts economic well-being, as measured by household consumer spending.
Human Economic Welfare Index *HEWI* (Jacobs, Šlaus, 2010)	Provides a holistic perspective on a population's well-being, integrating economic, social and environmental aspects.
Social Progress Indicator - *SPI* (Social Progress Imperative, 2013)	Based on 52 indicators grouped into three dimensions, reflecting the hierarchy of needs set by Maslow.
Weighted Index of Social Indicators *WISP* (Estes, 1970-2000)	A composite index that processes data from 10 fields.
Better Life Index - *BLI* (OECDE, 2011)	Mixed well-being index that takes into account 11 dimensions of well-being.

Source: created and processed by the author

4. Conclusions

Analysing the three concepts of growth, development and economic progress, we can state that each produces positive changes at both micro- and macroeconomic levels and can be regarded as targets of any economy. In general, the difference between progress and development is much smaller than between development and growth, which is also reflected in the works of many authors where development and progress are very often mentioned as concepts with the same meaning. We can also conclude that any economic development implies economic growth, but not every economic growth also means economic development and progress is the achievement of development.

The final conclusions of the paper converge on the idea that, despite controversies regarding the importance of GDP as an indicator of economic development, it continues to remain the most present and important reference indicator in economic statistics. However, in order to obtain an accurate and more complex image of the economic and social performance, it is recommended to use several indicators in combination with GDP.

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ANALYSIS OF WORKING CAPITAL EFFICIENCY FOR ARABLE CROP FARMS IN HUNGARY

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Abstract: *Our study is a thematic analysis of the literature on working capital, aiming to present the latest research and interpretations on working capital management. In the second part of the paper, we present an assessment of capital adequacy and working capital efficiency and their results, based on our own data collection and compared with the findings of the literature. There is a substantial international literature on the impact of working capital, which examines the returns and the impact on profitability of the stock of inventories, the turnover of various current assets and the cycle days associated with working capital management. In our study, we used these aspects to select asset endowment and turnover-income profitability indicators from the EMIS database for Hungarian arable crop farms, searching for correlations by regression analysis for three years 2018, 2020 and 2022. Our results show that working capital endowment specifically showed significant correlations with operating revenue in all three years, while the other explanatory variables mostly gave significant correlations only for the year 2022. The size of the Hungarian agricultural economy is specifically characterised by micro and small enterprises, therefore we categorised the enterprises into micro, small, medium and large enterprises based on the value of their assets and their revenue. The number of enterprises specifically engaged in cereal and oilseed production by size category thus differed significantly, and multivariate regression was no longer possible for the two larger categories. In these cases, correlation analysis preceded regression analysis. Examining working capital efficiency by firm size, small farms showed significant correlations with profitability, but they also tended to do so only for the year 2022.*

Keywords: *asset value; working capital; profitability; regression analysis; different sizes of firms*

JEL Classification: *M21; Q10*

1. Background

In the context of the intensification of production, the technical development of agriculture over the last century and its continuing trend, the increasing efficiency of inputs and the achievement of international competitiveness, the following questions need to be answered:

- which factors influence the size of businesses and, in particular the size of individual divisions and branches?
- is it possible to determine critical and optimal capital supply and capital expenditure values for enterprises?
- to what extent does a different capital supply change the risk-bearing capacity of the enterprise?
- to what extent various environmental and (socio-economic) conditions can and should be taken into consideration in efficiency studies?

A key driver of the development of enterprises is the need to satisfy the owner's interest, which is primarily realised through revenues and expenditures in relation to the capital invested, complemented by less measurable and thus less controllable external environmental factors, such as perceptions by investors, markets, partners, and other stakeholders. Ensuring that the enterprise operates in line with the interests of its owners is the main task of managers, who expect to ensure compliance through their decisions made based on strategic and operational plans. For owners who are not involved in the management of the company, their investments must generate a return in line with their expectations. This expectation is usually expressed in terms of the returns on risk-free investments, supplemented by an empirically determined but rather merely desired excess return reflecting the riskiness of the given investment. Quantifying these are facilitated by the pricing model for capital goods and, for decision-makers of leveraged companies, by the weighted average cost of capital model. Obviously, these models formulate expectations "only", the realisation of which can be achieved through joint decisions of the board and managers, where working capital management will have a significant role in ensuring the efficient running of operative processes.

Working Capital Management (WCM) is one of the most important decision-making processes for managers, as it has a profound impact on the liquidity and profitability of the company (Appuhami, 2008). Working capital is the primary driver of businesses and if it is not managed properly, it may lead to business failure (Padachi et al., 2012). According to Fenyves et al. (2016) and Pupos et al. (2011), working capital (WC) is the surplus of the current assets over the current liabilities. Accordingly, inventories, trade receivables and trade payables constitute the main components of an enterprise's working capital, which is a working, i.e. income-generating, non-cash part of its assets (Lux, 2017). Pricewaterhouse Coopers Global's 2019/2020 Working Capital Report suggests that efficiency improvements in working capital management could unlock up to EUR 1,200 billion of cash on a global level, increasing returns on capital investments by 48%. The three key findings of the report regarding the financial performance of globally listed companies over the past five years are:

(1) a decline in the Return on Capital Employed (ROCE);

(2) a sudden drop in investments;

(3) and the extension of outstanding debts to suppliers, which puts a significant strain on supply chain efficiency.

With these findings in mind, it is imperative to take action now to improve WCM in firms. Equally important is to know what the consequences are if a company does not have adequate working capital management. This is also addressed by a large volume of literature, primarily at an international level, guiding corporate decision-makers.

2. Literature review of factors affecting working capital management

2.1. Correlation between working capital and profitability

Several authors (Deloof, 2003; Charitou et al., 2010; Raheman et al., 2010), in their analysis of the impact of working capital management on profitability, most frequently mentioned the cash conversion cycle (CCC) and the net trading cycle (NTC)1 concerning working capital. Others considered the ratio of current assets to current liabilities to be an important vertical indicator of the balance sheet but also mentioned the liquidity ratio, the turnover rate of inventories, customers, suppliers, and the ratio of customers to suppliers (Afza, 2008; Singh and Pandey, 2008; Danuletiu, 2010).

Regarding profitability, researchers have analysed several indicators derived from accounting statements, the most commonly used ones being net operating profit (NOP), return on sales (ROS), return on equity (ROE), and return on invested capital (ROIC) (Azam and Haider, 2011; Akoto et al., 2013; Padachi, 2006; Nazir and Afza, 2008). The indicators include the Tobin's Q ratio, which integrates also market valuation and can be calculated by adding the market value of equity to the book value of liabilities (= e.g. in the case of a public limited company, the current share price x the number of shares) and dividing this by the value of total assets (Abuzayed, 2012; Hajdu, 2017; Tamásné and Lamanda, 2020; Várkonyiné, 2022).

Working capital management profitability analyses based on the cash cycle (CCC) are deduced based on the days in inventory, days receivables and days payable. In the following, I will briefly present the results of studies examining the relationship between each of these periods and profitability:

- Most analyses show an essentially significant negative correlation between the receivables (Days' Receivables, DR) period and profitability, an almost obvious correlation, since if the receivables period shortens, the income per unit period should increase, thus also increasing profitability (Abuzayed, 2012, Vural et al., 2012; Akoto et al., 2013]. However, some studies have shown a positive correlation, as the extension of the lending period has a positive effect on the increase in customer interest and thus on the increase in sales (Sharma and Kumar, 2011).

- Concerning the impact of the Days' Inventory (DI) period on profitability, most studies, similarly to DR, indicate a negative significant correlation, as expected, since e.g. a longer production period reduces the production of finished goods per unit period, thus reducing the sales revenue, leading to a reduction in income and profitability. Naturally, in the opposite case, profitability is increased due to the shorter time needed to absorb capital into the production process (Sharma and Kumar, 2011; Napompech, 2012). Nevertheless, Gill et al., (2010) and Mathuva (2010) have reported also a positive correlation, which they attribute to higher stock levels due to the elimination of stock shortages, and thus safer production.

- For the impact of the Days' Payable (DP) period on profitability, a positive significant correlation can be anticipated, since the later the repayment of trade credit – debts (= interest-free short-term liabilities), the higher the cash flow of the company becomes, thus increasing its development potential and consequently its profit (Alipour, 2011; Azam and Haider, 2011; Abuzayed, 2012).

2.2. Valuation of working capital investments and fixed assets
Only a small part of the available literature explores the relationship between working capital and capital expenditure (Capex) to measure efficiency, but all of them found a significant negative correlation (Appuhami, 2008). Ding et al. (2013) claim that Chinese firms that invest more in working capital are more sensitive to fluctuations in cash flows, and their investments in Capex tend to show a lower level of sensitivity to cash flow fluctuations. This basically suggests that companies increase or decrease their investment in working capital according to their Capex investment needs and according to cash flow fluctuations. Companies with a higher level of working capital investment are organisations with stronger financial constraints and more investment opportunities. They have concluded that Chinese companies facing financial constraints could focus on improving their working capital efficiency in order to minimise the negative impact of financial constraints on their investments in fixed assets.

2.3. Valuation of investments in working capital
Over recent decades, several highly cited authors have examined the characteristics of investments in organisational working capital. Chiou et al. (2006) state that it is the debt ratio and operating cash flow that determines the working capital investments of US

companies. Hezam et al. (2017) concluded that there is no evidence of the effect of complex economic indicators of the enterprise (such as company growth, company size, and company performance) on the working capital investment of companies.

Nazir and Afza's (2009b) study based on data from listed Pakistani manufacturing companies, reports that operating cycle, ROA and Tobin's Q are factors that positively and significantly correlate with the companies' working capital requirement (=WCR), whereas leverage has a negative effect on WCR, and has a significant effect on the WC requirements of companies.

Hill et al. (2010) have concluded that operating cash flow and company size have a significant positive impact on the WCR of companies and that sales growth, sales volatility, financial difficulties, and the market-to-book value ratio of companies have a negative and significant impact on their WC needs.

Finally, Banos-Caballero et al. (2010) have concluded Spanish small and medium-sized enterprises (SMEs) that operating cash flow, the company's age and the lagged cash conversion cycle (CCC) have a positive and significant relationship with CCC, whereas the leverage, growth potential, investment in fixed assets and ROA of SMEs have a negative and significant effect on CCC in the case of SMEs.

3. Methods

Based on the literature analysed above, although not fully investigating every relationship, our research was carried out by examining the working capital efficiency of Hungarian enterprises having agriculture, including crop production, as their main activity.

We have extracted our data from the EMIS database and supplemented it from the public financial reports of enterprises available on the website e-beszamolo.im.gov.hu.

The selection of the enterprises included in the analysis was based on Act XXXIV of 2004 on the classification of small and medium-sized enterprises (SME Act). The SME Act categorises enterprises by size, based on the number of employees and certain value limits, but each category is also distinguished by general characteristics, according to which:

Micro-enterprises:
- Usually employ less than 10 people.
- Have a low level of revenue and low value of assets.
- Are often run by the owner or by a small number of professionals.

Small enterprises:
- Usually employ 10 to 50 people.
- Have higher revenue and more assets compared to micro-enterprises.
- May have multiple separate specialised activities and departments.

Medium-sized enterprises:
- Typically have 50 to 250 employees.
- Generate more revenue and have more assets of greater value and stock than small businesses.
- May have more than one establishment or branch.
- Often have more complex organisational structures and management systems.

According to the Hungarian SME Act, in addition to the number of employees, it is also necessary to take into account the value of the annual turnover and total assets, whereby a micro-enterprise is defined as an enterprise with an annual net income and total assets of less than EUR 2,000,000, a small enterprise between EUR 2,000,000 and EUR 10,000,000, a medium-sized enterprise with a revenue of more than EUR 10,000,000 but less than EUR 50,000,000 and total assets of less than EUR 43,000,000. Enterprises with employee headcount and profit and loss assets exceeding the upper limits of the medium-sized category are already considered large enterprises.

To analyze the efficiency of the working capital of Hungarian plant-growing enterprises, we carried out correlation studies concerning the following basic balance sheet data and the economic indicators derived from it, sales revenue and additional income and profitability indicators:

Explanatory variables:
- Total assets
- Working capital
- Working capital turnover
- Current assets turnover
- Durable assets turnover
- Current ratio
- Quick ratio
- Cash and Cash Equivalents Ratio
- Cash Ratio
- Inventory/Total Assets %
- Cash/Total Assets %

Dependent Variables
- Operating income
- Operating profit or loss (EBIT)
- Profit after tax
- ROA, ROS, ROE profitability indicators and
- EBITDA Margin

In line with the findings of the literature, we have been looking for correlations in terms of the effects of the above explanatory indicators on operating income, different profits and profitability indicators. In this study, bivariate and multivariate regression analyses were conducted, supplemented by statistical hypothesis testing, allowing us to make more robust claims about the reliability of the relationships.

Regression analysis is of great importance in statistics and research since it provides a way to examine and predict relationships between variables.
The process of regression analysis is usually followed in the course of regression analysis, whereby the data and the model are tailored to the specific research or analytical objective. It is important to note that regression analysis can be an iterative process, and evaluating the results and making any necessary adjustments can lead back to an earlier stage of the process, as required.
In our study the grouping of enterprises into size categories has been based only on annual net turnover and total assets for lack of employee headcount data, which does not perfectly follow the principles of the SME Act, however, in this case, financial indicators are more relevant for grouping than labour force indicators.

4. Results

The EMIS database contains enterprises engaged in crop production for the years 2018, 2020, and 2022, and within it, the Hungarian enterprises involved in the cultivation of oilseeds and grains were filtered. As mentioned in the previous chapter, we looked for the effect of the balance sheet's basic data and the indicators derived from them as explanatory variables on operating income, EBIT, and profit after tax, in addition to the usual three profitability indicators (ROA, ROE, and ROS) and the general EBITDA margin indicator in the economic analysis of medium- and large-sized enterprises.

Applying multivariate regression for the 12 explanatory variables was not a problem for a relatively large number of micro- and small-sized enterprises. If the "p" value of the regression was below 0.05, the relationship between the variables was considered significant.

A much smaller number of companies represented the size of medium- and large-sized enterprises (Table 1). Bivariate regression was used in their case, preceded by a correlation test, looking for the closest relationship between the explanatory and dependent variables.

Table 2: Number of companies by size category

	2018	2020	2022
Micro-sized enterprises	106	233	179
Small-sized enterprises	313	287	236
Medium-sized enterprises	9	23	19
Large-sized enterprises	5	7	6

Source: own collection based on EMIS, 2024

In the case of micro- and small-sized enterprises, as a result of the regression, and in the case of medium and large-sized enterprises, as a result of the correlation and regression calculation, the significant correlation was involved in values below $p<5\%$. The selection of the three years (2018, 2020, and 2022) was justified by the period before, during, and after the COVID-19 epidemic, looking for possible differences in the individual periods as well.

4.1. Micro-enterprises

Regarding micro-enterprises, the relationships in Table 2 were determined.

Table 2: Correlations regarding working capital efficiency of micro-sized enterprises

Micro-sized Enterprises	Operating income			EBIT			Profit after tax			ROA			ROE			ROS			EBITDA Margin		
	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18
Total Assets			x																		
Working Capital	x		x	x			x									x			x		
Working Capital Turnover	x		x							x			x			x			x		
Assets Turnover	x		x	x			x			x						x					
Current Assets Turnover							x			x						x					
Durable Assets Turnover	x																			x	
Current Ratio		x																			
Quick Ratio																					
Cash and Cash Equivalents Ratio		x																			
Cash Ratio	x		x																		
Inventory/Total Assets %	x	x																			
Cash/Total Assets %																					

Source: Own calculation, 2024

The table shows the results of the multivariate linear regression, with the x marks indicating significant correlations between each explanatory variable and the given dependent variable.

The most significant correlation in the efficiency of working capital can be defined as operating income, which is supported by the ROS indicator. Examining the years, we found the highest frequency of correlations in 2022. In this year, working capital (with 5 dependent variables), its turnover ratio (5), assets turnover (5), and current assets turnover (3) showed a close relationship with the most results and profitability indicators in addition to operating income. We did not obtain verifiable correlations for the working capital efficiency of micro-sized enterprises operating in the other years included in the investigation.

4.2. Small-sized enterprises

Small business size was the category with the largest elements examined (Table 1) in all three years. The results of the regression analyses are summarized in Table 3.

As can be seen from the density of x marks, in this size category, the explanatory variables showed more significant correlations with the individual dependent variables compared to micro-enterprises. In terms of operating income, 2018 shows a similar picture to micro-enterprises, but here, the current assets turnover is significantly related to operating income.

Table 3: Correlations regarding working capital efficiency of small-sized enterprises

Small-sized Enterprises	Operating income			EBIT			Profit after tax			ROA			ROE			ROS			EBITDA Margin		
	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18
Total Assets		x	x																	x	
Working Capital	x		x	x			x													x	
Working Capital Turnover	x		x	x			x													x	
Assets Turnover		x	x													x					
Current Assets Turnover	x		x		x			x			x		x	x			x				
Durable Assets Turnover		x																			
Current Ratio				x		x	x	x		x	x		x			x	x				
Quick Ratio				x			x			x			x			x					
Cash and Cash Equivalents Ratio																					
Cash Ratio																					
Inventory/Total Assets %		x		x			x			x			x			x					
Cash/Total Assets %								x			x			x			x				

Source: Own calculation, 2024

Operating income has the most demonstrable influence of the individual explanatory variables compared to the other dependent variables, but EBIT and profit after tax also indicate a causal link with five explanatory variables in 2022. Overall, for the 3 years and the 7 dependent variables, the current ratio (in 9 cases), the current assets turnover (8), and the inventory ratio (6) show a significant relationship with an outcome variable. If we examine only the outcome-related dependent variables, even the quick ratio shows a stable, close relationship in 2022.

4.3. Medium-sized enterprises

This company size was much smaller in terms of the number of elements that could be included in the analysis compared to the previous two categories, which is not surprising due to the categorization criteria used (operating income 10-50 million €/company, value of

assets 10-48 million €/company). Therefore, a multivariate regression could only be done to the 12 explanatory variables in 2020, and in the next two years, the variables deemed suitable for regression analysis were first selected using correlation analysis. In the case of correlation, the explanatory variables with an R-value greater than 0.4 were included in the regression analysis. However, as seen in Table 4, high correlations rarely showed a significant relationship.

Table 4: Correlations regarding working capital efficiency of medium-sized enterprises

Medium-sized Enterprises	Operating income			EBIT			Profit after tax			ROA			ROE			ROS			EBITDA Margin		
	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18
Total Assets		C	C									-C			-C						
Working Capital	C	x	C			C														-C	-C
Working Capital Turnover		x																		C	C
Assets Turnover	C																				
Current Assets Turnover						x															
Durable Assets Turnover	C	x																			
Receivables Turnover Ratio																					
Payable Turnover Ratio																				x	
Current Ratio																				x	x
Quick Ratio		x					C													x	x
Cash and Cash Equivalents Ratio				C			C									C					
Cash Ratio				C			C									C					
Inventory/Total Assets %																			C		x
Cash/Total Assets %				C			C									C					

Source: Own calculation, 2024

In the table, the "x" marks show a significant relationship, and the "C" indicates a correlation higher than 0.4, but they no longer show an actual relationship.

Among the four size categories, the lowest significant correlation between the assumed explanatory and dependent variables can be seen here, even though the range of explanatory variables has been expanded with the turnover of durable assets, receivables, and account payable turnover, for which the EMIS database provided an opportunity (in the case of micro and small sizes, the previously mentioned indicators were available in very few cases, so we did not take them into account).

It is clear from Table 4. that by 2020, there were several significant correlations in the case of the operating income and, in this connection, the EBITDA margin. Operating income had an actual relationship with the liquidity indicators of working capital, its turnover ratio, the durable assets turnover, and the EBITDA margin, which also prevails in the two previous size categories.

4.4. Large-sized enterprises
Similarly to the methodology used for medium-sized companies, the explanatory variables included in the two-variable linear regression were first selected by correlation for the individual dependent variables. Naturally, much less correlation was detected than for the first two size categories (Table 5).

The table again shows several significant correlations between the examined variables for the year 2022 and, similarly to the previous measurements, they occurred here in most cases in the case of operating income, and correlations that cannot be considered significant also occurred here in the largest number.

Due to the small number of elements (5-7-6 in 2022-2020-2018), the correlation studies were only performed for completeness due to the size categories, knowing that the results cannot be considered representative.

Table 5: Correlations regarding working capital efficiency of large-sized enterprises

Large-sized Enterprises	Operating income			EBIT			Profit after tax			ROA			ROE			ROS			EBITDA Margin		
	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18	'22	'20	'18
Total Assets	x	x	C	x	C	C	x	C	C	x			x			-C			-C		
Working Capital	x	C	C	C			C			C		-C	C		-C	x	-C	-C	-C	x	-C
Working Capital Turnover	x	C	C	x	C	C	x	C	C	x			x			-C		-C	-C		-C
Assets Turnover		C	C				C			C		-C	x		-C	x	-C	-C	x	-C	-C
Current Assets Turnover	x	C	C			C	x			x			C			-C	-C	-C	-C	-C	
Durable Assets Turnover	C	C	C	C			C			C		-C	C		-C	x	-C	-C	x	-C	-C
Receivables Turnover Ratio																					
Payable Turnover Ratio																C			C		
Current Ratio	-C			-C		-C	-C			-C			-C	-C							
Quick Ratio	-C			-C		-C	x			x			-C								
Cash and Cash Equivalents Ratio						-C															
Cash Ratio						-C															
Inventory/Total Assets %																					
Cash/Total Assets %																					

Source: Own calculation, 2024

5. Conclusions

Based on the literature sources, we set the goal of analyzing the impact of the assets and working capital of enterprises dealing with Hungarian crop production, including the cultivation of oilseeds and grain crops, on profitability, income, and operating income for three years (2018-2020 and 2022) by size category. We could not provide all the explanatory variables in the literature for the analysis due to the shortcomings of the database and the reports with different details, but we still looked for the effect of at least 12 explanatory variables on seven dependent variables.

The large number of items per size category for micro- and small-sized enterprises enabled multivariate linear regression, where the effect of working capital and current asset turnover on operating income was significant in all three years, especially for small-sized enterprises. In the same size category, the current ratio and quick ratio for 2022 significantly correlated with almost all variables, corresponding to the effects mentioned in the literature (Afza & Nazir, 2008; Singh & Pandey, 2008; Danuletiu, 2010). In the case of medium- and large-sized enterprises, the explanatory variables of working capital and liquidity showed a significant relationship almost only for 2022; for the medium-size category, the EBITDA Margin, and in the case of the large size, adjusted to the operating income.

Overall, it can be concluded that out of the three examined years, only the working capital, turnover rate, and current ratio and quick ratio indicators for the year 2022 gave a relationship that could be classified as significant in the selected economic dimensions.

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NEW CHALLENGES IN DIGITALIZATION INNOVATIONS OF TOURISM SERVICES AT THE EXAMPLE OF HOSPITALITY

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Abstract: *Digitization in tourism represents a big challenge. Worldwide initiatives are directed towards its application in the service of the industry. Already at the present time, their portfolio is quite broad and gives opportunities for the use of these innovations. The aim of the empirical study was to find out, analytically evaluate and describe the perception of the attractiveness of selected digital tools in hotel rooms and the interest in them. Through questionnaire research as a tool of quantitative research, it approximates the results on a sample of Slovak respondents, who participate in tourism and use the accommodation services regularly. The results point to the fact that digital tools harmonize the offer, but do not represent a highly attractive element without which the tourists could not imagine their stay in accommodation establishments.*

Keywords: *Digitalization; Tourism; Hospitality services; Digital technologies.*

JEL Classification: *L83*

1. Introduction to the issue of digitization in tourism

Digitalization denotes the application of contemporary information technologies also exist in traveling. One is seeing more and more applications of the term "smart" advancements in social, economic, and technical fields which is produced by big data, open data, and sensors increased communication and sharing of information. As per Höjer and Wangel (2015), what we refer to as the technological is not "smart" technology improvement, but rather the relationship between them synchronization and co-ordinated using of different tools. The importance of digital tourism is related to supporting travel experiences through digital tools. Digitalism means the use of a communication tool, an IT solution that helps satisfy the needs of tourists and improve the competition of organizations and companies in tourism (Benyon et al., 2014). The impact of the recent COVID-19 pandemic on the hospitality industry has been dramatic. There is no doubt that it will never return to the way it was, and the future of the hospitality industry will be characterized by profound structural changes. The suspension of tourism activities has increased the use of digital technologies, and in the post-COVID-19 world, changes in the use of travel services by travellers and an increase in the use of digital tools are expected (Zeqiri et al., 2020). Today, digitization is no longer an innovative process, but a necessity, because it improves communication between entities using digital technology, refers to all economic sectors, including tourism. The digitization of a tourist destination can be viewed both from a procedural and a systemic point of view. However, they do not exclude each other, but complement each other. The authors of Karpova et al. (2020) focused on 10 types of tools: digital marketing, cloud technologies, information support, Internet of Things, virtual tourism, smart area, satellite navigation systems and geographic information systems, electronic document management, artificial intelligence,

big data and some distributed. registration tools. The ability to experience real-time travel via drones, satellite and other technologies could have a major impact on the hospitality industry and lead to new forms of travel. Virtual tourism would help reduce mass tourism and travel, although it depends on consumer understanding of technologies and satisfaction with virtual travel replacing real travel and physical presence at a destination. Virtual reality is also likely to influence travel planning, allowing visitors to visit museums, castles, galleries and other destinations before physical travel (Zeqiri et al., 2020).

1.1. New digital era of hospitality

Technology and digitization cannot be stopped. However, tourism companies can prepare for future challenges with sufficient flexibility and openness. In the tourism of the future, new consumers exhibit new priorities and demands (Miranda et al., 2015). As in any other industry, guests in hotels and restaurants expect a seamless experience – this experience should be available right from making a reservation to providing various hospitality facilities. The level of technology in each of these stages should be advanced or at least at the level of what customers have at home (EHL Insights 2023). As the author Šambronská (2024) states, innovations in the field of tourism, hospitality and destinations have a fundamental impact on their competitiveness and sustainable development. The introduction of innovations brings not only positives, such as the support of business activity (Beresecká, Svetlíková 2022), the expansion of the possibilities of using destinations and the motivation of visitors to a longer stay (Dzurov Vargová 2023), but also certain disadvantages that require a solution and elimination by the management. Innovations in tourism play an important role and often significantly expand the possibilities of businesses in tourism or the destination itself. Considering the rapidly changing trends and dynamics of the current world, it is crucial for managers in this area implement innovative approaches and procedures to successfully respond to new challenges and attract customers. Overall, it is clear that innovation is essential for the sustainable development and success of tourism and destination businesses. As stated by the author Kolesárová et al. (2024), reviewing published studies on digital technologies in the hotel sector after 2011, identified social media, mobile applications, artificial intelligence, self-service technologies and robots, virtual reality, commerce and social commerce, information systems, intelligent systems and front desk technologies as disruptive digital technologies and their applications in the hotel sector. For example, with the development of artificial intelligence (AI), service robots have become more common in the restaurant industry. The hospitality industry in general is focused on creating a more personalized and digitized experience services for consumers. It should limit mass tourism and allow individualization experience and sustainability (Ben Youssef and Zeqiri 2020).

1.2. Possibilities of using digital tools in the hospitality industry

According to Buhalis and Leung (2018), smart hospitality puts customers at the center of the process, providing personalized and contextual services and experiences, and enabling the exchange of information the value chain. Service robots are "system-based, independent and adaptive interfaces that interact, interact and provide services to an organization's customers (Wirtz et al., 2018). Tuomi et al. (2021) suggest that service robots play several roles in the production and delivery of hotel services. For example, in the production process of services, disinfection robots that emit UV rays to kill viruses and bacteria have been announced for use in airports and hotels worldwide to ensure a safe and clean environment (Greg 2020). In the service delivery process, service robots assist front-line employees when they encounter the service. For example, robotic doormen help employees greet customers upon arrival, carry luggage, guide guests and provide room service. Thanks to pre-programmed artificial intelligence and machine learning systems, service robots can

effectively respond to guests and communicate with them even in multiple languages (Zhu et al., 2021). In addition to service bots, online chat bots powered by artificial intelligence are also used to deliver quick responses to customers through real-time chat. Chatbots provide instant responses to customers via mobile apps, hotel websites or social media, greatly improving customer engagement. Chatbots can also be very useful during the current pandemic as housing has been scarce (Zhu et al., 2021). The Sitel Group (Jena 2020) found that customers believed that VR simulations were the best tool for operators in the restaurant industry to create an engaging customer experience. The restaurant industry has seen an increase in virtual reality (VR) applications in recent years. Considering the intangibles of the hospitality experience, VR can have a huge impact on the customer at the booking stage. With a digitally tailored environment, customers have a much clearer idea of what to expect, which attracts more potential customers. One example of a VR application is a virtual tour video that gives guests a first-person perspective of a property. With the click of a mouse or using a headset, guests can experience a digital walkthrough with a 360-degree view and even see the layout of the hotel's rooms. This not only gives customers the opportunity to experience before they book, it also allows the property to benefit from a "try before you buy" marketing strategy. A digital service platform allows guests to browse, select activities that suit them, facilitating seamless integration of technology into their travel experience. Ordering and reservation services, location-based services and\personalized communication and social media are some examples. of digital services that attract technophiles. There are a number of third-party applications that provide services that customers know and trust (Tossell 2015). Digitization makes more possible ecological "travel" and it is possible that people prefer to avoid it long journeys and multiple contact at airport hubs. To stay relevant, many hospitality companies are offering more online services and allowing virtual visits to museums, galleries, exhibitions, castles, zoos, aquariums and other destinations. Digital tools will continue to be used and developed in accommodation facilities as well. In the future, the hospitality industry will depend even more on digitization and new technologies (Zeqiri et al., 2020).

From above mentioned theoretical background there was an aim to answer the research questions:

- ▪ RQ1: Are modern digital tools designed for the hospitality sphere attractive for the tourist?
- ▪ RQ2: Are there any difference in the perceived attractiveness of selected digital tools?

2. Main aim and methodology

The aim of the study was to find out, analytically evaluate and describe the perception of the attractiveness of selected digital tools in hotel rooms and the interest in them.

Based on the method of *scientific abstraction*, the theoretical concept of the study was developed. Dominant attention was paid to the digital direction of the tourism industry. More specifically, the principles of using digital tools in the hospitality industry were theoretically described.

Based on the findings from the theoretical concept, specific digital tools that are currently used in the hospitality sphere were selected based on the use of *selection method*. These were the subject of research questions,

The research used *questionnaire research* as a main research method, which investigated the perception of the attractiveness of selected digital tools in hotel rooms and interest in them by using the examples of selected digital tools.

Through *mathematical and statistical methods*, the research results were analysed in the context of identifying differences in the perception of these digital tools in hospitality sphere in terms of selected characteristics of the respondents.

For the purpose of analytical evaluation of the results *Doornik-Hansen* test was used to verify the normality and hypotheses verification verified by *Anova* and *Kruskall Wallis* tests were used.

From the point of view of the form of the questionnaire, it was created in the MS forms platform and for older age categories it was created and distributed in physical form as well. Data collection as a basis for the research was carried out in February and March 2024. Respondents were approached personally, electronically through email addresses and social networks. The online method of collecting responses was more dominant. The available sample in various age categories in the territory of Slovakia was addressed. The sample consisted of 203 people who participated in the survey aged 18-63. The data was collected anonymously and then analysed to identify patterns and trends in the responses. In the questionnaire for specific instruments, a 7-point Likert scale was used to express attractiveness (1- extremely attractive, 2- very attractive, 3- rather attractive, 4- neither attractive - neither unattractive, 5- rather unattractive, 6- very unattractive, 7- maximum unattractive). The gender of the respondents, the age of the respondents and the education of the respondents were monitored as variables. For the purposes of this research, a total of 7 digital tools used in the hotel room were selected. Based on the aim of the study, a hypothesis was formulated.

H0: We assume that there are differences in the attractiveness of specific digital tools in hotel rooms and interest in them.
H1: We assume that there are differences in the attractiveness of specific digital tools in hotel rooms and interest in them, given to the selected characteristics of the respondents.

2.1. Research results interpretation

The research sample of the total number of respondents 203 consisted of respondents fulfilling the condition of participation in tourism and at the same time using the services of accommodation facilities created the dataset. Overall 96 men and 107 women participated in the research. The youngest respondent was in the age of 18 years and the eldest was 63 years old. For the purpose of the evaluation the age categories were divided into to four: adolescence (12-18 years), younger adults (19-29 years), middle-aged adults (30-49 years), older adults (50-64 years). The largest group was made up of respondents with a university education: of the first degree, second degree and the third degree, in total 110 respondents. Secondary education was stated by 93 respondents. As Table 1 (Descriptive statistics of the research sample) shows, the average value, which was the sum of all values in the set, of the binary gender category was 0.52239, the percentage of members of this category in the total sample was 52%. The average age of respondents was 32,070 years.

Table 1: Descriptive statistics of the research sample

	Gender	**Age**	**Education level**
Average	0,52239	32,07	1,5473
Median	1	26	2
Minimum	0	16	1
Maximum	1	64	2
Standard deviation	0,50075	12,31	0,499
Variation coefficient	0,95857	0,38386	0,32251
Skewness	-0,08964	0,76557	-0,18991
Pointiness	-1,992	-0,56663	-1,9639

Source: own processing

For testing the normality of each element, 4 different tests were input. The Doornik-Hansen test was chosen in particular. The decision rule of the p-value was the considered level of significance α equal to 0.05. The resulting values were written as a p-value.

Hypothesis H0 was rejected if P-value ≥ 0.05. The variable did not have a normal distribution. Hypothesis H1 cannot be rejected if P-value > 0.05. The variable has a normal distribution.

If the hypothesis was rejected, the non-parametric Kruskal-Wallis test was further used. If the hypothesis could not be rejected, the parametric One-Factor ANOVA test was used in the evaluation. On the scale, the attractiveness of digital tools in accommodation services was determined using the example of hotel rooms.

H1.1: We assume that there are differences in the attractiveness of specific digital tools in hotel rooms and interest in them, given to the gender of the respondents.

Table 1: Attractiveness of digital tools in hotel rooms according to the gender

Digital tool	p-value	ANOVA X^2	Kruskal-Wallis test
Keys via mobile application	0	-	0,0007
Mobile application for booking service, table, meals, drinks	0	-	0,01
Mobile application for light control	0	-	0
Smart TV	0,0009	-	0,9114
Mobile application for controlling the thermostat, air conditioning and temperature	0	-	0
Smart artificial intelligence for opening windows	0,2567	0,0183	-
Smart artificial intelligence for controlling curtains	0,026	-	0,0857

Source: own processing

H1.2: We assume that there are differences in the attractiveness of specific digital tools in hotel rooms and interest in them, given to the age of the respondents.

Table 2: Attractiveness of digital tools in hotel rooms according to the age

Digital tool	p-value	ANOVA X^2	Kruskal-Wallis test
Keys via mobile application	0	-	0,5799
Mobile application for booking service, table, meals, drinks	0	-	0,7796
Mobile application for light control	0	-	0,9141
Smart TV	0,0009	-	0,2781
Mobile application for controlling the thermostat, air conditioning and temperature	0	-	0,6753
Smart artificial intelligence for opening windows	0,2567	0,474	-
Smart artificial intelligence for controlling curtains	0,026	-	0,7584

Source: own processing

H1.3: We assume that there are differences in the attractiveness of specific digital tools in hotel rooms and interest in them, given to the education level of the respondents.

Table 3: Attractiveness of digital tools in hotel rooms according to the education

Digital tool	p-value	ANOVA X^2	Kruskal-Wallis test
Keys via mobile application	0	-	0,0047
Mobile application for booking service, table, meals, drinks	0	-	0,781
Mobile application for light control	0	-	0,4832
Smart TV	0,0009	-	0,835
Mobile application for controlling the thermostat, air conditioning and temperature	0	-	0,2495
Smart artificial intelligence for opening windows	0,2567	0,1901	-
Smart artificial intelligence for controlling curtains	0,026	-	0,2235

Source: own processing

2.2. Discussion

As can be seen from the results, there were used different methods for evaluation of the attractiveness of the selected digital tools. Kruskal-Wallis test was used as the most effective one.

According to the gender of the respondents, the Anova test was used in one case of the smart artificial intelligence for opening windows, but did not confirm the statistically significant difference. In the case of the other tools tested by the Kruskal-Wallis test, differences in the perception of their attractiveness were found. The most attractive seems to be the Smart tv operated by customers´ mobile phone. According to the age of the respondents, the variables did and did not have a normal distribution. Therefore, two tests were used: a parametric one-factor ANOVA and a non-parametric Kruskal-Wallis test. One-factor ANOVA was used for elements whose p-value under normality was higher than the significance level α 0.05. In the case of the age of respondents, there were not found significant differences. Only smart artificial intelligence for opening windows reached the value higher than 0,05. The same result was in the case of education level of the respondents. On the other hand, in the case of education level at the example of tools where the p-value of the normality of the elements were less than the significance level α 0.05 and subsequently was used Kruskal-Wallis test, the differences appeared.

Conclusion

In conclusion, it is possible to summarize that digitization in accommodation services is progressing, but the standards used so far represents an ideal model. Even though the portfolio of tools is expanding, the interest on the part of tourism participants is lower. In general, opinions on these tools are more unified and there are no significant differences in the perception of their attractiveness. Limitation of the study show the possibility to deepen the research and further expand the portfolio of researched digital tools.

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THE FIELD OF ACTIVITY AND INNOVATION – AN EMPIRICAL ANALYSIS IN EAST EUROPEAN COUNTRIES

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Abstract: *The current business environment is characterized by high competition between companies as well as global challenges and growing technological progress. Businesses must constantly adapt to changes in the business environment, changes in the market environment and the constantly changing requirements of customers. The purpose of this article is to point out the major gaps across eight former communist East-European countries in what regards the innovation: Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia. In order to compare the trends in hat regards innovation in Eastern European countries we have first collected data for four innovation indicators for each East European country, separately for each field of activity. We have computed variation coefficients that revealed the fields of activity with the highest and/or lowest gaps across selected countries. Our conclusion is that Eastern Europe is increasingly becoming a hotspot for innovation, with countries in the region making significant progress in various aspects of innovation-driven development. By leveraging their strengths, addressing challenges, and capitalizing on opportunities, Eastern European countries can further enhance their innovation performance, competitiveness, and sustainable growth in the global innovation landscape.*

Keywords: *innovation, field of activity, OSLO manual, product innovation, Eastern Europe*

JEL Classification: *O30, Q55, O32*

1. Literature review

The concept of innovation is not novel, yet we continue to encounter diversity and challenges in comprehending its essence. This diversity persists even in attempts to define, classify, measure and propose policies as concern both innovation and innovation activities (Bielińska-Dusza & Hamerska, 2021). The field of innovation research predominantly draws upon the overarching theory of entrepreneurship, strategic management principles, and theories of institutional and endogenous growth (Shane, 2003), (Song, 2016), (Costa, et al., 2016), (Mei, et al., 2019). Despite the breadth of theoretical frameworks utilized, there remains a notable gap in empirical studies that delve into microdata analysis within specific business sectors, particularly at the more granular 2–3 digit NACE levels. A study by Vokoun and Dvouletý (Vokoun & Dvouletý, 2022) has shed some light exactly in these specific NACE levels, their results support the idea according to which sectoral variables significantly influence firm innovation.
In order to fully grasp and attain the full benefits of developing a company based or focused on innovation, one starting point would be to understand the notion itself. Numerous definitions have been proposed for the concept of innovation over the years; in order to

provide a unified understanding, we will differentiate between "innovation activities" (referring here to the process), as opposed to simple "innovation" (referring here to the outcomes) (OECD/EUROSTAT, 2018). From an academic perspective, the factors that manage to influence innovation within individual firms are mostly rooted in Schumpeter's influential research, which emphasizes two key hypotheses: (1) larger firms demonstrate a greater propensity for innovation compared to smaller firms, and (2) industries characterized by higher concentration are more likely to exhibit elevated levels of innovative endeavors(Schumpeter, 2003).The major general approaches to innovation within a business ecosystem revolve around the following aspects: product innovation, process innovation, business model innovation, technological innovation, open innovation, disruptive innovation.

Assisted by the framework already established by the 2018 Oslo Manual for measuring scientific, technological and innovation activities, the following definitions shall be used: "An innovation is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)" (OECD/EUROSTAT, 2018); "Innovation activities include all developmental, financial and commercial activities undertaken by a firm that are intended to result in an innovation for the firm, whereas a business innovation is a new or improved product or business process (or combination thereof) that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm"(OECD/EUROSTAT, 2018). As can be taken from the analysis of the 2018 Oslo Manual, in a business setting, we can usually differentiate between product innovation (referring here both to goods and services), business process innovation (included here we enumerate production, distribution, logistics, and IT&C), organizational (referring here both administration and management) and marketing (including sales and after-sales support). We can thus observe that innovation is rooted in the functional areas of businesses.

The major activities that businesses can leverage in their favor in order to attain innovation outputs and results, of relevance to the innovation, are: the development of experimental R&D activities; engineering, design, and other creative work activities; marketing and brand equity activities; IP-related activities; employee training activities; software development and database activities; activities related to the acquisition or lease of tangible assets; innovation management activities (OECD/EUROSTAT, 2018). Apart from these activities that have as a result a specific type of innovative output, an observation that can be made refers precisely to how innovation can be measured throughout various ecosystems, either regional, national, and/or international. As such, there is a need to properly comprehend the spread, the use and the weight of various indicators that are used in order to effectively measure innovation. The existence of a multitude of companies that perform from an innovation perspective implies the existence of a multitude of indicators that have the potential to measure this innovation performance. For this purpose, guidance is provided by the Oslo Manual: "Innovation indicators can be constructed from multiple data sources, including some that were not explicitly designed to support the statistical measurement of innovation. Relevant sources for constructing innovation indicators include innovation and related surveys, administrative data, trade publications, the Internet, etc." (OECD/EUROSTAT, 2018). Among the sought-after properties of such indicators, we mention relevance, validity, precision, chronology, authenticity, equivalence, and ease of use. In this sense, it is imperative, for business and for researchers as well, to understand the impact that R&D activities have had over the years; R&D bearing activities are included within the innovation activity of businesses, but even so, in order for such endeavors to be deemed as bearing innovation outputs, certain criteria must be met. As according to the Frascati Manual description, R&D undertakings must satisfy five specific criteria: (i) novelty; (ii) creativity; (iii) addressing uncertain outcomes; (iv) methodical approach; and (v) potential for transferability and/or reproducibility(OECD, 2015). Of the previously mentioned criteria,

creativity is the one that is most closely related to the sources "that were not explicitly designed to support the measurement of innovation" as per the Oslo Manual. Such criteria can be thought of as being the sources for company innovation: unforeseen events, disparities, operational requirements, and shifts in industry and market dynamics(Drucker, 2002).

Innovation, even though desired, exists at the intersection of interests manifested by both the business environment and legal authorities (regional or national authorities) (Sehleanu et al, 2021). The primary motives driving companies to engage in research and innovation efforts include the desire to enhance profitability and solidify their strength within the market (Harhoff, 2000). The notion according to which innovation is meant to be seen as the primary driver of global economic advancement during times of crisis has gained widespread acceptance; a noteworthy group of enterprises that manifest such resilience during hardship or economic turmoil are enterprises that manifest innovative performances (Archibugi & Filippetti, 2013), (Wenzel, et al., 2020). Such an example of hardship has been manifested during the recent pandemic; at the same time, this period has also unfolded a particular way in which enterprises have managed to stay above competitors: innovation led through the use of digitalization.

Research indicates a significant relationship between the business sector (categorized by NACE codes - the Statistical Classification of Economic Activities in the European Community) and the extent of business innovation. According to a study conducted by the European Commission, specific sectors, including information and communication technologies (ICT), manufacturing, and healthcare, demonstrate higher levels of innovation compared to others (Hollanders, et al., 2020). This association is ascribed to various factors like competitive intensity, technological progress, and market demand inherent to each sector, all influencing the inclination for innovation among businesses operating within them. Similarly, research carried out by the Organization for Economic Co-operation and Development (OECD) highlightsthat sectors characterized by high-tech manufacturing NACE codes (example here can include the aerospace, pharmaceuticals, and biotechnology sectors), consistently surpass other sectors in innovation activities and performance (OECD, 2019). This underscores the significance of research and development (R&D) endeavors and technological advancements in fostering innovation within these industries(OECD, 2019).

Industries falling under NACE codes associated with information technology and digital services typically showcase heightened levels of innovation when compared to traditional sectors. This phenomenon can be attributed to the innate flexibility, rapid pace of evolution, and intense competition prevalent in these fields. An investigation conducted by the World Intellectual Property Organization (WIPO) has shed light on the correlation between specific NACE codes and patent activity, a pivotal gauge of innovation. Sectors like electronics, automotive, and renewable energy, categorized under distinct NACE codes, have been identified as significant contributors to global patent filings, indicating a robust association between industry sectors and innovative output(World Intellectual Property Organization (WIPO), 2022).While the WIPO report concentrates on innovation trends within technology-driven and research-intensive sectors, it does not imply exclusivity to these industries alone. For instance, Rydvalová and Pittnerová(Rydvalová & Pittnerová, 2013)scrutinized the innovative performances of businesses within the glass and jewelry sector in the Czech Republic. Their analysis disclosed a predominant emphasis on marketing innovation among these entities, with a majority relying on internal resources for innovation initiatives. Nonetheless, the study underscored a generally low level of overall innovative capacity among the surveyed firms. Moreover, it was noted that many companies prioritized tackling immediate challenges over investing in forward-looking development, including innovation endeavors.

Apart from internal business-specific benefits, tailoring the activities of a business through the development of innovation-lead strategies can increase the likelihood of the ability to

adjust to market dynamics, which in turn will favor the existence of satisfied customers (Pazilov, et al., 2020). Another notable research endeavor is the Norwegian Innovation Survey for 2013 levels, an independent inquiry conducted by Statistics Norway as part of the Community Innovation Survey (CIS) during one of its intermediary years. This comprehensive survey provides insights into innovation activities within the Norwegian business sector during 2013, examining the extent to which companies have implemented product or process innovations between 2011 and 2013; apart from aspects pertaining to employment (minimum 5 enterprises) and data that is analyzed for multiple industries and sectors, the study does point to the predominance of innovation within specific industries and fields of activity (NACE codes F41–F43, H49–H53, and I56, and further expanded within the manufacturing sector, specifically, NACE codes C10-C33) (Hashi & Stojčić, 2013).The previous studies highlight an important reality that currently unfolds: not only enterprises/SME's operating within the ICT industry (NACE Code 62 Information technology services) are prone to manifest an innovative activity. Even so, extensive research for the scope of the importance of ICT across various industries has highlighted that resources allocated towards ICT can facilitate a higher productivity and competition, overall reduction 0of costs and customer satisfaction (Añón Higón & Bonvin, 2022). Even though desired, such outcome stemming from the use of ICT for company development showcase the importance of constant investments for ICT related activities, as part of company and industry specific efforts to increase innovation performance and activities.

Another facet regarding innovation refers to types of businesses under analysis; we distinguish here between industrial enterprises and service enterprise. The Polish Central Statistical Office has developed and spread out a number of surveys during 2011-2018 (on a two year basis: 2011-2013, 2014-2016, 2016-2018, andby using NACE divisions); thesehave highlighted the most innovative active industrial enterprises and service SME's within the country. If during 2011-2013 notable activity was observed in divisions such as the manufacture of coke and refined petroleum products, pharmaceutical products, computer, electronic, and optical products, chemicals and chemical products, as well as mining of coal and lignite, during the 2014-2016 time period, mining of coal and lignite, manufacture of pharmaceutical products, computer, electronic, and optical products, chemicals and chemical products, and manufacture of coke and refined petroleum products dominated the industrial landscape. In a similar manner, during the years 2016-2018, compelling industrial activity was present in the manufacturing sector of pharmaceutical products, computer, electronic, and optical products, mining of coal and lignite, manufacture of electrical equipment, and manufacture of coke and refined petroleum products. In respect to service enterprises, during the 2011-2013 period, most innovation was noted in sectors encompassing insurance, reinsurance, and pension funding activities, scientific R&D, computer programming and consultancy activities, financial service activities, and information service activities. In the 2013-2016 period, similar innovation trends have been observed in divisions such as insurance, reinsurance, and pension funding, scientific R&D, computer programming and consultancy activities, financial service activities, and publishing activities. The final analyzed period, 2016-2018, highlights intensified innovation activities within the following areas: scientific R&D, insurance, reinsurance, and pension funding, computer programming and consultancy activities, information service activities, and publishing activities (Bielińska-Dusza & Hamerska, 2021), (GUS, 2014), (GUS, 2018), (GUS, 2020). Activities within specific industries exhibit diversity, showcasing the presence of a certain heterogeneity. This diversity may be based in various factors such as technological advancements, market demands, and regulatory frameworks, contributing to the unique innovation landscapes of each sector.

2. Romanian national and regional context

Countries boasting robust innovation ecosystems often draw greater investment, generate high-quality employment opportunities, and maintain advantageous trade balances (European Commission, 2016) (Wensheng, et al., 2022). As per the 2022 dataset released by the National Institute of Statistics, it is discerned that 10.7% of the active enterprises within Romania exhibit characteristics of innovation (Romanian National Institute of Statistics, 2023). Furthermore, findings from the private entity ROTSA indicate the presence of approximately 500 startups currently operating within the Romanian domain (ROTSA, 2021). Worthy of mentioning is the prominence of the fintech, automation, and marketing sectors within the startup landscape (largely focused on R&D intensity and widespread use of technology), representing 35.2%, 35.2%, and 14.2% of total employees respectively. These following sectors also stand out for developing startups with the highest revenue figures, namely Automation (38.1%), Fintech (31.8%), and Marketing (12.1%). Additionally, Romania's standing in the Global Innovation Index (GII) is noteworthy, positioning itself 49th out of 132 economies surveyed and 31st among the 39 European states evaluated (World Intellectual Property Organization (WIPO), 2022).

Table 1. Share of innovation active enterprises by NACE Rev. 2 activity and size class in 2016, 2018 and 2020

Country\Year	2020	2018	2016
Bulgaria	36.2	30.1	59.8
Czechia	56.9	46.8	72.4
Croatia	54.9	52.5	72.2
Hungary	32.7	28.7	61.5
Poland	34.9	23.7	58.8
Romania	**10.7**	**14.6**	**23.1**
Slovenia	55.2	48.6	66.9
Slovakia	36.6	30.5	66.6

Source: own elaboration by authors based on information from EUROSTAT database for the years 2016, 2018 and 2020 (EUROSTAT, 2023)

Out of 28,776 SME's in 2016-2018, 4,198 of them are focused on innovation. Manufacturing accounted for 94.7%, with relatively small shares in the remaining sectors: water distribution, sanitation, waste management and cleaning services 3.1%, electricity generation and supply and thermal energy, gas, water a it is heating and air conditioning 1.6%, and the mining industry 0.6%. IT&C (39.8%) accounted for the largest share of innovation in service sector activities, followed by general trade (21.4%), transportation and warehousing (16.8%), professional, scientific and technical activities (15.9%), and financial intermediation and insurance (6%). Out of the total of 4,198 innovative enterprises, 1,836 enterprises innovated only products, and 2,843 enterprises innovated products (regardless of other types of innovations). In the industrial sector, 1,222 SME's introduced only new or significantly improved products, and 1,755 SME's innovated introduced innovated product. In the service sector, 614 SME's introduced new or significantly improved products (Romanian National Institute of Statistics, 2020).

Data from the Community Innovation Survey results from the EUROSTAT databaseon innovation activities of enterprises(by NACE Rev. 2 activity and size class)make it possible to observe the imbalances that exist between various European nations concerning innovation activities(EUROSTAT, 2023). The following table highlights the evolution of innovation-active enterprises in three for 2016, 2018 and 2020 levels.

Concerning Romania, a sharp decline in the share of innovative firms can be noticed. From 2016 to 2020, there has been a negative evolution. Between 2016 and 2018, the Bucharest-Ilfov region has had the highest share of innovative enterprises, representing 25.5% of the total, followed closely by the North-West region at 21.1%. Conversely, the South-West Oltenia region and the West region recorded the lowest proportions, each at 4.4% and 4.0% respectively. The North-West region has had the highest percentage of enterprises solely innovating in products, reaching 11.0%, while the West and South-West Oltenia regions had the lowest proportions, both at 2.0%. In terms of combined product and/or business process innovation, the North-West region led with 6.1%, contrasting with the West region's mere 1.3%. At the same time, the North-West region exhibited the highest proportions of innovative SME's introducing new products for internal use (3.7%), while the South-West Oltenia region showcased the highest proportions of innovative SME's introducing new products to the market (1.6%). Innovative activities within the North-West area include R&D (64.1%), IT&C activities (62.1%), beverage manufacturing (52.5%), manufacturing of motor vehicles, trailers, and semi-trailers (41.7%), and computer service activities (41.7%). It is noteworthy that certain regions attract higher levels of innovative activities in SME's, such as the Centre region, where both metallic ore extraction and petroleum product manufacturing score 100%(Romanian National Institute of Statistics, 2020).

3. Methodology

The purpose of this article is to point out the major gaps across eight former communist East-European countries in what regards the innovation: Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia. In our opinion it is relevant to compare countries with similar background before the 90's and that are part of the European Union at the moment.   We have used data collected from OECD website and they refer to deviations (differences) of industry-country indicators with respect to the overall country-specific average. The collected indicators are: Innovative firms as percentage of total firms (product/business process - Oslo Manual 2018), Innovation-active firms (innovative enterprises as well as firms with innovation activities that have not necessarily led to an innovation), as a percentage of total firms, Product innovative firms (innovation of services), as a percentage of total firms, Business process innovative firms, as a percentage of total firms. The reference years are presented below:

Table 2. Reference years for the empirical research

BGR	Eurostat Community Innovation Survey 2020 and National Innovation Survey	2018-20	3
HRV	Eurostat Community Innovation Survey 2020 and National Innovation Survey	2018-20	3
HUN	Eurostat Community Innovation Survey 2020 and National Innovation Survey	2018-20	3
POL	Eurostat Community Innovation Survey 2020 and National Innovation Survey	2018-20	3
ROU	Eurostat Community Innovation Survey 2020	2018-20	3
SVK	Eurostat Community Innovation Survey 2020 and National Innovation Survey	2018-20	3
SVN	Eurostat Community Innovation Survey 2020	2018-20	3

All the data collected refer to 2018-2020, as seen above.

4. Results

In order to compare the trends in hat regards innovation in Eastern European countries we have first collected data for four variables: Innovative firms (product/process), as a percentage of total firms (IF), Innovation-active firms (innovative enterprises (INN_OSLO) as well as firms with innovation activities that have not necessarily led to an innovation), as a percentage of total firms (IAF), Product innovative firms (innovation of services), as a percentage of total firms (PIF), Business process innovative firms, as a percentage of total firms (BIF).

Since the data are extremely heterogenous, the only statistical method that could be used as the computation of Pearson's variation coefficient, which is computed as a ratio beteen the standard deviation of the values and the average value.This coefficient indicated if the values are homogenous or not and if the average value is representative for the sample.

In case the values are above 0.4, the indicator is heterogeneous for the selected field of industry. The highest gaps between the selected countries in what regards the Innovative firms (product/process), as a percentage of total firms (IF) is in Warehousing & spt act. for transportation, postal activities whilst the lowest gap is in the manufacturing of transportation equipment.

Table 3. Field of activity-related variation coefficients for Eastern European Countries

Indicators / Field of activity	IF	IAF	PIF	BIF
Warehousing & spt act. for trans., postal act.	0,688	0,53	0,769	0,559
Trans. & storage	0,628	0,607	0,889	0,639
Mining & quarrying	0,627	0,555	0,421	0,671
M. of textiles, leather & related pdts	0,553	0,483	0,506	0,68
Wholesale trade, excl. motor veh. & mtrcl.	0,521	0,496	0,625	0,614
Manufacturing	0,477	0,47	0,542	0,616
Electricity, gas, steam & ac. supply	0,473	0,264	0,482	0,477
M.of food, beverages & tobacco pdts	0,471	0,519	0,508	0,599
Sc. research & dev.	0,471	0,102	0,518	0,466
M. of furniture & other pdts.; eqpt. repair & install	0,458	0,42	0,525	0,559
Land trans. & via pipelines, water, air trans.	0,439	0,415	0,655	0,428
Professional, scientific and technical activities	0,429	0,338	0,48	0,479
M. of computer, electronic & optical pdts.	0,418	0,344	0,463	0,481
Information & communication	0,393	0,364	0,43	0,488
Water coll., treat. & supply	0,369	0,323	0,679	0,384
Advertising & market research	0,352	0,259	0,632	0,382
M. of basic metals	0,34	0,288	0,426	0,392
Architectural, engineering, technical testing act.	0,338	0,285	0,366	0,396
Water supply & waste mgmt	0,332	0,249	0,576	0,343
Sewerage, waste mgmt, remediation act.	0,316	0,215	0,588	0,298
M. of rubber & plastic pdts.	0,315	0,27	0,42	0,337
Financial & insurance act.	0,311	0,264	0,326	0,286
M. of other non-metallic mineral pdts.	0,308	0,287	0,552	0,61
M. of wood, paper, printing & rep.	0,29	0,248	0,405	0,332
M. of fabricated metal pdts., except machinery eqpt.	0,287	0,245	0,431	0,316
M. of basic pharmaceut. pdts. & preparations	0,268	0,188	0,353	0,3
M. of electrical eqpt.	0,259	0,213	0,22	0,295
Publishing & content act.	0,234	0,197	0,204	0,45

M. of machinery & eqpt n.e.c	0,232	0,177	0,253	0,267
ICT Services	0,227	0,386	0,5	0,482
M. of transport eqpt.	0,226	0,167	0,227	0,298

Source: own elaboration by authors based on information from OECD database

In what regards the innovation-active firms (innovative enterprises (INN_OSLO) as well as firms with innovation activities that have not necessarily led to an innovation), the highest gap is in the transportation and storage field of activity. The same field of activity has the highest gap in East European product innovative firms (innovation of services). The business process innovative firms have the highest heterogeneity in the manufacturing of textiles, leather & related products.

Conclusions and discussions

In recent years, Eastern Europe has been making significant strides in innovation, driven by a combination of factors such as economic development, investment in education and research, entrepreneurial spirit, and supportive policies and initiatives. While Eastern European countries vary in their innovation performance and capacity, several countries in the region have emerged as innovation leaders and hubs. Here's an overview of innovation in Eastern Europe:

1. Global Innovation Index (GII): Eastern European countries have been making progress in the Global Innovation Index rankings. Countries like Slovenia, Czech Republic, and Poland have been recognized for their innovation performance and are among the top-ranked countries in the region.
2. Startup Ecosystem: Cities like Prague (Czech Republic), Budapest (Hungary), and Warsaw (Poland) have vibrant and growing startup ecosystems. These cities host numerous startups, incubators, accelerators, and co-working spaces, attracting both local and international entrepreneurs, investors, and talent.
3. Educational and Research Institutions: Eastern European countries have been investing in education, research, and development. Countries like Czech Republic, and Hungary have strong educational systems and universities that produce skilled graduates and researchers in science, technology, engineering, and mathematics (STEM) fields.
4. Technological Infrastructure and Digitalization: Eastern European countries are embracing digitalization and advanced technologies, with increasing internet penetration, ICT infrastructure development, and adoption of digital technologies in various sectors.
5. Government Support and Policies: Governments in Eastern Europe are implementing policies, programs, and initiatives to promote innovation, entrepreneurship, and digital transformation. Supportive regulatory frameworks, tax incentives, grants, and funding opportunities are available to encourage innovation and R&D activities.
6. Collaboration and Partnerships: Eastern European countries are fostering collaborations and partnerships between academia, industry, research institutions, and international organizations to promote knowledge exchange, technology transfer, and innovation-driven growth.
7. Focus on Specific Sectors: Eastern European countries are focusing on specific sectors and industries to drive innovation and economic growth. For example, Hungary and Czech Republic are focusing on automotive, manufacturing, and engineering industries.

8. Challenges and Opportunities: Despite progress, Eastern European countries face challenges such as limited access to finance, talent retention, brain drain, and bureaucratic hurdles. However, these challenges also present opportunities for innovation, collaboration, and growth.

In conclusion, Eastern Europe is increasingly becoming a hotspot for innovation, with countries in the region making significant progress in various aspects of innovation-driven development. By leveraging their strengths, addressing challenges, and capitalizing on opportunities, Eastern European countries can further enhance their innovation performance, competitiveness, and sustainable growth in the global innovation landscape.

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THE IMPACT OF SOCIAL NETWORKS IN TOURISM PROMOTION. EVOLUTION AND TRENDS

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Abstract: *The present article investigates the impact of social networks in the tourism industry, highlighting their transition from simple social platforms to marketing tools. The paper focuses on analyzing the impact of digitalization on consumer behavior in tourism, proposing strategies for optimizing tourism marketing in the current digital context. Moreover, the article is part of a broader research that primarily employs literature review as its research method. At the same time, it paves the way for further in-depth analyses. The introduction emphasizes the changes that digitalization has brought to tourism with a focus on social networks. It discusses the importance of two-way communication as well as the influence of user-generated content and the role of emerging technologies. The chronological analysis of social networks from Myspace to Instagram and TikTok highlights the fact that academic literature was examined to illustrate how technology adaptation has improved over time and can be enhanced. The section on budget allocation and performance evaluation details the importance of adaptable strategies for maximizing ROI and underscores the importance of a complex approach based on quantitative and qualitative metrics. As part of extensive research, the paper contributes by encouraging the development of new strategies for digital tourism promotion adapted to the rapidity of changes.*

Keywords: *social media; tourism; digital promotion tool; literature review*

JEL Classification: *M37; Z32*

1. Introduction

Digital transformation, accelerated by the proliferation of social networks, has fundamentally changed the tourism industry in recent years. Thus, social networks are no longer just spaces for interaction between people but have become marketing tools. These marketing tools are used to disseminate information, contributing to consumers' decision-making processes. Due to these changes, researchers have begun to explore in depth the impact of social networks on tourism. In this regard, they have highlighted their importance and role in building a brand image and maintaining images, in promoting tourist destinations or any businesses in the tourism field.

Recently, researchers such as Huang et al. (2020) have highlighted the ability of social networks to create bidirectional communication between tourism companies and consumers, being a means of exchanging personalized information. This interaction not only increases the visibility of destinations but also consolidates consumers' trust and loyalty. Smith and Xu (2020) continued the research, analyzing in depth how user-generated content can influence potential visitors' perceptions. On the other hand, Kim and Kim (2020)

explored the role of short videos in tourism marketing and capturing public attention. This highlights the importance of adapting marketing strategies to emerging trends. Another study, conducted by Chen and Xie (2021), demonstrates how social media platforms such as Instagram or TikTok have become essential nowadays in stimulating interest, arguing the crucial role of attractive visual content. Li et al. (2022) mark the interest in using artificial intelligence and big data analysis for personalizing user experiences on social networks. Therefore, in the current context marked by rapid changes and the adoption of advanced technologies, social networks offer significant opportunities for innovation and adaptation in the tourism industry. Their importance transcends simple promotion and in this way, they become essential for engagement, personalization, and sustainability.

The article aims to explore the use and impact of social media platforms in the tourism industry, focusing on theoretical analysis and a comprehensive review of the specialist literature. I will investigate how these digital channels influence the behavior of tourism consumers and how they can be exploited by tourism brands to improve their marketing strategies. In this context, the article will critically evaluate existing empirical studies, providing a synthesis of current knowledge and identifying research gaps that could be addressed in future studies.

The realization of promotion through social networks has evolved from simple strategies to much more complex and multidimensional approaches. Within the strategies of promotion using social networks, analyzing the specialist literature, I have synthesized a series of pillars. The first pillar is the creation of authentic content, which is paramount for gaining trust and interest. Tussyadiah and Pesonen (2018) emphasize the importance of user-generated content in tourism, exemplifying the role of authentic reviews and photographs on the decision-making perception. Another pillar of strategies is community engagement. In this context, Munar and Jacobsen (2014) discuss the importance of engaging communities in this field, suggesting that tourism companies should use customer feedback to adjust their offers. Also, other strategies found in the literature address the strategic use of influencers. Among the pillars, there are also identifying relevant keywords to improve online visibility. Studies, belonging to Li et al., (2020) talk about the efficient use of hashtags and keywords in increasing the audience. Last but not least is the personalization and segmentation of the audience, which is among the fundamental principles in using social networks in tourism. Innovative companies such as Airbnb constantly use social networks to increase their visibility, promoting unique experiences on Instagram, Smith, and Zook (2020) also illustrate how New Zealand applies effective promotion strategies through social networks, launching a campaign on Tiktok to inspire domestic tourism.

2. The Evolution of Social Networks in Tourism

The last two decades have been when social networks began to dominate the modern communication landscape. They have influenced numerous sectors and industries, including the tourism industry. Thus, this chapter aims to explore the evolutionary trajectory of social networks and how they have reshaped tourism. Figure 1 illustrates this aspect. Starting with the first platforms, namely Myspace and Flickr, which paved the way for the expression of personal experiences online, and continuing with the current dynamism of platforms such as Instagram or TikTok, social networks have played a pivotal role in transforming the way businesses and tourist destinations are promoted and perceived by tourists. The existing research in the field marks the important stages in understanding this phenomenon. Boyd and Ellison (2007) were the ones who defined the concept of social network, Kietzmann and Canhoto (2013) were pioneers in analyzing the impact of the Instagram network in the tourism landscape, while Jin and Phua (2014) examined the influence of influencer

marketing. These authors and many others have significantly contributed to the academic body of knowledge.

2003-2004: The Emergence and First Uses	• Myspace (2003) and Flickr (2004) introduce the concept of sharing personal experiences, including travel.
2006-2010: Expansion and Diversification	• Facebook (2006) begins to be widely adopted, becoming an essential tool for tourism promotion. • Twitter (2006) provides a platform for quick updates and direct interaction with consumers. • YouTube (2006, acquired by Google) becomes the main channel for travel videos and destination showcases.
2010-2015: The Era of Visuals and Influencer	• Instagram (2010) revolutionizes tourism with its emphasis on high-quality photos and visual storytelling. • The emergence of travel influencers, who collaborate with destinations and brands to reach wide audiences.
2015-2020: Technological Innovations	• Augmented reality and 360° videos begin to be integrated into online travel experiences. • TikTok (2016) and Pinterest gain popularity as platforms for travel inspiration and fresh ideas.
2020-Present: The COVID-19 Pandemic and Its Impact	• Rapid adaptation to changes in consumer behavior, focusing on sustainability and responsible tourism. • The launch of new technologies such as ClubHouse, BeReal, Lemon8.

Figure 1: The Evolution of Social Media Use in the Tourism Industry
Source: Created by the author

Initially, platforms like Myspace and Flickr introduced the opportunity to post photos and share experiences. However, the emergence of Facebook, Twitter, and YouTube broadened the spectrum of social media in tourism. These platforms facilitated not just content sharing but also direct interaction with companies. The entrance of Instagram (Kietzmann & Canhoto, 2013) transformed travel photography into a powerful promotional tool, and the role of travel influencers became more pronounced, starting to collaborate with various destinations and brands (Jin & Phua, 2014). As technology evolved and social networks adapted, integrating augmented reality, 360° videos, and other innovations improved the virtual experience. Emerging platforms like TikTok began to capture public interest. The role of social media was highlighted with the COVID-19 pandemic, and since then, these platforms have become a vital channel for promotion in tourism (Gossling et al., 2020).

3. Analysis of Social Media Platforms in Tourism

In the current context of the European Union, it is observed that half of the companies use social networks. Contrary to this general trend, Romanian companies do not follow this practice.
At the top of the ranking is Malta, where 84% of businesses use social networks as a means of communication with customers, followed by Denmark with 75% and the Netherlands with 74%. In the last position is Romania, with a percentage of only 33%, as is shown in Figure 2.
Compared to 2014, an important increase in the adoption of socialization recipes was noted, the greatest progress being registered in Denmark and Luxembourg, while the smallest increases in Romania, Slovenia, Ireland and Portugal.
The reluctance of the Romanian business environment is surprising because many studies have shown that more than 53% of the inhabitants of urban areas in Romania use social media recipes every day, early in the morning.
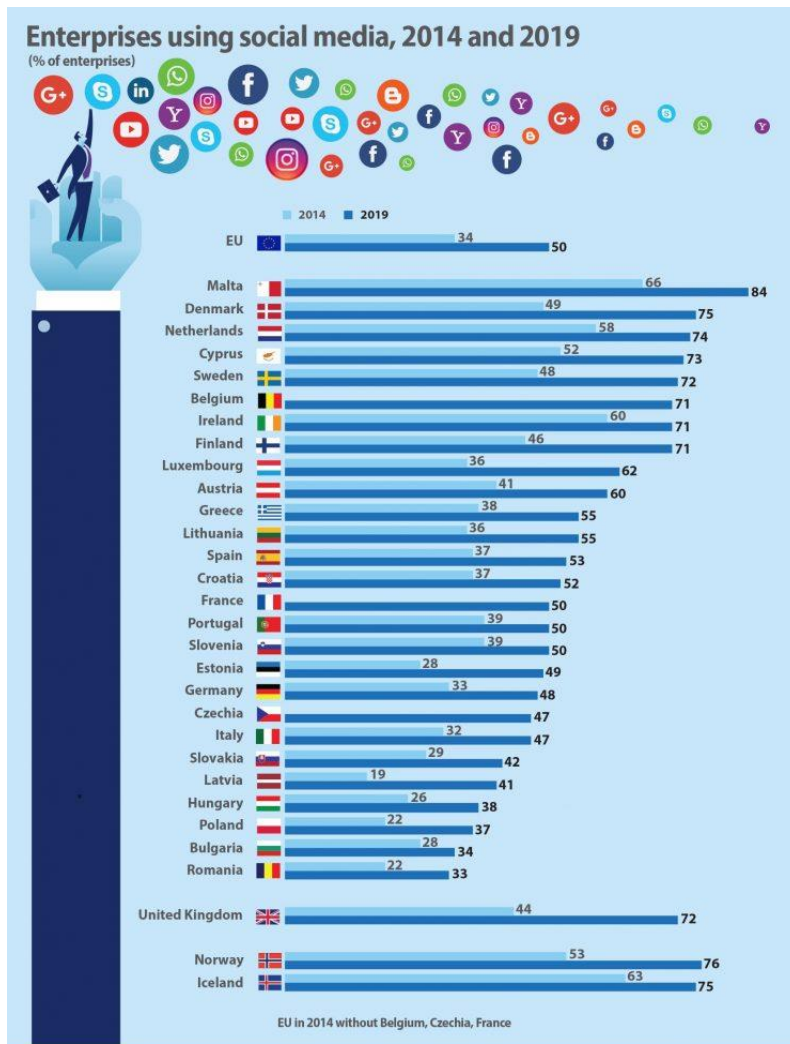
Figure2.Companies using social media for marketing by countries
Source:https://transylvanianow.com/company-use-of-social-media-lowest-in-romania-eurostat/

Following the chronological exploration of the evolution of social networks and their significant impact on the tourism industry, understanding how they are integrated into tourism marketing strategies becomes essential. Choosing the right platform is both a tactical and strategic decision that can directly influence the success of a promotional campaign. The choice of appropriate platforms involves a deep understanding of the company's objectives and the audience's profile. Thus, there are significant differences regarding consumer preferences and tourists from one region to another. Another important criterion is the age of the audience. While Instagram and TikTok are ideal for campaigns aimed at a younger audience, Facebook provides information for a much broader and diverse audience. This can also be seen in the available reports and analyses.

Globally, social media platforms have become essential in planning and sharing travel experiences. One of the most recent reports available from We are Social (2022) illustrates the landscape of social media use in the tourism industry, according to Figure 3.
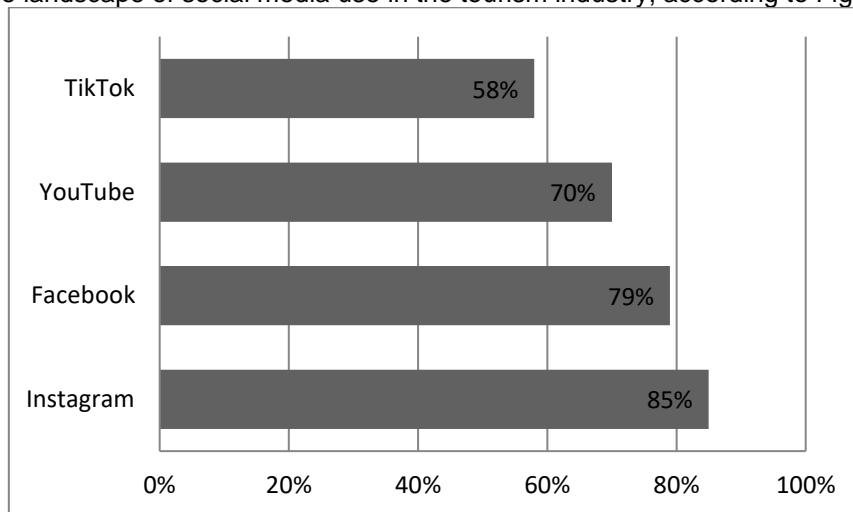
Figure 3: The use of social media platforms in the global tourism industry by companies
Source: We are social (2022)

Therefore, we observe that Instagram is the most used platform, with 85% of tourism companies turning to these networks to visually promote destinations. Facebook continues to be popular as well, recording a percentage of 79%. Moreover, 70% of companies in the tourism industry prefer detailed videos and travel guides posted on YouTube. The most interesting aspect, however, is the significant growth of TikTok, which has achieved a considerable percentage of popularity in the context of tourism promotion. In Romania, the trends are relatively similar to the global ones, but there are also some local specifics reflecting the behavior of Romanian internet users. According to the study conducted in the industry by Spark Foundry (2023) and found in the work belonging to Bâdea (2023), as also illustrated by Figure 4, the dominant platform, with a usage of 91%, remains Facebook. This indicates a consistency among Romanians. This is followed by Instagram, with a percentage of 59%. This fact indicates a strong preference for visual content among potential tourists. In third place in Romania is TikTok, also experiencing rapid growth with a usage of 47%.
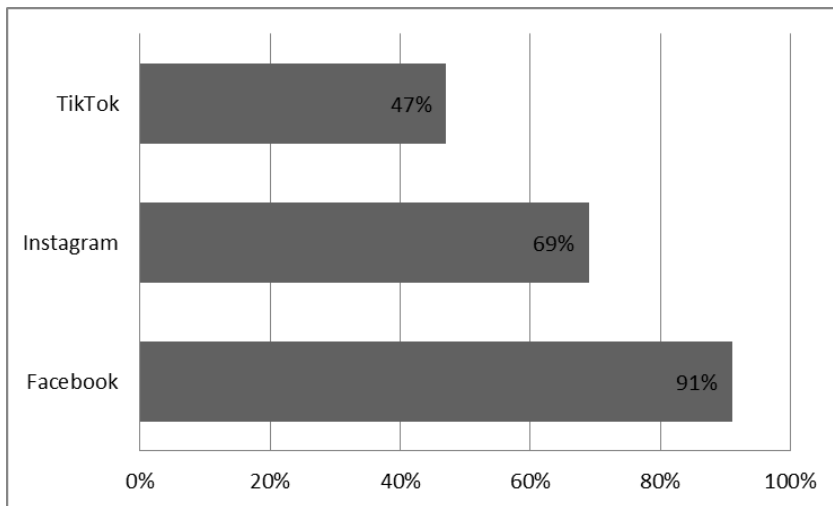
Figure 4: The use of social media platforms in the Romania
Source: Bâdea, (2023)

Comparing global data with that from Romania, it is noticeable that trends in our country align with the global dynamics, highlighting the specificity that the Romanian market rapidly adopts new platforms. Facebook, one of the oldest and most omnipresent social media platforms, plays a crucial role in the tourism industry, being the top choice in Romania and second globally. It is widely used due to its ability to reach a vast audience, with over two billion active users. Specialized works in the field emphasize the reasons for using Facebook in this industry, highlighting precise targeting, content diversity, and the platform's support for a variety of content types, from text and image posts to videos and stories. Moreover, it benefits from detailed statistical analyses provided by Facebook Insights. There are also a series of limits and disadvantages synthesized in the literature, mentioning market saturation and frequent changes found in Facebook's algorithm, which affect the organic visibility of content. Upon analysis, Facebook's use is predominantly for promoting destinations, managing customer relationships, and company-influencer collaboration.

Instagram has rapidly evolved from a photo-sharing platform to a marketing tool. With a smaller number of active users, Instagram is another intensively researched tool that offers a vast audience and precise targeting opportunities. According to Jain and Lyons (2020), the supreme advantage of the platform is that it excels in visual storytelling, offering companies the opportunity to authentically present their products/services. Extended visibility, high engagement, and the visual format stimulating interaction and diverse content such as posts, stories, IGTV, and reels are just a few of the advantages intensely researched in specialty analyses. The limits identified in the literature highlight intense competition and the frequent necessity to bring innovative content. Instagram's impact on travel is undeniable, according to CNBCTV18, a study by the World Tourism Organization found that Instagram users are more likely to travel than non-users.

TikTok has demonstrated a remarkable ability to promote tourist destinations in a totally unexpected way (Chu et al., 2020). However, despite the considerable volume of research focused on social media, there is a need to explore TikTok's spontaneous influence in the sphere of tourism. It stands out for its ability to generate trends and attract a young audience, capturing users' attention through a visual and interactive approach. Preliminary studies and market analyses indicate that TikTok has significantly influenced travelers' behaviors. The most frequently mentioned advantages in the literature are facilitating and distributing viral content that rapidly extends, a high conversion rate, and the possibility of demographic targeting, while the main disadvantage found in all specialty works is the limitation of video length, which, in this industry, is a considerable promotion. Although TikTok is predominantly

associated with disseminating short-duration videos, recent observations from the academic body and industry specialists suggest an emerging trend of the application favoring and promoting the production of longer-duration video content, a strategy potentially aimed at positioning itself in direct competition with YouTube. By supporting the development of vlog and infotainment content categories, which have seen remarkable success on YouTube, TikTok aims to extend the average viewing duration and the total time spent by users on the app.

4. Budget Allocation and Performance Evaluation

Efficient budget allocation for campaigns carried out on social media and concrete evaluation of performance are crucial pillars in maximizing outcomes. Thus, strategic decisions regarding the distribution of financial resources and investment profitability are based on a detailed understanding of each social media network's dynamics.

The budget allocation varies according to objectives, target audience, and characteristics of each platform. In their work, Smith et al., (2021) emphasize the importance of preliminary analysis of audience behavior and subsequent preferences. Thus, they illustrate that platforms such as Instagram and TikTok may require much larger budgets to produce high-quality content, whereas Facebook campaigns might benefit from organic and promoted posts to optimize costs. A primary method used in allocating budgets is cost-benefit analysis, which compares the costs associated with each social media platform and campaign with the expected benefits, in terms of increased visibility, engagement, web traffic, and conversions.

Evaluating the investment for each platform involves not only calculating the revenues generated by campaigns but also understanding the added values in terms of brand awareness. Jones and Heffernan (2020) address the complexity of measuring ROI in social media and highlight the necessity for advanced analytical tools and methods for tracking conversions.

A clear distinction between the categories of tools used for measuring ROI can be presented according to Figure 5. Thus, we can group metrics oriented towards the activity of the tourist/client, including the number of followers, likes, shares, and on the other hand, metrics oriented towards results, such as conversion rates. Moreover, another classification in this context is made by Schee et al.,(2020), who categorizes social media metrics into volume measures (quantitative) that include the number of fans, likes, or posts, and sentiment measures considered pseudo-qualitative. Lovett (2011) advanced the idea of a more complex hierarchy. Nonetheless, experts have emphasized that, although measuring success on social media has presented challenges, there are several methods through which it can be done, the responsibility resting on managers. The challenge in defining ROI is not only technical but also discursive, as the term is often used by marketers as synonymous with any measurement tool for social media activity. Recent autors propose using a mix of quantitative and qualitative metrics to obtain a comprehensive picture of performance.
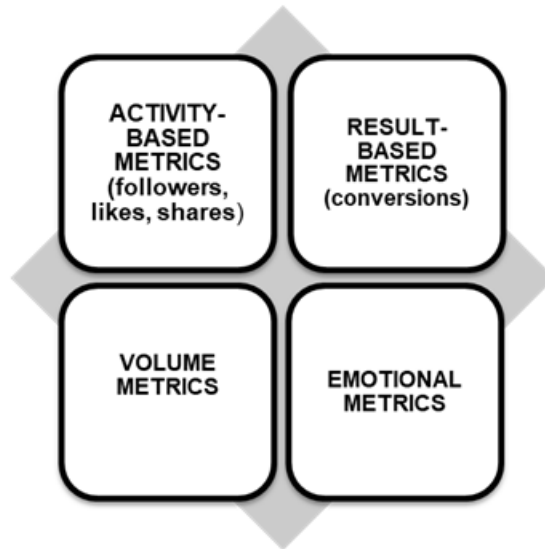
Figure 5: The use of social media platforms evaluation in the Romania
Source: Bâdea, (2023)

5. In conclusion

The article deals with the profound digital transformation in the tourism industry, which has been accelerated by the proliferation of social networks that have transcended the boundaries of personal interaction platforms and evolved as essential marketing tools. This evolution has led researchers to analyze the impact of social networks on tourism, emphasizing their essential role in building and maintaining a brand image.

Recent research such as Huang et al., (2020), Smith, Xu (2020), Chen, Xie (2021) have investigated the different spectrums of social media in tourism, from two-way communication between companies and consumers to content generated of users or even the potential of artificial intelligence.

Analyzing the evolution of social networks in tourism, a transition was observed from platforms such as Myspace and Flickr, which inaugurated the sharing of personal experiences in the online environment, to the current dynamics that are dominated by Instagram and Tiktok, which have radically transformed the way of promotion. Academic studies mark key milestones in understanding the impact of social media on tourism.The analysis of the use of social media platforms in the tourism industry expresses a pronounced preference for Instagram, globally as the main platform. This is closely followed by Facebook and YouTube, preferred for detailed videos and travel guides. TikTok is also notable for its significant growth, representing a new emerging frontier in tourism promotion. At the same time, trends in Romania reflect a similar pattern, with Facebook dominating the local scene, a fact that underlines the consistency of Romanians' preferences for visual content.

In the context of allocating budgets and evaluating the performance of campaigns on social networks, the importance of a strategic approach that takes into account the characteristics of each platform, the objectives of the campaign and the profile of the audience is noted. The existing studies on the market emphasize the need for a cost-benefit analysis and the use of advanced analytical tools, in order to determine the profitability of investments but also to guide decisions of a corporate nature. In this way, the choice of platform becomes a tactical as well as a strategic decision. Regarding the ROI for each platform, the need for an approach that goes beyond the calculation of direct revenues is highlighted, and the importance of understanding added values such as brand awareness is highlighted. The

paper illustrates the clear distinction between the categories of tools used to measure ROI and groups the aspects observed in the literature into activity-oriented, outcome-oriented, quantitative or emotional metrics.

This article is a foundation for exploring digital promotion in the tourism industry, being a critical starting point in the complex analysis of online promotion tools. This article is part of a larger research framework aiming to gain a closer understanding of the ways in which digital technology and social media contribute to the dissemination of tourism company images. This will be followed by other in-depth studies that will explore, among other things, the impact of artificial intelligence, the effectiveness of influencer marketing campaigns in attracting tourists and more. Therefore, the paper presents not only an assessment of the current state but also a call for further research in this vital field.

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WASTE GENERATION AND WASTE MANAGEMENT IN ROMANIA IN THE CONTEXT OF THE EUROPEAN TRANSITION TO A CIRCULAR ECONOMY

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Abstract: *The circular economy is, from 2015, the European Union's answer to today's sustainability issues. This paper highlights some of these issues and summarizes what circular economy means and some of the barriers facing its implementation, based on a classical literature review. Then, the monitoring framework of The European Union is presented, with the most important regulation mentioned. Starting from the famous 3R, the research was narrowed to recycling. An analysis was carried out concerning waste production and waste management based on Eurostat's official European statistics. A descriptive comparison was made between Romania's situation and the European Union average to establish the evolution of indicators like waste generation, municipal waste generation, and recycling rates since this country joined The European Union in 2007. Overall, it can be said that Romania has made steady progress in managing waste more responsibly, but there are still quite large differences from the EU average for the majority of the indicators analyzed. Also noteworthy is the fact that the European Union, as a whole, evolves with small, but steady steps, increasing the waste management indicators towards a circular economy.*

Keywords: *circular economy; waste management; recycling rate; Romania, European Union.*

JEL Classification*: Q01, Q50, Q53.*

1. Introduction and theoretical framework

Environmental problems should be a global priority at this moment for the sake of future generations. According to the World Meteorological Organization (2023), the data collected until October show that the year 2023 was the warmest in the history of climate records i.e. the warmest in the last 174.
This is affected and affects several other aspects related to the environment. Among them, the United Nations University, in their Interconnected Disaster Risks report (2023), highlights some like accelerating extinctions, groundwater depletion, unbearable heat, mountain glacier melting, space debris, and uninsurable future.
The list above can be completed more and more because there are too many environmental problems. Why did it end up here?
The economic model practiced for hundreds of years can be blamed. This is the traditional linear economic model developed based on the principle "take, make, dispose" (Tambovceva and Titko, 2020). Therefore, a new approach is needed on how to carry out economic activities.
Many of these problems also affect Romania, a country in the EU engaged in the implementation of the circular economy (CE) principles and practices. On this basis, in the

following, it is presented a review of the literature on the circular economy concept and the EU Circular Economy monitoring framework with a summary of indicators.

One of the new approaches to carrying out economic activities is the circular economy, which appears as an alternative to the classic linear model that reduces the negative socio-environmental impacts (Terra Dos Santos et al., 2023). This implies considering some important aspects like closing, slowing, and narrowing the loop of materials' flows by returning to production the products that reached the end-of-life and were usually intended for final disposal (Nikolaou and Tsagarakis, 2021). These closed-loop production patterns have the purpose of increasing the level of efficiency in the process of using resources and improving the relationship between the economy, environment, and society (Ghisellini et al., 2016).

The closed loop is based on the three R's: Reduce, Reuse, and Recycle as a central element for the circular Economy. The complexity of the notion led some authors to conceptualize the circular economy starting from over 100 collected definitions. (Kirchherr et al., 2017). With this in mind, Murray et al. (2017) consider the circular economy as an economic model where "planning, resourcing, procurement, production, and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being".

Based on the concepts above the three R's were extended in time to five: recycling, remanufacturing, repairing, refurbishing, and reuse, but the essence remains the same. Both consumers and producers must consider the principles of the circular economy so that instead of a product being used only once, viable alternatives must be found to extend the product's life. For example, an electronic product that someone no longer needs can be refurbished and donated to others who need it, or in the worst case, the product can be recycled and the materials obtained need to be reintroduced into the economic circuit.

The concept can be further extended, as a framework was proposed (Morseletto, 2020; Potting et al., 2017) based on ten common circular economy strategies coded from R0 (high circularity) to R9 (low circularity): R0 - Refuse, R1 - Rethink, R2 - Reduce, R3 - Re-use, R4 - Repair, R5 - Refurbish, R6 - Remanufacture, R7 - Repurpose, R8 - Recycle, R9 - Recovery.

There are many followers, but also critics of the circular economy. Palea et al. (2023) demonstrate that adopting the model of circular economy can bring benefits for firms and new profitability opportunities. CE can contribute to better financial performance, ease of raising capital, and better efficiency.

The critics refer mainly to CE's limits in achieving a real circularity, closed loops in which waste no longer exists are almost impossible to achieve. For this reason, the studies also focus on the barriers encountered in the implementation of the circular economy. Most often, reference is made to cultural barriers (Kirchherr et al., 2018; Grafström and Aasma, 2021), market barriers (Kirchherr et al., 2018), regulatory barriers (Briguglio et al., 2021), and technological barriers (Trevisan et al., 2023). Other researchers (Vermunt et al., 2019) have shown that the types of barriers are not generally valid but that they differ, depending on the circular business model that is implemented.

When it comes to technology, a new concept is more often mentioned "Smart Circular Economy". This is based on the use of the latest generation of digital technologies in the implementation of circular economy principles (Lobo et al., 2021). Consequently, industry 4.0 technologies as well as other technologies such as blockchain or the Internet of Things can play a crucial role in the implementation of this concept (Javeed and Akram, 2024; Trevisan et al., 2023). Along with these, the transformative role of artificial intelligence in the use of the circular economy should not be neglected either, this technological revolution is predicted to be increasingly important (Sánchez-García et al., 2024).

The objective of the paper is to analyze the situation of Romania, in comparison with the EU average, regarding waste generation and waste management, in the context of transitioning to a circular economy. Therefore, the following research questions were stated:

RQ1: What progress has Romania made in reducing waste compared to the average of the European Union?

RQ2: Have the waste recycling rates improved in Romania since joining the European Union?

For this study, statistical data were collected from the official Circular Economy Monitoring Framework available on the Eurostat website. The values of the selected relevant indicators were collected for Romania and compared with the EU average, for the period 2000-2022 (depending on the indicator).

The remainder of the paper is organized as follows: section 2 presents the monitoring framework of The European Union, with the most important regulation, section 3 presents a comparative analysis between Romania and the European Union average considering indicators like waste generation, municipal waste generation, and recycling rates and the discussions related, section 4 presents the conclusions of the study, and section 5 is dedicated to presenting the acknowledgements.

2. The approach of the EU to the circular economy

There is an obvious and growing interest in implementing the circular economy principles and practices, but still, global production has remained mainly based on the linear model. Thus, in the process of implementing a circular economy, further additional support is necessary, and public and government policies have an essential role in it (Hartley et al., 2023).

Since 2005, the European Union has recognized the high degree of resource consumption as being slightly lower than that of the USA, but double that of Japan (European Environment Agency, 2005). In this context, the EU developed in the same year a framework for the sustainable use and management of natural resources, as an important step towards transitioning to a circular economy, but without this concept being mentioned.

The first EU action framework regarding the transition to the circular economy model was developed in 2015 and targets the following areas: production, consumption, waste management (including material reuse), innovations, and investments (European Commission, 2015).

The European Commission has been constantly working to improve the approach to the circular economy. Therefore, in 2020, it was published a new regulatory framework emphasizing the need for sustainable product design, waste management, and secondary raw materials and specific regulations for certain relevant product categories (European Commission, 2020). For monitoring, Eurostat follows 11 indicators divided into 5 areas: production and consumption, waste management, secondary raw materials, competitiveness and innovation, and global sustainability and resilience (Eurostat, 2024).

Table 1: The conceptual framework of Circular Economy indicators in the European Union

Sub-Indicator	Indicator
Production and consumption	
Material footprint	Material consumption
Resource productivity	
Green public procurement	
Waste generation per capita	Waste generation
Generation of waste excluding major mineral wastes per GDP unit	
Generation of municipal waste per capita	
Food waste	
Generation of packaging waste per capita	
Generation of plastic packaging waste per capita	
Waste Management	

Recycling rate of municipal waste	Overall recycling rates
Recycling rate of all waste excluding major mineral waste	
Recycling rate of packaging waste by type of packaging	Recycling rates for specific waste streams
Reuse and recycling rate of WEEE separately collected	
Secondary raw materials	
Circular material use rate (circularity rate)	Contribution of recycled materials to raw materials demand
End-of-life recycling input rates	
Trade in recyclable raw materials: • Imports from non-EU countries • Exports to non-EU countries • Intra EU trade	Trade in recyclable raw materials
Competitiveness and innovation	
Private Investments to circular economy sectors	Private investment, jobs and gross value added related to circular economy sectors
Persons employed to circular economy sectors	
Gross value added to circular economy sectors	
Patents related to waste management and recycling	Innovation
Global sustainability and resilience	
Consumption footprint	Global sustainability from circular economy
Greenhouse Gas emissions from processing, manufacturing, and services	
Material import dependency	Resilience from circular economy
EU self-sufficiency for raw materials	

Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/web/circular-economy/database [3 April 2024].

3. Waste generation vs waste management – Romania vs EU: analysis and discussion

As was shown, the EU framework for monitoring the circular economy is quite large. To compare Romania's situation with that of the European Union, we chose some representative indicators regarding waste production and waste management.

The issue of waste was chosen because of the central role that waste management has in the European Union's Circular Economy. Over time, there have been many normative acts specially created for this. If we refer to the time of Romania's accession to the European Union, a year later, in 2008, a precursor act of the current circular economy, a waste management directive that lays the foundations for the principles of producer responsibility and "the polluter pays principle", was introduced (The European Parliament, 2008). Starting from 2015 we refer to the Circular Economy Action Plan updated and modified with the realities encountered in implementing the CE concept.

According to Eurostat (2024), the generation of municipal waste per capita indicator shows "waste collected by or on behalf of municipal authorities and disposed of through the waste management system". This indicator should have a value as small as possible to reduce the environmental impact. As shown, the municipal waste per capita is lower than the EU average in all the years since 2000. It can be highlighted that, in the period 2020-2022, the kilograms per capita were almost half of the EU average, but there is a slightly negative trend of growth for Romania in the last years. Surprisingly, according to the most recent data (Eurostat, 2024), Romania ranks first in the European Union for this indicator, with 301 kilograms of municipal waste per capita, followed by countries like Poland, Estonia, Sweden, and Hungary. At the opposite pole, we find countries like Austria, Denmark, Luxembourg, and Belgium with values over 700 kilograms per capita.
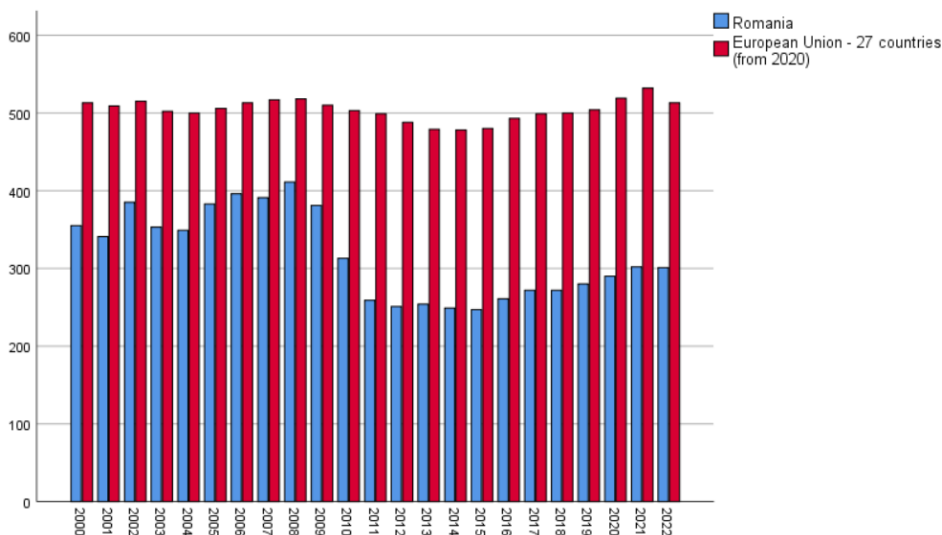
Figure 1: Generation of municipal waste per capita (in kilograms per capita)
Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/databrowser/view/cei_pc031/default/table?lang=en&category=cei.cei_pc [4 April 2024].

The total waste generation per capita (including major mineral wastes) is higher than the EU average in all analyzed years. It should be noted, however, that this has more than halved from 17.215 kg per capita in 2004 to 7.338 kg per capita in 2020, while the European average remains around 5.000 kg per capita.
In 2020 the best-performing countries from this point of view were Croatia, Latvia, Portugal, and Hungary, with values below 2.000 kilograms per capita of total waste generation. In contrast to these, there are also countries with very high values of waste generation, namely Finland (20.993 kg per capita), Bulgaria (16.785 kg per capita), Sweden (14.664 kg per capita) and Luxembourg (14.618 kg per capita).
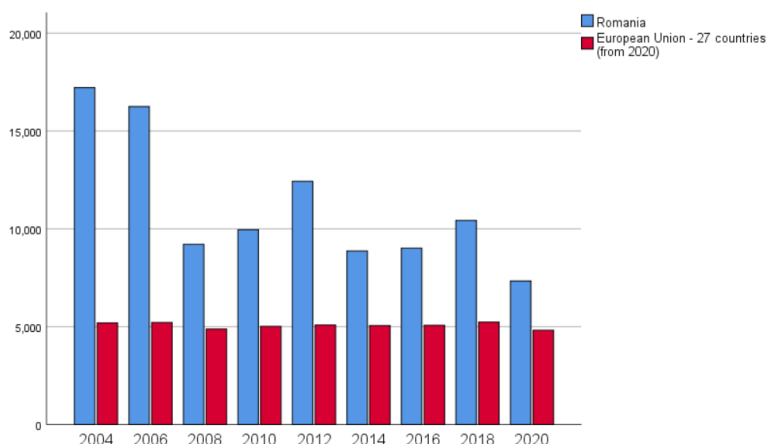
Figure 2: Waste generation per capita (in kilograms per capita)
Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/databrowser/view/cei_pc034/default/table?lang=en&category=cei.cei_pc [4 April 2024].

The indicator presented in Figure 3 is representative of the circular economy because it shows somewhat the efficiency regarding waste generation with which the economy

generates a thousand euros of GDP. The value should be as low as possible. Romania's evolution is good, decreasing from 379 kg per thousand euro in 2004 to 107 kg per thousand euro in 2020, but still above the EU average of 65 in 2020. This may also be due to the major differences between Romanian's GDP (11.430 euro per capita in 2020) and the EU's average GDP (30.050 euro per capita in 2020), based on statistics from Eurostat (2024). Consequently, Romania is at the top of the countries with the worst performances from this point of view, being exceeded, in 2020, only by Bulgaria – 419 kg per thousand euro, Estonia – 412 kg per thousand euro, Poland – 150 kg per thousand euro and Latvia – 110 kg per thousand euro. Also, Eurostat data places Ireland, Luxembourg, and Denmark as the best-performing countries in 2020, with values under 40 kg per thousand euro GDP.
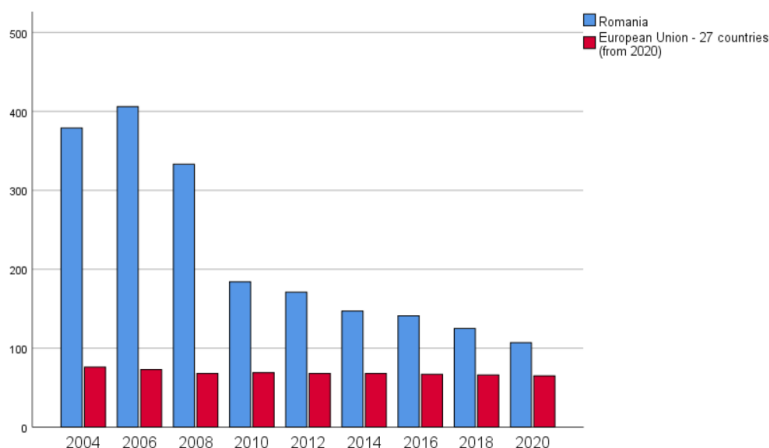
Figure 3: Generation of waste excluding major mineral wastes per GDP unit (in kilograms per thousand euro, chain-linked volumes - 2010)
Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/databrowser/view/cei_pc032/default/table?lang=en&category=cei.cei_pc [4 April 2024].

In the following, two of the most important waste recycling rates are analyzed, recycling being one of the foundations of the circular economy.
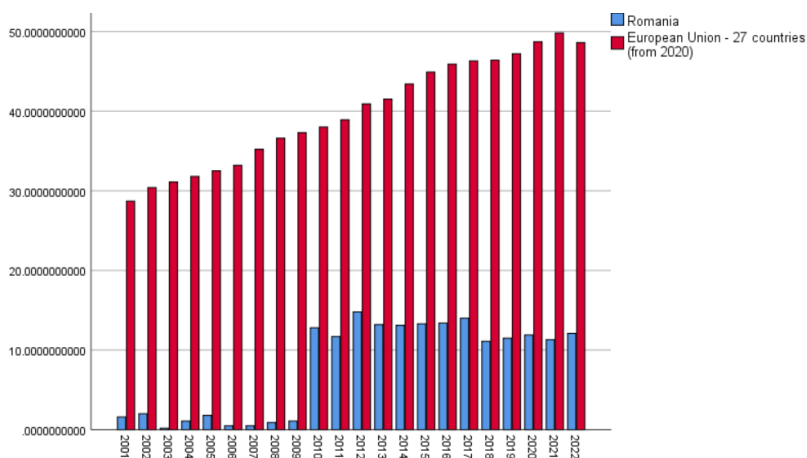
Figure 4: Recycling rate of municipal waste (Percentage)
Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/databrowser/view/cei_wm011/default/table?lang=en&category=cei.cei_wm [4 April 2024].

Romania's municipal waste recycling rate was quite bad, with values under 2% every year from 2001 to 2009. The rate improved since 2010 and in 2022 was 12,1%, but far below the European Union average of 48.6%.

Even with this development, according to the most recent Eurostat data, Romania ranks last, close to countries like Malta, Cyprus, and Greece, also with values below 20%. The best performers are Germany, Austria, and Slovenia with values of municipal recycling rates over 60% in the last years.
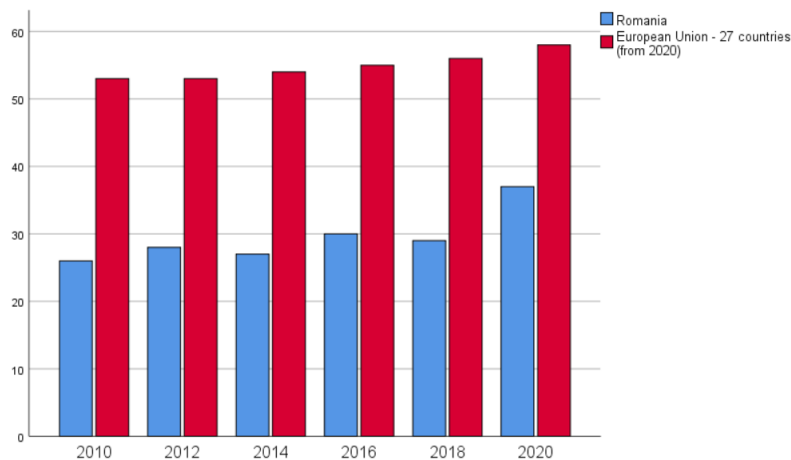
Figure 5: Recycling rate of all waste excluding major mineral waste (Percentage)
Source: Authors` elaboration based on Eurostat statistics, [Online], Available: https://ec.europa.eu/eurostat/databrowser/view/cei_wm010/default/table?lang=en&category=cei.cei_wm [4 April 2024].

A better recycling rate for Romania is in the case of all waste excluding major mineral waste, which has steadily increased since 2010 and reached 37% in 2020. However, this percentage is still below the EU average of 58% in 2020. Eurostat's statistics shows also other countries with small percentages in the last years, under 40%, like Bulgaria, Greece, Malta, Portugal, and Finland. High percentages of this recycling rate can be found in countries such as Belgium, Slovenia, Netherlands, Italy, Lithuania, and Luxembourg, which have exceeded the 70% milestone in recent years.

4. In conclusion

The study focused on analyzing several relevant indicators of waste generation and waste management in Romania, compared with the EU average, in the context of transitioning to a circular economy. For this purpose, we have enunciated two research questions that have guided our analysis.

Answering the question "What progress has Romania made in reducing waste compared to the average of the European Union?" we can say that it was a constant one, but not a very spectacular evolution was registered. The generation of municipal waste per capita is one of the few indicators from the CE monitoring framework that Romania is over than the EU average. This is not the case for the total waste generation per capita, but also here some overall progress is observed on the evolution chart.

To answer the other question "Have the waste recycling rates improved in Romania since joining the European Union?", we can conclude that joining the European Union brought improvements in the way of recycling waste, especially that of municipal waste. For this particular type of waste, the values of recycling rates increased from almost nothing, around and under 1% until 2009, to values above 10%. There is much improvement to be done to

reach the EU average that has a constant upward trend. However, the implementation of European legislation in the field of waste and its recycling has left a positive mark.

For future research, we intend to develop a thorough analysis of all indicators in the framework, and also a comparison with other countries in the European Union, revealing the challenges faced by Romania in implementing circular economy principles.

5. Acknowledgements

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ELEMENTS OF TAXATION AND THEIR ECONOMIC EFFECTS

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Abstract: *This paper analyzes taxation and its elements and aspects of Romania's evolution. Direct and indirect taxes are fundamental elements of the Romanian tax system and own resources that the state can obtain. The article also delves into the future perspectives of taxation and their potential impact on Romania, providing a comprehensive understanding of this evolving landscape.Taxation represents a central aspect of economic policy, having a crucial role in financing public expenditures and influencing economic agents economic behavior. The main elements of taxation include taxes, duties, and social contributions. Taxation is an essential tool of economic policy, financing public expenditure and influencing economic behavior. Through its various elements and effects, taxation contributes to the achievement of the economic and social objectives of a state.*

Introduction

Taxation, a key tool for all governments, holds the potential to not just stimulate the economy but also achieve public policy objectives. It serves as the backbone of the social contract, enabling citizens to fulfill their obligations and the state to protect their interests. Central taxes cater to national interests, funding social, educational, health services, and investments, while local taxes focus on local objectives, ensuring a high quality of life for residents.

The implementation of the social contract often showed slippages that generated fiscal riots. States have always been in a position to establish and respect principles to prevent such riots, one of the most important being that of "imposition justice," which he formulated as follows: "The subjects of each state must contribute, as much as possible, at the support of the state, concerning their respective possibilities, that is, about the income that, under the protection of this state, they can enjoy." (Smith, 1965, pp. 242-256). Contrary to Smith's opinion, Milton Friedman combats progressive tax quotas considering them means of "coercion to take from some and give to others, a fact that comes into direct conflict with individual freedom." (Friedman, 1995, p.195)

Fiscal policies that support progressive taxation, specific to countries with social democratic regimes, favor people experiencing poverty and increase the tax burden on private companies and those with high incomes. In contrast, proportional taxation, promoted by liberal regimes, favors economic development by not additionally taxing the rich and companies. An exciting position is supported by Richard A. Musgrave, for which the equity of taxes is reflected in the benefit that each payer receives through the social services they benefit from (Musgrave & Musgrave, 1973, p. 194), and this can be considered a motivating idea for contributors.

Determining the level of taxation is challenging given its dual role: stimulating the economy and preventing excessive and long-lasting deficits. A high level of taxation allows the achievement of some economic and social policy objectives. However, it is difficult for the population to determine how to reduce consumption. On the other hand, low taxation can be

economically friendly but risky from the point of view of the budget deficit. Therefore, all possible influences of fiscal policies must be taken into account.

Another contradictory aspect of the level of taxation resides in the "income effect," in which low taxes on work, which generate higher nominal wages, determine the reduction of working time parallel to the increase of free time, and in the "substitution effect," in which high labor taxes cause employees to increase their working hours to counterbalance the reduction in the net salary.

In conditions of high taxation, the degree of tax evasion is high, while in conditions of low taxation, the degree of voluntary compliance increases. At the same time, when the increase in taxation occurs against the background of the increase in the population's income, it is less felt and generates fewer adverse reactions (Văcărel, 2003, pp.3-4).

There are then significant differences in time and space regarding the way states use tax revenues in the interest of citizens, respectively, regarding the quality of social, health, or educational services. Nowadays, citizens are increasingly interested in decision-making transparency and the efficiency of spending money from fees and taxes, the EU being, at present, increasingly interested in the construction of a "fair, efficient and favorable tax system for economic growth" (https://european- union.europa.eu/priorities-and-actions/actions-topic/taxation_ro). The most significant shortcomings appear in conditions where corruption is not controlled, substantial sums collected by the state being wasted or directed to those close to the political system, a fact that brings essential damages. Added to this is the reduced capacity to collect taxes and fees, which generates frustration among good taxpayers.

The complex challenges faced by fiscal policies compel us to consider whether it's time for a paradigm shift in the fiscal field. Could a 'creative/constructive destruction' of the current system be the answer, enabling it to better adapt to the ever-evolving economic realities of our time.

Aspects regarding the evolution of taxation in Romania

Elements of taxation can be found since antiquity in the form of external taxes, for example, customs duties, or internal taxes such as income tax, inheritance tax, etc., collected both by local agents and state officials, the amounts obtained being used, mainly, for the support of wars, respectively of vulnerable people. In the periods that followed, the issue of taxation became more complex and better regulated.

Taxation is structured around critical elements such as direct and indirect taxes, local taxes, and social contributions.

Direct taxes are levied directly from taxpayers and are based on the level of income or profits made. In contrast, indirect taxes, such as value-added tax (VAT) or excise duties, are levied indirectly on consumers by being included in the price of goods and services.

Direct taxes, such as income tax, profit tax and social contributions (CAS and CASS), are key elements of Romania's fiscal system. They not only generate revenue for the state, but also influence the fiscal behavior of citizens and businesses.Income tax is one of the most important sources of income for the state budget of Romania. It is levied on both individuals and legal entities, having a significant impact on their fiscal behavior.

According to the study conducted by Popescu, A. (2018), income tax can negatively affect employee motivation and productivity. High-income tax levels can lead people to work less or look for ways to reduce their taxable income, thus affecting economic growth and competitiveness.

At the same time, income tax can also have effects on investments and entrepreneurship in Romania. Individuals and legal entities may be discouraged from investing their savings or starting their own business due to the high tax burden, thereby reducing innovation and economic development.

The profit tax is levied on legal entities and represents another important source of income for the state budget of Romania. This tax can also have a series of economic effects on the business environment. The profit tax can influence the investment decisions of companies. High corporate tax rates can discourage companies from investing in new technologies or expanding their operations, thus affecting economic growth and innovation. Also, corporate tax can affect the competitiveness of businesses in the international market. Companies in Romania may be at a disadvantage compared to those in other countries with lower profit tax rates, which may affect exports and attract foreign direct investment.

Social contributions, such as social security and health contributions, are levied on both employers and employees to finance various social programs and services. These contributions can also have a significant impact on the Romanian economy. Social contributions can affect labor costs and, implicitly, the competitiveness of businesses.

Employers may be discouraged from hiring new workers or offering higher wages due to the high tax burden associated with social contributions. Social contributions can also have effects on the financial health of businesses. As social contributions represent a significant part of labor costs, they can affect the profit margins and investment capacity of businesses.

Indirect taxes, such as value-added tax (VAT) and excise duties, are fundamental elements of Romania's fiscal system. VAT is one of the most important sources of income for the state budget of Romania. VAT has a significant impact on consumption and consumer purchasing behavior. Since VAT is included in the prices of goods and services, it can affect the purchasing power of the population and consumption behavior, sometimes causing it to be reduced.

VAT can also affect the competitiveness of businesses, especially in the SME sector. Higher prices caused by VAT can cause a decrease in demand for goods and services produced by Romanian enterprises, thus affecting their income and profitability.

Excise duties, applied to goods such as alcohol, tobacco, and fuels, also have a significant impact on the Romanian economy; high excise duties can cause a decrease in consumption of these goods, having a positive impact on public health and on the costs associated with medical care.

However, high excise duties can also have adverse effects on the competitiveness of businesses, especially for the transport and logistics sector. Higher excise duties can increase operational costs for businesses using fuels, thus affecting their profitability and competitiveness in the market.

Each of these fiscal elements has its own effects on the economy. For example, direct taxes can influence income distribution and poverty by progressively taxing those with higher incomes and providing tax breaks for those with lower incomes. In addition, direct taxes can affect the work and investment behavior of individuals and businesses.

On the other hand, indirect taxes can have an impact on inflation and consumer purchasing power. Although these taxes are levied indirectly, they can be regressive, disproportionately affecting those with lower incomes. Excise duties, for example, can increase the prices of certain goods, which can reduce access to them for disadvantaged groups.

Social contributions, such as those for pensions and health insurance, are another critical component of the tax system. These contributions are collected from both employers and employees and are used to finance social programs and insurance for the population. However, high levels of social contributions can affect the competitiveness of businesses and increase labor costs.

In conclusion, a country's fiscal elements play an essential role in shaping economic behavior and in providing the resources necessary for the functioning of the government and the financing of public services. Understanding the impact of these elements and their appropriate management are crucial to achieving the goals of economic and social development in a society.

Two significant changes took place in Romanian taxation after 2000:

-the transition from progressive taxation in installments between 18 and 40% to proportional taxation with a single tax rate of 16% and, subsequently, 10%, which also meant an increase in the level of collection of taxes and duties
- the transfer of pension and health insurance contributions only to employees, simultaneously with their percentage reduction

Table 1: The transition of taxes in the years 2004-2016

Destination of contributions	Employers 2004	Employers 2016	Employees 2004	Employees 2016	*Total 2004*	*Total 2016*
State social insurance budget	19.75%	-	9,5%	25%	29,25%	25%
Social health insurance fund	7%	-	6,5%	10%	13,50%	10%
Unemployment benefit fund	2.50%	2,25%	1%	-	3,5%	2,25%
Unemployment benefit fund	0,75%	-	-	-	0,75%	-
Total	30%	2,25%	17%	35%	47%	37,25%

Source: Ministry of Finance

Taxes and duties are the primary source of revenue for governments around the world and play a crucial role in financing public expenditure and economic development.
According to the study by Popescu (2017), the source of taxes can influence a country's fiscal balance and income distribution. Direct taxes, such as income tax and corporate tax, can help redistribute income by progressively taxing those with higher incomes, while indirect taxes, such as VAT and excise duties, can disproportionately affect income earners. Regarding the destination of taxes, transparency and responsibility in the use of fiscal resources is essential. Governments must ensure that taxes collected are directed to priority areas and are used effectively to maximize social and economic benefits. For example, a significant proportion of tax revenues can be directed to the health system to ensure access to quality health care for all citizens. Investments in infrastructure, such as roads, railways, and communication networks, also contribute to boosting economic growth and improving the quality of life.

Taxation in the Modern World and the Future of Taxation

In the modern world, taxation is not only a revenue collection tool for the state, but also an important mechanism for promoting social equity, supporting sustainable economic development and combating inequalities. In the modern world, taxation is increasingly influenced by globalization and technological changes. Multinational companies and digital technologies pose new challenges to tax collection and combating tax evasion, requiring greater international coordination and adaptation of tax regulations to new economic realities.
The digital economy and globalization have created significant challenges for traditional tax systems. Professor Adrian Câciu, from the Academy of Economic Studies in Bucharest, in

his paper "Digital Economy and Taxation: Challenges and Solutions," argues that a revision of the fiscal framework is necessary to adapt taxes to the new economic realities.

The future of taxation is marked by a series of trends and challenges that will shape tax policy in the coming decades. One of these issues is the rise of sustainability and environmental concerns. According to the study carried out by Ionescu (2020), green fees and taxes are becoming increasingly important in the context of climate change and sustainable development agendas, being used to discourage polluting activities and promote clean technologies.

Also, the digitization of the economy will continue to influence taxation in the future, and digital technologies and the digital economy will raise new questions related to income taxation and VAT collection in a globalized and interconnected economy. Governments will have to adapt quickly to these changes and develop appropriate tax regulations for the digital environment.

Professor Ionuț Dumitru, former president of the Fiscal Council of Romania, in his work "Structural Reforms and Efficient Fiscal Systems", emphasizes the importance of structural reforms to promote a more efficient and fair taxation in Romania and at the same time argues that a holistic approach is needed, which aim at both simplifying the tax system and improving tax administration.

In addition, economic and social inequality will continue to be a significant concern for future fiscal policies; progressive taxes and income redistribution measures will play an increasingly important role in fighting inequalities and promoting a fairer and more inclusive society.

Professor Mihai Copăceanu, from the University of Bucharest, in his work "Digitalization and Adaptation of Fiscal Systems: Challenges and Strategies," highlights that digitalization requires a review of fiscal systems to collect and manage revenues from the digital economy efficiently. The implementation of innovative fiscal instruments, such as taxes on digital transactions or personal data, may be necessary to ensure adequate and fair taxation in this area.

In the context of the increase in tax evasion in the digital environment, Romanian researchers, such as Ana Popa and George Marinescu, in their work "Fiscal Evasion in the Digital Era: New Trends and Solutions," propose innovative strategies to combat this phenomenon. The use of emerging technologies such as data analytics and artificial intelligence could significantly improve the ability of tax authorities to detect and prevent online tax evasion.

Table 2: Taxes on income & profits, social security contributions and total tax revenue for the OECD countries in 2022 (% of GDP) and the VAT rates for 2022.

Country	Taxes on income & profits, GDP, %	Social security contributions, GDP, %	Total tax revenue, GDP, %	VAT rates
Australia	18,1	0	29,5	10,0
Austria	13,3	14,7	43,1	20,0
Belgium	15,9	12,9	42,4	21,0
Canada	16,9	4,7	33,2	5,0
Chile	10,5	1	23,9	19,0
Colombia	6,6	1,6	19,7	19,0
Costa Rica	5,5	8,9	25,5	13,0
Czechia	7,1	15,8	33,9	21,0
Denmark	27	0	41,9	25,0

Estonia	7,9	11,4	32,8	20,0
Finland	15,9	11,9	43	24,0
France	12,9	15	46,1	20,0
Germany	13,1	14,6	39,3	19,0
Greece	8,3	12,1	41	24,0
Hungary	5,6	9,4	33,2	27,0
Iceland	17,8	3	34,9	24,0
Ireland	11	3,2	20,9	23,0
Israel	12,3	5	32,9	17,0
Italy	14,1	13,2	42,9	22,0
Japan	11	13,3	34,1	10,0
Korea	11,9	8,2	32	10,0
Latvia	6,8	9,2	30,2	21,0
Lithuania	10	9,9	31,9	21,0
Luxembourg	14,8	10,7	38,6	17,0
Mexico	8	2,4	16,9	16,0
Netherlands	12,5	12,6	38	21,0
New Zealand	20	0	33,8	15,0
Norway	26,8	7,7	44,3	25,0
Poland	7,3	13,7	35,2	23,0
Portugal	10,5	10,3	36,4	23,0
Slovak Republic	7,9	14,6	34,8	20,0
Slovenia	7,5	16	37,4	22,0
Spain	11,8	12,8	37,5	21,0
Sweden	14,7	8,7	41,3	25,0
Switzerland	12,7	6,8	27,2	7,7
Türkiye	5,8	5	20,8	18,0
United Kingdom	13,3	7,1	35,3	20,0

Source: Revenue Statistics 2023- Tax Revenue Buoyancy in OECD Countries, https://www.oecd.org//tax/revenue-statistics

In 2022, France had the highest tax-to-GDP ratio at 46.1%, a position it last held in 2018. Norway followed with the second-highest ratio at 44.3%, while Mexico had the lowest ratio at 16.9%.

Denmark observed the largest decrease in its tax-to-GDP ratio between 2021 and 2022, with revenues falling by 5.5 percentage points. This decline was attributed to decreases in revenues from income taxes (4.5 percentage points) and from taxes on goods and services (0.9 percentage points).

Türkiye experienced the next-largest decline of 2.0 percentage points, with social security contributions falling by 1.6 percentage points and revenues from personal income tax (PIT) dropping by 0.7 percentage points.

As of 1 January 2022, 23 OECD countries had a standard VAT rate of 20% or higher. Among these, 10 countries had a standard VAT rate of 23% or higher. All of these countries are EU

Member States, with the exceptions of Iceland and Norway, which have standard VAT rates of 24% and 25% respectively.

The average standard VAT rate of the 22 OECD countries that are EU members is 21.8%, which is notably higher than the OECD average of 19.2%. EU Member States are required to follow common rules for determining their national VAT rates (VAT Directive 2006/112/EC), which sets the minimum standard VAT rate at 15%. The average VAT standard rate in the OECD in 2022 was 19,2%.

According to the Execution Report of the Consolidated General Budget of Romania as of 31.12.2022 available on the website of the Ministry of Finance, tax revenues in 2022 accounted for 16.1% of the GDP. This included a VAT rate of 6.6% of the GDP and a profit tax, wages, income, and capital gains totaling 4.6% of the GDP.

Currently, three VAT rates apply in Romania: the standard rate, applied to most products and services of 19% and the reduced rates of 9% and 5%. The standard rate of 19% is valid from January 1, 2017 and applies to all products and services, except for those for which a reduced rate applies or for those operations for which there are VAT exemptions.

Conclusion

Taxation is a necessary evil. That is precisely why it is necessary for taxpayers, individuals, or commercial companies to be aware of the importance and usefulness of their financial efforts and for the state, through specialized institutions, to efficiently and transparently use the revenues collected in the interest of citizens.

Fiscal policies must be adjusted periodically according to the economic situation of each country, respecting the principles of equity, solidarity, and effectiveness, and correlated with budgetary and monetary policies (Văcărel, 2007, p.43).

Taxation has both short-term and long-term effects on the economy. Among the short-term effects, we mention the increase in government spending that stimulates aggregate demand and facilitates the exit from recession in conditions of high taxation, but this can lead to an increase in the budget deficit and public debt in a situation of reduced taxation, in the short term a reduction in economic growth can be registered, but also a reduction in inflation and the deficit, as well as a depreciation of the national currency. In the long run, tax cuts stimulate economic growth by increasing investment and labor supply but may cause the budget deficit to increase. In contrast, tax increases may translate into increased public spending on education, health, and infrastructure, including increased productivity, but they can also increase public debt.

The implementation of common fiscal policies in the EU would have, on the one hand, positive effects, given that the response to the developments of the world economy would be unitary, but also adverse effects, especially regarding direct taxes, deriving from the differences between the member countries under the aspect of the level of development and the standard of living.

Over long periods (half of the last century - the first decade of this century), there is an increase in taxation both in the OECD countries and, in particular, in the EU countries, of course, with differences between different regions, depending on several factors endogenous and exogenous.

Digitization represents an opportunity for the tax system in Romania, while at the same time, it is also a challenge for the Romanian economic environment. Adapting to technological changes and implementing intelligent and innovative tax policies are essential to ensure a fair, efficient, and growth-friendly tax environment in the digital age.

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UNDERSTANDING DIGITAL ENTREPRENEURSHIP: A THEORETICAL PERSPECTIVE

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Abstract: *This paper explores the multifaceted nature of digital entrepreneurship, tracing its evolution alongside the digital transformation of the broader economy. Entrepreneurship research has expanded to encompass a wide range of theoretical perspectives. It outlines the evolution of theoretical perspectives in entrepreneurship studies, shifting from a focus on individual characteristics to a broader emphasis on environmental, social, and institutional factors. The paper highlights the diversity of methodological approaches utilized in entrepreneurship research, ranging quantitative, qualitative, and computational techniques. The advent of the internet opened the door for e-commerce in the 1990s, followed by the rise of Web 2.0 social platforms in the 2000s, further empowering entrepreneurs through user-generated content and the power of networks. The current phase of digital entrepreneurship is characterized by data-driven platforms, sophisticated algorithms, and the blurring of physical and digital boundaries. Theoretical frameworks, including innovation theory, resource-based views, lean startup methodologies, and institutional perspectives, aid in understanding the opportunities and challenges within this dynamic field. Digital entrepreneurship is presented as a dynamic force reshaping the modern economy. The paper traces the evolution of digital entrepreneurship through three key phases: the emergence of e-commerce in the 1990s, the rise of Web 2.0 social platforms in the 2000s, and the current dominance of data-driven platforms. The ongoing digital revolution has profoundly altered the entrepreneurial landscape, demanding new skills, strategies, and models for success. The COVID-19 pandemic further accelerated digital adoption across businesses and society. The paper underscores the significance of digital entrepreneurship within the context of technological advancement, institutional shifts, and evolving market dynamics.*

Keywords: *digital entrepreneurship; Web 2.0; data-driven platforms*

JEL Classification: *L26; M13; O33.*

1. Introduction

Understanding the complex phenomenon of entrepreneurship, a key driver of innovation and economic growth, requires a multifaceted approach. This paper delves into the rich theoretical foundations of entrepreneurship research, exploring a spectrum of perspectives. These include neoclassical economics with its focus on market equilibrium, behavioural theories examining individual motivations, resource-based views emphasizing strategic

resource utilization, and the role of institutional and social networks in shaping entrepreneurial outcomes.

The technological advancement, particularly the rise of the internet and subsequent digital innovations, has profoundly transformed the entrepreneurial landscape. This transformation has given birth to the dynamic field of digital entrepreneurship, where businesses leverage digital technologies to create new products, services, and business models. This paper investigates the theoretical underpinnings, unique characteristics, and transformative impact of digital entrepreneurship on industries, individual empowerment, and economic growth.

To gain a holistic understanding of entrepreneurship in the digital age, this paper also examines the diverse methodological toolkit employed by researchers. This includes quantitative approaches for analysing trends, qualitative methods for deep insights into entrepreneurial behaviours, and computational techniques for examining large-scale digital datasets. By exploring these theoretical and methodological foundations, we can gain a comprehensive understanding of the forces shaping entrepreneurship in our rapidly evolving digital world.

2. Theoretical and Methodological Approaches in Entrepreneurship Research

Entrepreneurship as a field of research has expanded substantially in recent decades. Theoretical perspectives have focused on the characteristics and behaviors of individual entrepreneurs as factors in the formation and growth of new firms. Over time, entrepreneurship literature has evolved to encompass broader questions about how environmental, organizational, institutional, and social factors shape entrepreneurial processes and outcomes (Carlsson et al., 2013). Entrepreneurship research has become more diverse, with researchers now employing a wider range of theories, methodologies, and real-world contexts.

From a theoretical perspective, several theories stand out in the analysis of entrepreneurship, its determinants, and its impact. Neoclassical economics focuses on how entrepreneurship contributes to market equilibrium through arbitrage and balancing supply and demand (Casson, 1982), and the entrepreneur is a rational optimizer. Contrarily, Austrian economics views entrepreneurship as a disruptive force that challenges the market status quo, with entrepreneurs driving dynamic change through innovation (Schumpeter, 1934). Behavioral theories delve into the psychological traits, cognitive biases, and motivations that differentiate entrepreneurs from other economic actors (Baron, 1998). Resource-based perspectives emphasize how entrepreneurs strategically leverage unique combinations of assets to achieve competitive advantage and value creation (Alvarez and Barney, 2004). Institutional theories dissect how formal and informal institutions shape the incentives and constraints encountered within the entrepreneurial sphere (Baumol, 1990; North, 1990). Social network perspectives focus on the ways in which an entrepreneur's embeddedness within social structures and communities influences their access to opportunities, resource mobilization, and entrepreneurial success (Aldrich and Zimmer, 1986). These theoretical perspectives illustrate the multifaceted nature of entrepreneurship as a socio-economic phenomenon. While neoclassical views highlight its role in market equilibrium and Austrian views its disruptive potential, behavioral and resource-based views emphasize the individual entrepreneur's psychological attributes and strategic use of resources. Additionally, institutional and social network theories underscore the influence of external environments on entrepreneurial outcomes. Understanding these various perspectives is important for a comprehensive analysis of entrepreneurship and its role in driving economic and social change.

The analysis of entrepreneurship also applies a methodological approach. Entrepreneurship research leverages a spectrum of methodologies to provide comprehensive insights. Quantitative approaches like statistical analysis and surveys illuminate macro-level trends and entrepreneurial attitudes, while qualitative methods such as case studies, ethnography, and grounded theory offer in-depth understanding of entrepreneurs' behaviors and strategies. Additionally, action research allows for direct intervention and support, while computational analysis utilizes data science techniques to analyze large entrepreneurial datasets. This methodological diversity empowers researchers to generate a holistic view of the complex entrepreneurial landscape (Neergaard and Ulhoi, 2007).

3. Entrepreneurship in the Era of Digitization

Digital entrepreneurship has emerged as a dynamic subset of entrepreneurship, encompassing the creation of new ventures within the digital space. These ventures harness the power of the internet, mobile technology, big data, AI, and other digital capabilities to drive innovation and growth. As a dynamic research stream, the study of digital entrepreneurship draws upon a diverse range of theoretical underpinnings. Thus, according to the innovation theory, digital entrepreneurship often revolves around the development and commercialization of innovative products, services, or business models, drawing upon concepts from innovation theory (Bailetti, 2012). The resource-based theory explains how digital entrepreneurs effectively leverage unique digital resources, such as data, platforms, and networks, to gain competitive advantages, aligning with the resource-based view (Acs et al., 2009). Also, according to Ries (2011), lean startup approaches, emphasizing iterative, user-driven strategies for digital business model development. Institutional theory analyzes the role of regulations and norms in shaping the entrepreneurial environment (Giones and Brem, 2017). Social network theory emphasizes the importance of collaboration and connections (Autio et al., 2018). Also, the cognitive processes and decision-making patterns of digital entrepreneurs influence their venture creation and growth strategies, aligning with entrepreneurial cognition research. Digital entrepreneurship represents a transformative force in the modern economy, driven by technological advancements and the ever-evolving digital landscape. The theoretical frameworks outlined above provide a foundation for understanding the dynamics, challenges, and opportunities shaping this burgeoning field.

The study of digital entrepreneurship employs a diverse array of methodological approaches. The most common methods found in the literature review are those that include statistical analyses that measure digital entrepreneurship using population-level data (Koellinger, 2008; Sussan and Acs, 2017); surveys gathering individual and organizational data on digital capabilities and behaviors (Higón, 2012; Kraus, et al., 2018); in-depth case studies examining how digital ventures operate within specific contexts (e.g., Kollmann, 2006; Nambisan, 2017); ethnographic studies exploring cultures and interactions within the digital entrepreneurship space (Lange, 2006); and computational techniques that analyze online artifacts to study digital entrepreneurial dynamics (e.g., Whelan, et al., 2010; Arora, et al., 2016). As the field continues to evolve, mixed-methods approaches will likely become even more valuable for providing multi-level insights into the processes and contexts that shape digital entrepreneurial outcomes.

The rapid digital transformation of business, communication, and society over the past decades has profoundly shaped the evolution of entrepreneurship. Traditional entrepreneurial processes, models, and practices have required adaptation to the new realities of an intensely digitized, networked world. This paper delves into how the ongoing digital revolution has transformed key aspects of entrepreneurship, leading to the

emergence of novel ventures, business models, skillsets, strategies, and digitally driven value creation methods. The analysis explores this evolution in three phases: the 1990s with the rise of e-commerce (Laudon and Traver, 2014), the 2000s with the explosion of Web 2.0 social media platforms (von Hippel, 2009; Kaplan and Haenlein, 2010), and the current shift towards data-driven, platform-based entrepreneurship. This digital transformation encompasses waves of technology adoption, institutional impacts, evolving skill requirements, peer-to-peer collaboration, the blurring of physical and digital boundaries, and the ongoing disruption of established businesses. A relevant factor is how digitization alters entrepreneurial contexts, opportunities, resources, processes, and value creation. This evolution reveals the interdependent, socially constructed nature of entrepreneurship within broader technological, economic, and social systems. The changes brought about by digital technologies have necessitated new entrepreneurial capabilities, mindsets, and models – but also allow ventures to scale and internationalize at unprecedented speed. Navigating this new digital landscape remains imperative for competitiveness.

The 1990s witnessed the initial transformation of the entrepreneurial landscape as the internet opened for commercial use, ushering in a focus on e-commerce and the basic adoption of digital tools. Key developments included the lifting of commercialization restrictions in 1995, enabling entrepreneurial ventures in cyberspace (Lécuyer and Brock, 2006). E-commerce startups seized opportunities in online retail, auctions, marketplaces, payments, and digital content distribution, with iconic firms like Amazon, eBay, and PayPal establishing themselves (Laudon and Traver, 2014). Businesses began adopting software and digital communication tools (email, websites), often integrating them into traditional models rather than driving strategic change (Amit and Zott, 2001). Enthusiasm fueled speculative investment, exemplified by the dotcom bubble (Goldfarb, et al., 2007). Alongside this, institutions navigated extending regulations to the digital realm (Litan and Rivlin, 2001). While this period revealed the potential of digital connectivity, technological limitations in speed and user experience hindered the full potential of e-commerce. This pioneering period revealed new avenues for exploiting digital connectivity, but technological limitations in terms of speed, user experience, and convenience constrained e-commerce and digital integration possibilities. Competencies, business models, and institutions remained only partially adapted to the nascent digital era. In this emerging digital environment, entrepreneurial opportunities largely focused on utilizing basic websites for e-commerce, advertising, informational content, and digital media distribution (Laudon and Traver, 2014). However, limited bandwidth, small user bases, a lack of online payment infrastructure, and immature web interfaces restricted more complex entrepreneurship during this pioneering period. Consequently, business models and institutions remained partially adapted to the emerging digital era.

The early 2000s saw a profound reshaping of the entrepreneurial landscape driven by Web 2.0 technologies, fostering interactive social platforms, user-generated content, and multifaceted digital marketplaces. Social networks like Facebook, YouTube, Twitter, and messaging apps emerged, connecting billions of users worldwide and enabling the viral growth of digital entrepreneurs through network effects (Kaplan and Haenlein, 2010). These platforms shifted power to users and peer-to-peer content creation. They democratized content creation and eliminated geographical constraints. User-centered innovation became ubiquitous (von Hippel, 2009), and crowdsourcing, reviews, and collaboration expanded dramatically. During this phase, multifaceted platforms like Uber, Airbnb, UpWork facilitated exchanges between distinct audiences while reshaping industries (Parker, et al., 2016). Reputation systems fostered trust in these disruptive peer-to-peer models. Agile development, lean startup approaches, and hacking emerged as entrepreneurial skills adapted to the accelerated cycles of digital products (Ries, 2011). Speed and flexibility

became even more crucial. Cryptocurrencies and blockchain also sought to decentralize finance and commerce, expanding digital institutional structures. New governance models based on consensus algorithms emerged. Web 2.0 massively extended digital integration into entrepreneurial ecosystems and business models, while simultaneously enabling new digitally savvy competitors (Mills, 2007). Incumbents in many sectors underestimated these effects. These shifts gave rise to iconic platform-based entrepreneurial ventures like Airbnb, Uber, Square, Spotify, and Twitter. User engagement became essential for value creation.

The current landscape of digital entrepreneurship exhibits an increasing reliance on intelligent algorithms, big data analytics, artificial intelligence, Internet of Things connectivity, and dominant platforms. Developments include platform giants like Alphabet, Amazon, Meta, and Alibaba, leveraging network effects and employing sophisticated algorithms that utilize massive datasets to dominate markets. Startups are increasingly building on top of their platforms. Advanced analytics and machine learning underpin personalization, recommendations, predictive modeling, price optimization, and other applications that generate competitive advantages (Court, 2015). The physical-digital convergence expands through sensors, 5G networks, geolocation, augmented reality, robotics, and 3D printing. Connected intelligent products become ubiquitous. While the growth of the gig economy and the rise of decentralized technologies like blockchain offer new opportunities, entrepreneurs must also grapple with the ethical implications of these technologies, addressing concerns surrounding job security, data privacy, and cybersecurity (Manyika et al., 2016; Reyna et al., 2018).

The COVID-19 pandemic and associated public health restrictions have further catalyzed the digitalization of entrepreneurial activities: video conferencing, e-commerce, remote work, and other online modalities have become essential as physical interactions declined during lockdowns and social distancing protocols (Bartik et al., 2020). Many traditional SMEs were forced to rapidly pivot online, swiftly adopting e-commerce and digital communication capabilities to survive (Salah and Ayyash, 2024). This compressed years of change into months. New digitally enabled startups emerged in telehealth, online education, food and grocery delivery, digital events, remote services, and other pandemic-adapted sectors. Existing platforms like Zoom, Shopify, and Amazon experienced surging growth. Venture funding flows continued to grow strongly as digital startups attracted investor interest based on resilient performance while traditional sectors struggled (Gupta and Wing, 2021). Online activity became the default for many routines.

4. In conclusion

Entrepreneurship research has evolved into a rich and multidisciplinary field. The focus has expanded from a narrow view of individual entrepreneurs to encompass the complex interplay of psychological, social, economic, and institutional forces that shape entrepreneurial activity. This shift, along with the adoption of diverse research methodologies, allows for a more nuanced and comprehensive understanding of entrepreneurship as a driver of innovation, economic growth, and social change. The ongoing progression of the digital revolution has systematically transformed entrepreneurial processes, strategies, and business models over the past three decades. Web 2.0 and current data-driven platforms have profoundly altered the ecosystemic context in which entrepreneurs operate and compete. As digital penetration continues into society and the economy, developing digitally-based leadership, competencies, and business models represents an essential mandate for entrepreneurs to capitalize on the opportunities unlocked by technological innovation. The pandemic has provided an additional push to digital adoption, underscoring this imperative. Strategic integration of digital capabilities into all entrepreneurial activities is essential for 21st-century competitiveness.

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HETEROSCEDASTICITY CORRECTION MEASURES IN STOCHASTIC FRONTIER ANALYSIS

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Abstract: *The stochastic frontier analysis (SFA) model, designed to assess technical efficiency in production models, operates under the assumption of homoscedasticity. However, in practical scenarios, either the random error or the technical efficiency error, or both, can exhibit non-homoscedasticity. This research proposes heteroscedasticity correction measures for the random error (HCRE), technical efficiency error (HCTE), and both (HCRTE) within the SFA model. The study aims to determine which correction measure yields the most efficient parameter estimates when heteroskedasticity is present. The comparison involves evaluating the mean squared error (MSE) across different forms of heteroscedasticity and sample sizes through Monte Carlo simulations comprising 5000 replications. The findings indicate that attempting to correct for heteroskedasticity in the absence of such issues can adversely affect the parameter estimates of the SFA Model. Conversely, the HCRTE measure consistently produces the most efficient estimates when dealing with heteroskedasticity in terms of both random error and technical efficiency. Moreover, in cases where heteroskedasticity exists, applying the HCRTE measure not only enhances parameter estimates but also improves the technical efficiency measure of the SFA model.*

Keywords: Stochastic Frontier Production; Heteroscedasticity Correction; Technical Efficiency, Monte Carlo Simulation.

Introduction

Stochastic frontier analysis (SFA) emerged significantly with seminal papers by Meeusen and van den Broeck (1977) and Aigner, Lovell, and Schmidt (1977), becoming a promising

area of research for scholars. The core objective of SFA is to gauge firm efficiency, with technical efficiency defined by Koopmans (1951) and cited by Battese and Coelli (1977) as the inability to increase one output without decreasing another or using more input. Consequently, SFA measures technical efficiency as the ratio of actual output to potential output. However, the SFA model assumes no heteroscedasticity, which can distort technical efficiency measurements, underscoring the criticality of accurate model performance (Hadri, 1999). Common issues such as multicollinearity, heteroskedasticity, and autocorrelation in least squares regression-based estimation of frontier functions have been overlooked in SFA applications, prompting a focus on developing heteroskedasticity-corrected measures for more efficient SFA estimates. This study aims to propose and compare such measures to enhance the accuracy of technical efficiency estimation within the SFA framework.

Review of the Related Literature
Studies focusing on stochastic frontier analysis (SFA) often encounter issues related to heteroskedasticity, especially when dealing with data from diverse firms varying in size and variables. Historically, economists have linked heteroskedasticity in cross-sectional data to size-related characteristics of observed firms, highlighting the serious implications for least-squares estimation. Jon and Stephen (1995) introduced a method to address heteroskedasticity in cost-frontier estimation, demonstrating significant changes in estimated frontiers and inefficiency measures. In contrast, Taeyoon and K (2008) explored heteroscedasticity in the stochastic frontier cost function using aggregated data and Monte Carlo studies. Their findings suggested that heteroscedasticity predominantly affects the random effect and unexplained error term, affecting the estimation of inefficiency measures. Ford (1999) developed a test for heteroskedasticity in stochastic frontier models, focusing on the error term related to inefficiency measurement and proposing a Lagrange multiplier test akin to Breusch-Pagan's test for linear models.

Further investigations by Caudill and Ford (1993) using Monte Carlo experiments revealed the overestimation of intercepts and underestimation of slope coefficients in the presence of heteroskedasticity. They emphasized the sensitivity of inefficiency measures to specification errors in frontier models. Hadri (1999) expanded on heteroskedasticity corrections in stochastic frontier models, affecting firm-specific inefficiency measures and rankings. In the context of energy demand functions, Llorca et al. (2017) applied SFA to estimate energy efficiency measures at the country level, proposing a random parameter model to accommodate unobserved heterogeneity among countries. Their approach provided robust alternatives for international comparisons, especially in regions like Latin America and the Caribbean with significant energy consumption in the transport sector. Despite these insights, recent and comprehensive studies on heteroskedasticity corrections in SFA models remain limited, highlighting the need for further research to address this gap effectively.

Methodology
3.1   SFA estimation
Following (Battese & Coelli, 1995) as sited by (Nguyen, 2010), the stochastic frontier model used in the study is thus: considering cross-sectional data on the quantities of N inputs x_{ni}, $n = 1, \ldots, N$; $i = 1, \ldots, I$ are used to produce a single output y_i, $i = 1, \ldots, I$ am available to each of the I producers. The stochastic production frontier for producers can be written as follows.

$$y_i = f(x_i; \beta).\exp(V_i).TE_i$$

(3.1)

Here, the βs are the parameters in the production function. V_i reflects random noise, and TE_i is the output-oriented technical efficiency of producer i. From Equation (3.1) we have;

$$TE_i = \frac{y_i}{f(x_i; \beta).\exp(V_i)}$$

(3.2)

Assuming the $f(x_i; \beta)$ takes a Cobb-Douglas form, the (3.2) becomes

$$TE_i = \exp\{-U_i\}$$

(3.3)

Thus, the stochastic production frontier becomes;

$$\ln y_i = \beta_0 + \sum_{n=1}^{N} \beta_n \ln x_{ni} + V_i - U_i$$

(3.4)

Then the estimate of the technical efficiency can be obtained from: (3.3) and (3.4) (Battese & Coelli, 1977) as sited by (Nguyen, 2010)

$$\widehat{TE_{1i}} = \exp\{-\widehat{E(U_i|E_i)}\}$$

(3.5)

$$\widehat{TE_{2i}} = E(\widehat{\exp\{-U_i\}}|E_i)$$

(3.6)

Here, the joint density of U and V is then given as follows (Nguyen, 2010):

$$f(u, v) = \frac{1}{\sqrt{2\pi}\sigma\theta}\exp\left\{-\frac{v^2}{2\sigma^2}\right\}$$

(3.7)

Since E + U, the joint density of U and E after variable transformation is (Nguyen, 2010):

$$f_{U,E}(u, \epsilon) = \frac{1}{\sqrt{2\pi}\sigma\theta}\exp\left\{-\frac{(\epsilon + u)^2}{2\sigma^2}\right\}$$

(3.8)

Hence, the marginal density of E can be derived (Nguyen, 2010):

$$f_E(\epsilon) = \int_0^\theta \frac{1}{\sqrt{2\pi}\sigma\theta}\exp\left\{-\frac{(\epsilon + u)^2}{2\sigma^2}\right\} du$$

(3.9)

$$= \int_{\frac{\epsilon}{\sigma}}^{\frac{\theta+\epsilon}{\sigma}} \frac{1}{\sqrt{2\pi}\theta}\exp\left\{-\frac{z^2}{2}\right\} dz$$

(3.10)

$$= \frac{1}{\theta}\left[\Phi\left(\frac{\theta + \epsilon}{\sigma}\right) - \Phi\left(\frac{\epsilon}{\sigma}\right)\right], \epsilon \in \Re$$

(3.11)

Noting that $F_E(\varepsilon)$ is a symmetric density with a mean of (Nguyen, 2010):

$$E(\epsilon) = -E(u) = -\frac{\theta}{2},$$

and variance of (Nguyen, 2010):

$$Var(\epsilon) = Var(v) + Var(u) = \sigma^2 + \frac{\theta^2}{12}$$

3.2 Proposed Measures for Heteroscedasticity Correction in SFA

After a successful estimation of the SFA model parameters and assuming the decomposed error terms in SFA model which is an established modified ordinary least squares regression model, the assumption of homoscedasticity and thus heteroscedasticity (non-constant variance in the error term) is violated.

This study then proposed the following measures in an attempt to obtain the most efficient measure of heteroskedasticity correction in any given stochastic frontier analysis model considering its nature of the decomposed error terms $(V_i - TE_i)$. Recall from (3.1) a typical stochastic production frontier model that is presented in (3.12) and (3.13) as the log linear and linear functions respectively by:

$$y_{i=f(X_i;\beta).\exp(V_i).TE_i}$$

(3.12)

$$y_{i=\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+(V_i-TE_i)}$$

(3.13)

Then, the proposed measures are:

$$y_{i=\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+(\Delta V_i-TE_i)}$$

(3.14)

$$y_{i=\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+(V_i-\Delta TE_i)}$$

(3.15)

$$y_{i=\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+\Delta(V_i-TE_i)}$$

(3.16)

Where:

(ΔV_i) is when the heteroscedasticity is corrected only in the random error component,

(ΔTE_i) is when the heteroscedasticity is corrected only in the technical efficiency component, while, $(\Delta V_i - TE_i)$ is when heteroscedasticity is corrected in both the random error component and the technical efficiency component of the error term of the SFA model.

In practice, the nature of heteroskedasticity in real-life data is never known. Hence, the error variance is often estimated using a functional form of the residuals obtained from the OLS estimator (White, 1980). Basically, WLS involves the use of weights to correct for the structure of heteroscedasticity present in the model. In the literature, White (1980) is the most widely accepted approach towards generating weights. This procedure is as follows:

From (3.13) the stochastic frontier model with the assumption of heteroskedasticity is given by:

$$y_{i=\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+(V_i-TE_i)}$$

(3.17)

Letting $\mu_i = (V_i - TE_i)$

Where μ_i is the error term in OLS model.

$$y_{i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \mu_t}$$
(3.18)

$$Var(\mu_i) = E(\mu_i^2) = \sigma^2 \qquad \text{for } i = 1, 2, \ldots, n$$

Note that the *t* subscript attached to the sigma square indicates that the disturbance for each of the *n units* is drawn from a probability distribution that has a different variance (Lee, 1983).

Given such a non-constant variance function

$$Var(e_i)^{\square} = \sigma^2 = \sigma^2 x_i^\alpha$$
(3.19)

where α is the unknown parameter in the model;

Taking the natural logarithm

$$\ln \sigma^2 = \ln \sigma^2 + \alpha \ln x_i$$
(3.20)

Then take the exponential of the equation.

$$\sigma_i^2 = exp[ln(\sigma_o^2) + \alpha \, ln(x_i)]$$
(3.21)

Letting $\beta_1 = ln(\sigma_i^2)$, $\beta_2 = \alpha$, $Z_i = ln(x_i)$

$$\sigma_i^2 = exp[\beta_1 + \beta_2 Z_i]$$
(3.22)

From equation 3.22, if the variance depends on more than one explanatory variable or from a multiple regression case, equation 3.22 is transformed into equation 3.22* below:

$$\sigma_i^2 = exp[\beta_1 + \beta_2 Z_{i2} + \ldots + \beta_3 Z_{is}]$$
(3.22*)

Thus, we take the exponential function since it gives a non-negative value of variance σ_i^2.

Therefore, the equation (3.21) becomes $\beta_1 = ln(\sigma_i^2), \beta_2 = \alpha, Z_i = ln(x_i)$ in multiple regression case. Then, using the OLS technique to estimate the coefficients $\beta_1, \beta_2, \ldots, \beta_s$ of the variance function

$$ln(\sigma_i^2) = \beta_1 + \beta_2 Z_{i2} + \cdots + \beta_s Z_{is}$$
(3.23)

Where $Z_{i2} = ln(x_2)$, $Z_{i3} = ln(x_3)$ and so on.

We then took the square root of the exponential of the fitted estimate.

$$\hat{\sigma}_i = \sqrt{exp(\hat{\beta}_1 + \hat{\beta}_2 Z_{i2} + \ldots + \hat{\beta}_s Z_{is})}$$
(3.24)

Then $\hat{\sigma}_i$ is the weight required to transform the data set by dividing through.

Since;

$$Var\left(\frac{e_i}{\sigma_i}\right) = \frac{1}{\sigma_i^2} Var(e_i) = \frac{1}{\sigma_i^2} \times \sigma_i^2 = 1$$
(3.25)

Using the estimate of our variance function $\hat{\sigma}_i^2$ in place of σ_i^2 in the equation (3.12) above to obtain the Generalized Least Square Estimator of $\beta_1, \beta_2, \ldots, \beta_s$.

We then defined the transformed variables as homoskedasticity.

$$y_i^* = \frac{y_i}{\hat{\sigma}_i}, \ x_{i1}^* = \frac{1}{\hat{\sigma}_i}, \ x_{i2}^* = \frac{x_i}{\hat{\sigma}_i}, \dots, \ x_{is}^* = \frac{x_s}{\hat{\sigma}_i}$$
(3.26)

3.3 The Monte Carlo Design

To investigate the finite sample properties of the maximum likelihood (ML) estimators of the half-normal stochastic frontier production functions in the presence of heteroskedasticity, we use a Monte Carlo experiment. We simulate a frontier model using a simple Cobb-Douglass production function of the form:

$$\ln y_i = \alpha + \boldsymbol{\beta}^{\mathbf{T}}\mathbf{x}_i + v_i - u_i$$
$$= \alpha + \boldsymbol{\beta}^{\mathbf{T}}\mathbf{x}_i + \varepsilon_i.$$

where v and u are a normal error variable and a half normal error, respectively.

Following (Guermat & Hadri, 1999), we then simulate the independent variables X_i as follows:

X_i are sets of independent variables that are fixed following $X_1 = 1\dots N$, $X_2 = 1\dots \sqrt{N}$ and $Z = \sqrt{i}$, for i = 1… N. We also generate the two error terms as follows $v \sim N(0, \sigma^2)$ and $u \sim |N(0, \sigma^2)|$

Then the model for the heteroskedasticity function was formed as follows:

$$\sigma_v = exp(\alpha_0 + \sigma_{\alpha 1} \ln X_{1i} + \sigma_{\alpha 2} \ln X_{2i})$$
$$\sigma_u = exp(\gamma_0 + \sigma_{\gamma 1} \ln Z_i)$$

The parameters were then set at:

$$\beta_0 = \alpha_0 = \gamma_0 = \alpha_1 = \alpha_2 = \gamma_1 = 1$$
$$\beta_1 = \beta_2 = 0.5 (constant return to scale)$$

The parameter σ measures the degree of heteroscedasticity. We use several degrees of heteroscedasticity by letting σ to vary (0, 0.2, 0.3 and 0.4). When $\sigma = 0$ we obtain the homoscedastic case. We also considered different sample sizes: 20, 40, 100, 250, and 500 observations (Hadri, Guermat, & Whittaker, 1999). To analyze the effect of heteroscedasticity, we estimated the following models (OBC, OCRE, OCTE, OCEP, SBC, HCRE, HCTE, HCRTE) which represents OBC before any form of correction; OCRE corrected for heteroscedasticity in V; OCTE corrected for heteroscedasticity in W; OCEP corrected for heteroscedasticity empirically; SBC before any form of correction; HCRE corrected for heteroscedasticity in V; HCRE corrected for heteroscedasticity in W; HCRTE corrected for heteroscedasticity empirically, respectively) using the MSE. We also set the number of replications to 5000.

Results

The results from the simulation study for scenarios with no heteroscedasticity and in the presence of heteroscedasticity. The performance of the proposed measures was studied with the behavior of their respective mean square error (MSE).

Table 4.1 MSE of the measures without heteroskedasticity

N	Ordinary Least Square Models				Stochastic Frontier Analysis Models			
	OBC	OCRE	OCTE	OCEP	SBC	HCRE	HCTE	HCEP
20	38391.44	38391.77	38391.77	38488.18	39230.07	25938.77	25938.77	2568879.00
30	23307.88	23307.90	23307.90	23308.38	23228.77	14357.29	14357.29	167731082.00
40	27651.82	27651.84	27651.84	27651.85	28518.75	16336.75	16336.75	14815393453.00
50	25897.93	25906.55	25906.55	25899.33	25894.39	14468.46	14468.46	13277272.00
100	24008.15	24008.28	24008.28	24008.47	27665.21	12807.45	12807.45	28951440.00
250	27971.75	27971.83	27971.83	27989.21	30726.15	12000.69	12000.69	2689264.00
500	37934.92	37935.06	37935.06	37941.24	59551.22	18780.36	18780.36	71964505.00

Estimators with minimum MSE

Figure 4.1

The measure with the line closest to zero is the best

From Table 4.1 and Figure 4.1, the following was observed: The OBC model exhibited the lowest MSE across sample sizes of 20, 30, 40, 50, 100, 250, and 500. This indicates that attempting any form of heteroskedasticity correction, as seen in OCRE, OCTE, and OCEP, would lead to adverse outcomes, as evidenced by the MSE simulation results presented in

the table above, due to the absence of heteroskedasticity in the data. Furthermore, it was observed that as the sample size increased (specifically, from 50 to 500), the MSE values for the OBC, OCRE, OCTE, and OCEP models remained relatively consistent. This observation suggests that the proposed correction methods in the OCRE, OCTE, and OCEP models may be more effective with smaller sample sizes. In terms of SFA estimators, both HCRE and HCTE demonstrated minimal MSE values, with identical MSE values across all sample sizes considered. However, the HCRTE model yielded higher MSE values in varying sample sizes.

Table 4.2 MSE of the Proposed Measures with a Varying Level of Heteroskedasticity

N	hetero (sigma)	Stochastic Frontier Analysis Correction Measures			
		SBC	HCRE	HCTE	HCRTE
20	0.1	545.82	487.34	353.44	18.33*
	0.3	330.24	1388.67	311.36	2.42*
	0.5	327.21	8404.04	750.18	1.78*
30	0.1	298.79	236.64	173.55	7.84*
	0.3	165.89	554.37	148.22	0.99*
	0.5	164.83	4271.25	218.29	0.82*
40	0.1	436.44	349.22	247.8	6.86*
	0.3	325.55	1060.7	277.78	1.27*
	0.5	322.34	8564.54	410.01	0.87*
50	0.1	180.15	142.07	99.26	4.45*
	0.3	148.82	484.18	120.76	0.72*
	0.5	147.75	4061.62	183.04	0.75*
100	0.1	48.58	34.81	24.29	1.47*
	0.3	36.7	116.42	28.02	0.80*
	0.5	36.83	1105.16	42.8	0.84*
250	0.1	5.36	3.84	2.75	0.65*
	0.3	3.58	11.13	2.91	0.97*
	0.5	3.58	120.74	4.14	1.00*
500	0.1	1.31	1.29	1.14	0.72*
	0.3	1.45	2.76	1.43	1.05*
	0.5	1.45	24.53	1.61	1.06*

*Estimators with minimum MSE

Figure 4.2   MSE Line Graph for the Proposed Measures at a heteroskedasticity level of 0.1

MSE line graph for the proposed measures at heteroscedaticity level of 0.1
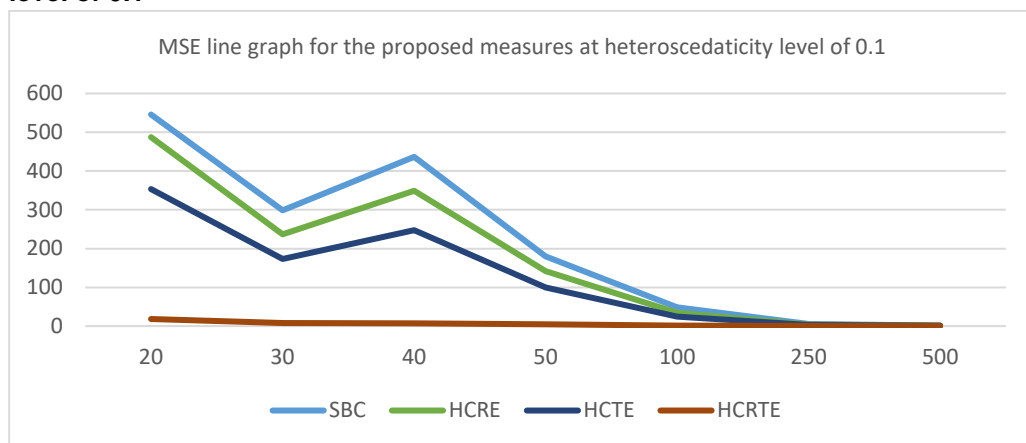
Figure 4.3   MSE line graph for the proposed measures at a heteroskedasticity level of 0.3

MSE line graph for the proposed measures at heteroscedaticity level of 0.3
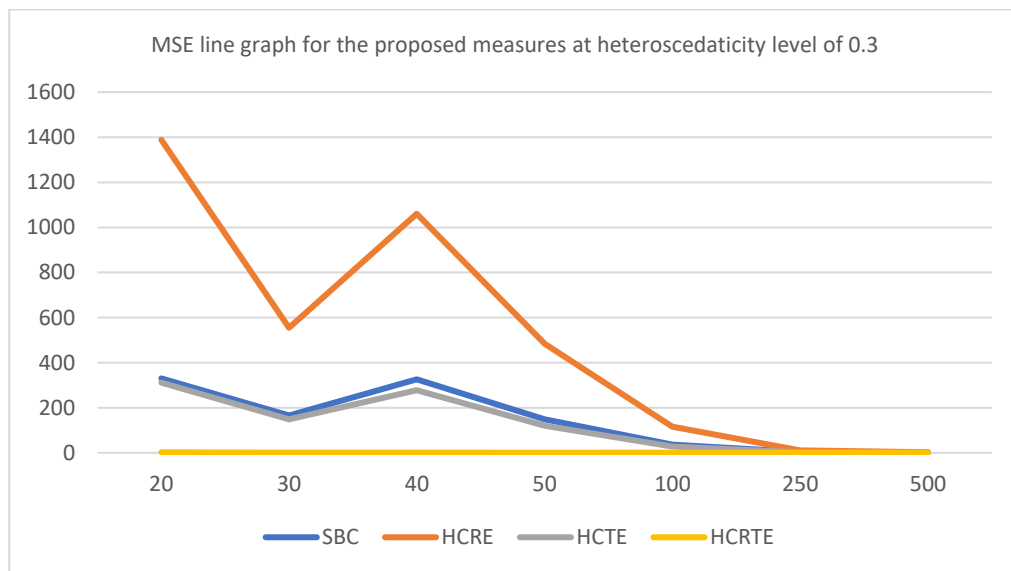
Figure 4.4   MSE Line Graph for the Proposed Measures at the heteroscedasticity level of 0.5

MSE line graph for the proposed measures at heteroscedaticity level of 0.5
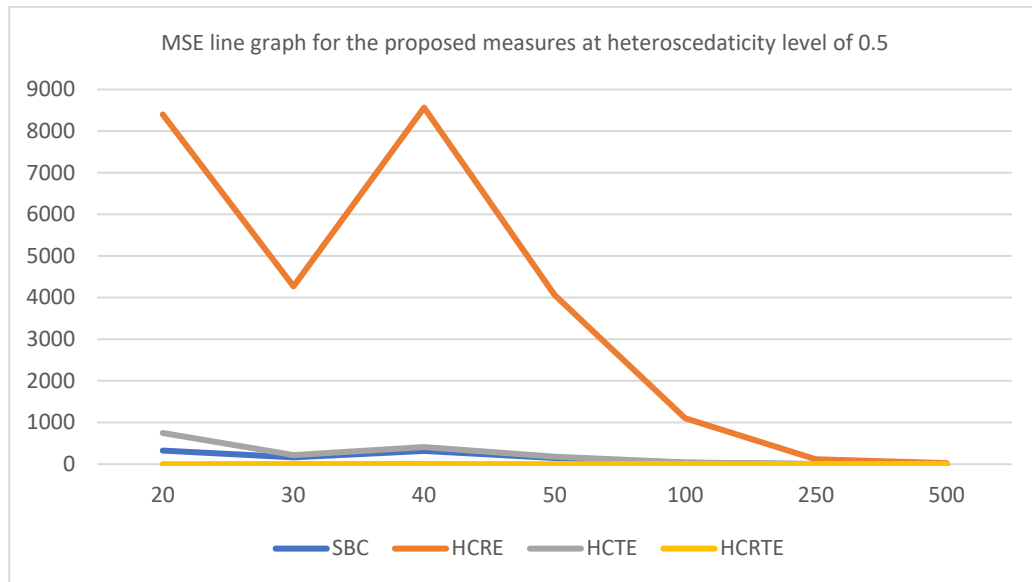
The measure with the line closest to zero is the best

From Table 4.2 and Figure 4.2. 4.3, 4.4, the following observations were made: Among the SFA correction measures (SBC, HCRE, HCTE, and HCRTE), HCRTE consistently exhibited the minimum MSE across all sample sizes (20, 30, 40, 50, 100, 250, and 500) and for all levels of heteroskedasticity (0.1, 0.3, and 0.5). This strongly suggests that the proposed correction measure (HCRTE), which addresses heteroskedasticity in both SFA error components, consistently yielded the lowest MSE values across all sample sizes, making it the most effective correction measure.

Conclusions

In conclusion, the effectiveness of heteroscedasticity corrections in the ordinary least squares (OLS) and stochastic frontier analysis (SFA) models is more pronounced in smaller sample sizes (n < 100), as evidenced by the simulation study results that indicate improvements in parameter estimates and reduced mean squared error (MSE) values as sample sizes increase towards infinity. Among the OLS models (OBC, OCRE, OCTE, OCEP), the OCEP model demonstrates superior performance with consistently minimal MSE across varying sample sizes. Similarly, in the SFA models (SBC, HCRE, HCTE, and HCRTE), the HCRTE model stands out with the lowest MSE values across different sample sizes.

However, corrections for heteroskedasticity in known forms (OCRE, OCTE for OLS; HCRE, HCTE for SFA) do not always yield better results compared to the jointly corrected OCEP and HCRTE models. This suggests that jointly correcting heteroscedasticity in both the u and v disturbance components of the model is more effective, especially in real-life data scenarios where the true form of heteroscedasticity may not be known. The results consistently show that OCEP and HCRTE provide the most efficient estimation, as indicated by their minimal MSE values at various levels of heteroskedasticity.

Based on these findings, it is recommended to test for heteroskedasticity in production models before applying any correction procedure and estimating SFA models. Furthermore, the use of relatively small samples (n < 100) can lead to more consistent and reliable results in estimating technical efficiency and optimizing the performance of the production model. The proposed estimators OCEP and HCRTE show promising performance in the simulation study, highlighting their potential for practical use in addressing heteroskedasticity and improving technical efficiency measures in SFA.

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DIGITALISATION IN ACCOMMODATION AND FOOD SERVICE ACTIVITIES IN ROMANIA AND EUROPEAN UNION

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Abstract: *The purpose of this paper is to evaluate the levels regarding the digitalisation and e-commerce footprint of enterprises in accommodation and food service activities for Romania and the European Union (EU). The goal of this research relating to the status of digitalisation and electronic commerce in accommodation and food service activities, is to better understand the magnitude (in Romania and EU) of the aforementioned from the viewpoint of specific indicators. And through those indicators to retrieve some answers regarding to: the degree of digitalisation, the level of enterprises where persons employed have access to the internet and also that have access to the internet for business purposes, the use of social media, the degree of enterprises with a website, the extent of difficulties for web sales of enterprises, what is the situation regarding the enterprises with e-commerce sales and enterprises total turnover from e-commerce sales. The research methodology included collecting information from recognized data bases (Google Scholar for theoretical part and Eurostat for the empirical approach).*

Keywords: digitalisation; e-commerce; accommodation; food service; Romania; European Union.

JEL classification: L66, L81, M10, M20, O14, O32, Q55, Z30.

1. INTRODUCTION

Digitalisation in business means the use such digital technologies that will help to change the business model and create new revenue and value-creating opportunities. Nowadays, digitalisation appears in all areas of life. Digitalisation, which means the use of modern information technologies, also occurs in tourism. Digital tourism means the use of an info-communication tool, an IT solution that can help to meet the needs of tourists and improves the competitiveness of organizations and businesses in tourism (Happ and Ivancsó-Horváth, 2018).
Digitalisation through ICT (Information and communication technology) offers tourism organizations the possibility of having a global presence as well as creating partnerships around the world in an efficient and low-cost way. Developments in ICT, specifically with Digital Marketing and E-commerce, had a major impact on the Tourism sector, allowing new forms of dissemation and sale of products, and even making available new ways of tourism that until now were not so explored. Ecommerce has transformed the perspective for companies, expanding the lot of potential customers. E-commerce refers to buying and selling of goods and/or services over the internet (Carvalho and Carvalho, 2020).
Digitalisation will happen sooner or later so it is better to grab the opportunity and increase the customer base. The use of technology will only rise and the dependency of the customers on available technology is bound to increase therefore it is important for businesses to go with the flow (Mishra et al. 2021).

E-commerce is a part of the digitalisation process among other pieces.

E-commerce involves undertaking personal and commercial activities by computer and telecommunications networks in both intra-organizational electronic messaging and information management (Mapeshoane and Pather, 2016).

2. BENEFITS OF DIGITALISATION AND E-COMMERCE

Some of the benefits regarding digitalisation are highlighted by Dredge et al. 2019, as follows:

Leads to creativity and innovation in tourism and also facilitates increased customization of visitor experiences;

Enhances visitor satisfaction and contributes to new destination configurations;

Inspires new business models, new value chains, new business ecosystems;

Opens up new roles for consumers and producers (i.e. prosumers);

Improves online presence for competitiveness and also it improves growth;

Addresses seasonality and improves networks.

Some of the benefits regarding e-commerce are highlighted by Mapeshoane and Pather (2016), as follows: The primary use of e-commerce is the Internet as a communication medium between customers and suppliers; E-commerce increases revenue for organizations; Easy access to potential customers is one of the most important benefits of e-commerce.

Pathmanathan et al. (2021) mention that, the larger the reach of the operations of tourism businesses, the more likely it is for companies to use e-commerce. Some of the emphasized benefits of e-commerce in tourism are:

Bringing in a new class of tourists connected to the Internet;

The openness of the tourist and hotel establishments to the local, regional and international market;

Obtaining information about competitive services and their advantages in order to keep the tourist and hotel establishment in a good competitive position;

A means of reducing promotional expenses, improving and developing tourism and hotel services and products;

It allows providing fast and varied services to tourists;

A means of competition, as it allows exit from the local markets to target global markets.

3. METHODOLOGY OF RESEARCH AND RESULTS

The purpose of this paper is to evaluate the levels regarding the digitalisation and e-commerce footprint of enterprises in accommodation and food service activities (group I in NACE rev.2- European Classification of Economic Activities) for Romania and the European Union (EU).

The goal of this research relating to the status of digitalisation and electronic commerce in accommodation and food service activities, is to better understand the magnitude (in Romania and EU) of the aforementioned from the viewpoint of specific indicators, for instance:

Objective 1: Identify Romania's situation in comparison with the European Union's regarding the degree of digitalisation;

Objective 2: Analyze the level of enterprises where persons employed have access to the internet and also that have access to the internet for business purposes;

Objective 3: Identify the use of social media by tourism enterprises;

Objective 4: Identify the degree of enterprises with a website;

Objective 5: Determining the difficulties of online business sales;

Objective 6: Analysis of e-commerce tourism businesses and total business turnover from e-commerce sales.

The research methodology included collecting information from data bases (Google Scholar for theoretical part and Eurostat for the practical approach). Some of the drawbacks consisted in the inexistence of the data due to the low reliability factor and that some statistics were not available in a continuous timeline thus creating a sort of discrepancy regarding the indicators studied (some related to the starting period, other for in between part and some for final stages). Even so, it is considered that a clear picture can be drawn from presented information. The gathering of information period was around from February to March 2024. Regarding the degree of digitalisation, first indicator "classification of enterprises in accommodation and food service activities by digital intensity" shows us the situation of Romania and EU and can be seen in Graphic 1 and 2.
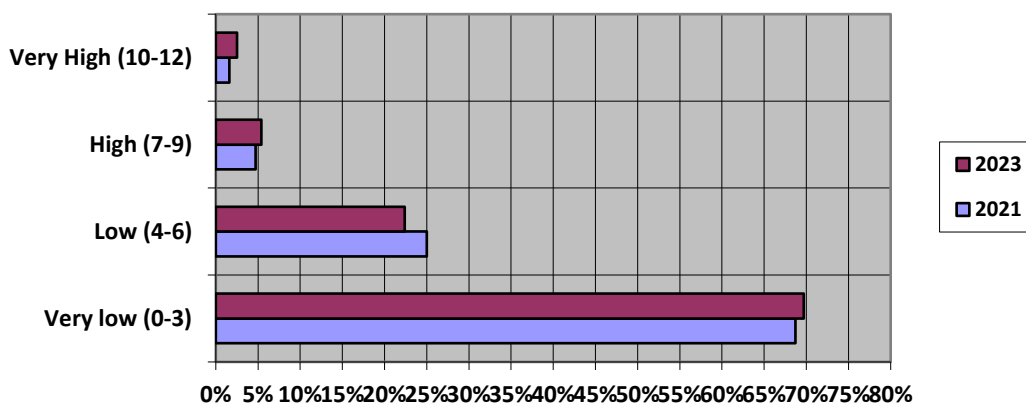
Graphic 1: Classification of enterprises in accommodation and food service activities by digital intensity (Digital intensity index v3/ DII v3) in Romania.
Source: processed after Eurostat.

According to Eurostat, the Digital Intensity Index (DII) is a composite indicator, derived from the survey on ICT usage and e-commerce in enterprises. The DII is one of key performance indicators in the context of the Digital Decade, which sets out Europe's ambition on digital, laying out a vision for the digital transformation. The indicator is useful to describe the extent to which EU enterprises are digitalised. It measures the use of different technologies by enterprises and was for the first time compiled in 2015. The indicator is calculated based on 12 variables, with each of the variables having a score of 1 point. The variables are dotted/scored with 1 point if the condition is fulfilled and are as follows: Enterprises where more than 50% of the persons employed used computers with access to the internet for business purposes; Use any social media; Enterprises where web sales were more than 1% of the total turnover; Used any computer networks for sales (at least 1%). The DII distinguishes four levels of digital intensity for each enterprise:
Enterprise with a very low DII: count of enterprises with points between 0 and 3;
Enterprise with a low DII: count of enterprises with points between 4 and 6;
Enterprise with a high DII: count of enterprises with points between 7 and 9;
Enterprise with a very high DII: count of enterprises with points between 10 and 12.
Regarding the indicator in Graphic 1 (digital intensity in Romania in accommodation and food service activities), it can be observed that it has a relatively big level of the very low category. In 2021, around 68.7% while in 2023, the percentage increased to 69.7%. As trends and technology evolves it somehow should have been the other way around. As a thumb rule it is better to be an indirectly proportional connection, as time goes by the very

low category should have decreased in order to be able to be more engaged in the digital tendencies of current period. The low category decreased, which is a good sign if we look further at the bigger picture, meaning that some of the percentage of low transferred to the high and very high categories. There is also the possibility that from low category some of the enterprises, in order to cut costs to downgrade to very low. A genuine positive aspect is that enterprises ranked in high and very high are more (as of percentages) in 2023 than 2021, reaching 5.4% (for high category) and 2.5%. This can show that some companies invested more in going digital and contracted more subareas of the digital tools available at that time.
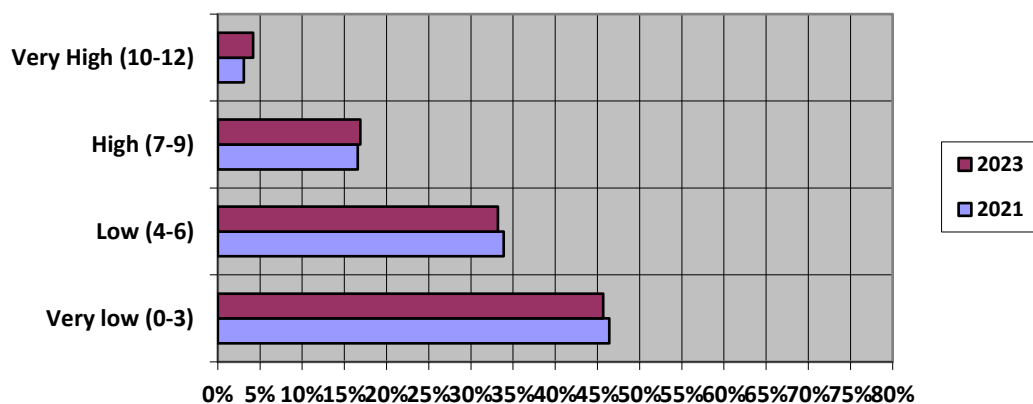
Graphic 2: Classification of enterprises in accommodation and food service activities by digital intensity (Digital intensity index) in EU.
Source: processed after Eurostat.

In EU case, digital intensity indicator (Graphic 2) has lower values than Romania's for the very low category, just over 45% with a decreasing tendency in 2023 compared to 2021 which can be considered a positive aspect. The low category (4-6) is around 33% in 2023 with 1 percental point less than in 2023. For the high (7-9) and very high (10-12) categories, the EU average is positioned better than Romania's relating to digital intensity. EU high category is around three times higher than in Romania's case (by percentages) while the very high category is around 1.6 times higher. This indicates that digitalisation of accommodation and food service activities is not as developed in Romania compared to EU. Also, the trend is on an ascending path for high and very high categories which can emphasize in EU's case, the focus on investment in digitalisation in this area.
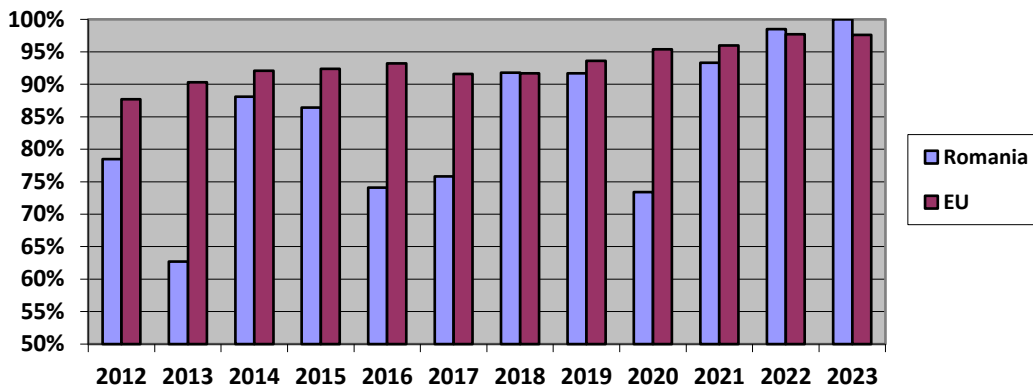
Graphic 3: Percentage of enterprises where persons employed have access to the internet in accommodation and food service activities.
Source: processed after Eurostat.

For the majority of the analyzed period, EU is better positioned than Romania regarding the percentage of enterprises where persons employed have access to the internet in accommodation and food service activities (Graphic 3). Only in three years (2018, 2022 and 2023) from a total analyzed period of 12 years Romania has overcome EU. In 2023 it actually reached 100% which is considered to be a great performance compared to 2013, when the percent was just above 60%. Another interesting fact is that the fluctuations in Romania's case are way more pregnant than EU's which are to say, smother. The percental gap between the highest and lowest level are around 10% in EU's case compared to a whopping 37% in Romania's case.
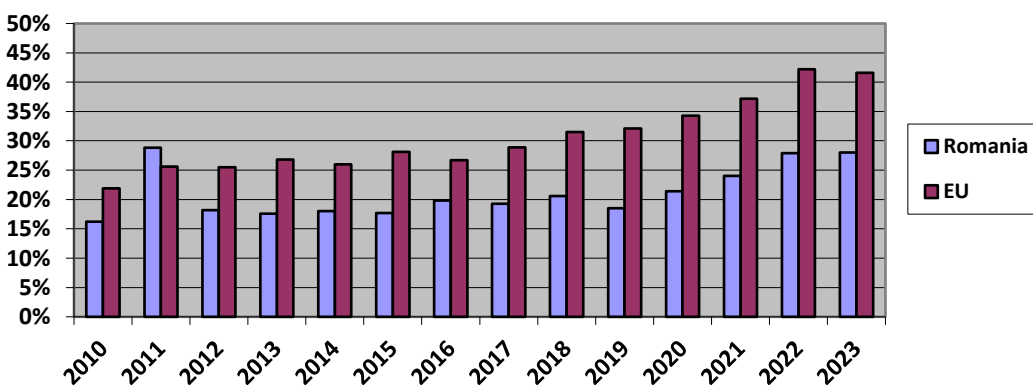
Graphic 4: Percentage of persons employed that have access to the internet for business purposes in accommodation and food service activities.
Source: processed after Eurostat.

Referring to percentage of persons employed that have access to the internet for business purposes in accommodation and food service activities (Graphic 4), EU is better positioned than Romania with a single exception, 2011. In Romania, the percent varies from a lowest value around 16.2% in 2010 to a highest of 28.8% in 2011, the biggest gap for the researched period being around 12%. Year 2023 also comes close to the highest level

recorded of around 28%. In EU's case, it varies from 21% in 2010 to a maximum of 42.2% in 2022. In this case the biggest gap was around 21% in the analyzed period. Overall, for EU it can be mentioned that is on a more stable path with steady growing perspectives regarding the percentage of persons employed that have access to the internet for business in accommodation and food service activities. Meanwhile Romania, lately (2020-2023), is on an ascending way also while between 2010 and 2019 the percentages fluctuated more than in EU's situation. Even thou, both Romania and EU have levels of over 90% of enterprises where persons employed have access to the internet in the last three years, it can be stated that there's room for improvement. Majorly for Romania to close the gap compared to EU or even to be on the same level as EU.
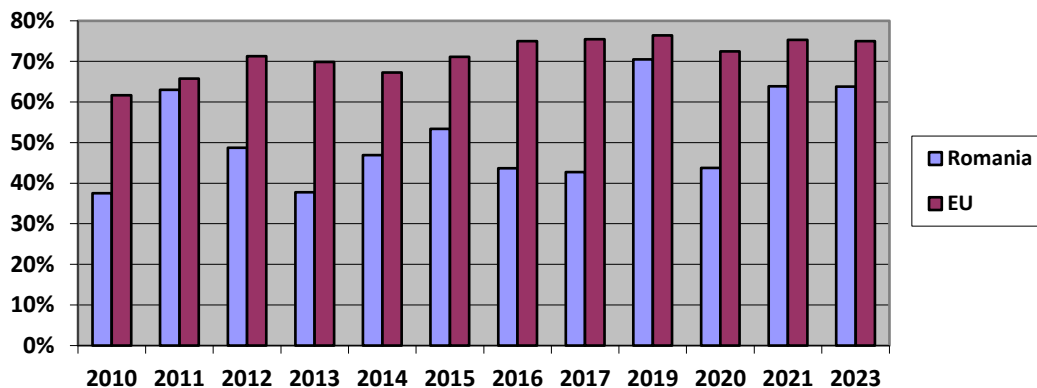
Graphic 5: Percentage of enterprises that use any social media in accommodation and food service activities.
Source: processed after Eurostat.

While social media is quite popular nowadays for personal use, the percentage of enterprises that use any social media in accommodation and food service activities (Graphic 5) are maybe not as great as expected. In both cases there are fluctuations and not a steady, healthy ascending path. In the last 7 years numbers for EU are constantly above 70% with a maximum of 76.4% in 2019. In Romania's case, in the total analyzed period of time, the percentages vary from a low 37.5% to maximum of just above 70% and that level only reached one time, in 2019.
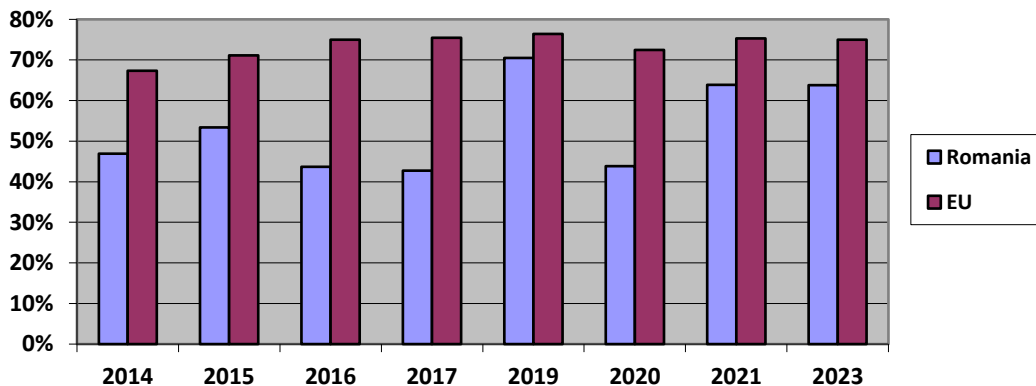
Graphic 6: Percentage of enterprises with a website in accommodation and food service activities.
Source: processed after Eurostat.

Regarding the percentage of enterprises with a website in accommodation and food service activities (Graphic 6), again Romania is situated below EU's numbers. In EU, the minimum value is around 67% to a maximum one of around 75%, the gap being 8 percentual points. On the other hand, the values for Romania range from 42.7% to 70.5%, in this case the gap reaching 28 percentual points, over three times more than in EU. A possible explanation for this difference may stand in the cultural characteristics, Romanian enterprises from this area maybe following a more analog, classical approach while in EU's case, things are somehow pushed more towards a kind of modern, updated time that we are living, being more connected (especially online).
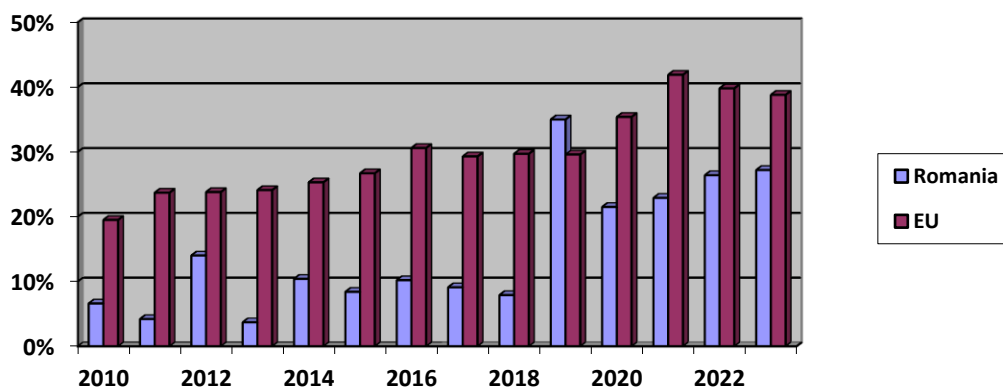
Graphic 7: Percentage of enterprises with e-commerce sales in accommodation and food service activities.
Source: processed after Eurostat.

The percentage of enterprises with e-commerce sales in accommodation and food service activities (Graphic 7) have grown since 2010 in both cases. In Romania the trend was somehow sinuous up until 2019, from 2020 it can be seen to be on a continuous ascend. In EU, the path is more linear up until 2021 in the last 2 analyzed years it's on a descent, compared to Romania's numbers. Even though, only in 2019 things are in favor for Romania,

when it has reached a high of around 35% compared to 30% for EU in that year. In all the other years, EU is positioned better. Was that 42% (for EU) maximum registered value, the upper limit for this sector? Or it is just a conjunctural situation and a momentarily one only? If observed in opposition to Romania, it can be said that maybe a limit was reached. But the fact that it was for only a limited period of time (just 3 years) it is far for us to say that. One possible idea is that in EU's area, more digital tools were used for a more aggressive promotion and marketing without selling online any kind of services, just redirecting the customers to the offline site. It is a possibility but it kind of goes against the data shown in the previous indicators debated.

According to Eurostat, in Romania the percentage of enterprises that have had difficulties for web sales to other EU countries (including any of high costs, complaints, labelling, languages, business partners restrictions) was around 1.5% in 2017, 4.1% in 2019, 9.8% in 2021 and 8.2% in 2022. In EU the values are in between 3.6% in 2017 and 4.4% in 2021 (the last available information) with the lowest of 2.8% in 2019.
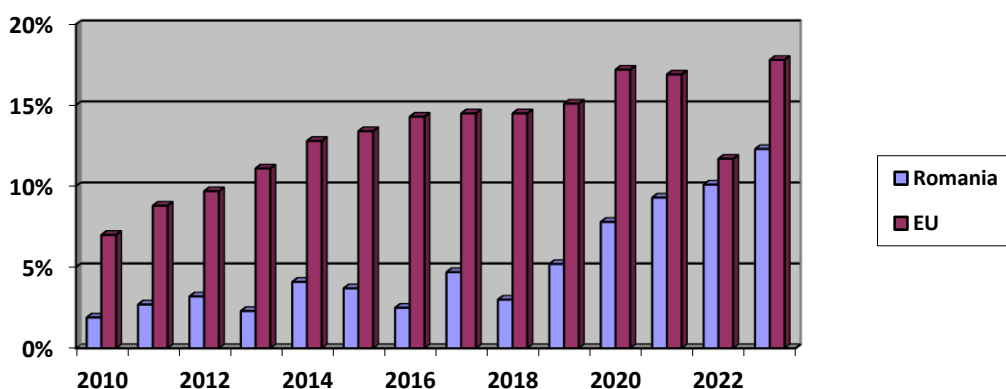
Graphic 8: Percentage of enterprises total turnover from e-commerce sales in accommodation and food service activities.
Source: processed after Eurostat.

The percentage of enterprises total turnover from e-commerce sales in accommodation and food service activities (Graphic 8) is in the trend of the previous indicators. A higher level indicates a higher degree of digitalisation. Again, Romania is in a kind of bad positioned compared to EU. The period between 2010 to 2018 can be characterized by a lot of ups and downs referring to Romania. A positive aspect is that from 2019 up until 2023 it is ascending in Romania while in EU has shown a bit of slowdown in 2021 and 2022. Generally speaking, accommodation and food service sector may have been impacted in a negative way by the Russian-Ukrainian war which begun in February 2022 and this may also have been a factor for the decrease in the percentages of EU. In uncertain times, produced by major events such as crisis, wars, pandemic, a part of people tends to limit their budget and time to activities and areas more related and closer to basic necessity putting on second plan or on hold activities such as visiting, sightseeing, going out etc. Regarding the absolute values on e-commerce sales in Romania's case, there is no information regarding this indicator on Eurostat.

4. IN CONCLUSION

Some of the benefits regarding digitalisation are that it leads to creativity and innovation in tourism and also facilitates increased customization of visitor experiences and it enhances visitor satisfaction and contributes to new destination configurations.

Some of the emphasized benefits of e-commerce in tourism are: bringing in a new class of tourists connected to the Internet; The openness of the tourist and hotel establishments to the local, regional and international market; Obtaining information about competitive services and their advantages in order to keep the tourist and hotel establishment in a good competitive position.

Regarding the first objective it can be observed that Romania has a relatively big level of the very low category (one category with the least degree of digitalisation from a total of four categories). In 2021, around 68.7% while in 2023, the percentage increased to 69.7%. As trends and technology evolve it somehow should have been the other way around. The low category decreased, which is a good sign if we look further at the bigger picture, meaning that some of the percentage of low transferred to the high and very high categories. In EU case, digital intensity indicator has lower values than Romania's for the very low category, just over 45% with a decreasing tendency in 2023 compared to 2021 which can be considered a positive aspect. For the high (7-9) and very high (10-12) categories, the EU average is positioned better than Romania's relating to digital intensity. EU high category is around three times higher than in Romania's case (by percentages) while the very high category is around 1.6 times higher. This indicates that digitalisation of accommodation and food service activities is not as developed in Romania compared to EU.

Related to the second objective, for the majority of the analyzed period, EU is better positioned than Romania regarding the percentage of enterprises where persons employed have access to the internet in accommodation and food service activities. Only in three years (2018, 2022 and 2023) from a total analyzed period of 12 years Romania has overcome EU. Referring to percentage of persons employed that have access to the internet for business purposes in accommodation and food service activities, EU is better positioned than Romania with a single exception, 2011. In Romania, the percent varies from a lowest value around 16.2% in 2010 to a highest of 28.8% in 2011, the biggest gap for the researched period being around 12%.

About the third objective, while social media is quite popular nowadays for personal use, the percentage of enterprises that use any social media in accommodation and food service activities are maybe not as great as expected. In both cases there are fluctuations and not a steady, healthy ascending path.

Referring to fourth objective, the percentage of enterprises with a website in accommodation and food service activities, again Romania is situated below EU's numbers. In EU, the minimum value is around 67% to a maximum one of around 75%, the gap being 8 percentual points. On the other hand, the values for Romania range from 42.7% to 70.5%, in this case the gap reaching 28 percentual points, over three times more than in EU.

About the fifth objective, which is constituted in determining the difficulties of online business sales, in Romania the percentage of enterprises that have had difficulties for web sales to other EU countries (including any of high costs, complaints, labelling, languages, business partners restrictions) was around 1.5% in 2017, 4.1% in 2019, 9.8% in 2021 and 8.2% in 2022. In EU the values are in between 3.6% in 2017 and 4.4% in 2021 (the last available information) with the lowest of 2.8% in 2019.

In the end, the last objective was fulfilled and the percentage of enterprises with e-commerce sales in accommodation and food service activities have grown since 2010 in both cases. In Romania the trend was somehow sinuous up until 2019, from 2020 it can be seen to be on a continuous ascend. In EU, the path is more linear up until 2021 in the last 2 analyzed years it's on a descent, compared to Romania's numbers. The percentage of enterprises total turnover from e-commerce sales in accommodation and food service activities is in the trend

of the previous indicators. A higher level indicates a higher degree of digitalisation. Again, Romania is in a kind of bad positioned compared to EU. The period between 2010 to 2018 can be characterized by a lot of ups and downs referring to Romania.

Overall, values register by EU are on a brighter side than Romania's. It means that Romania has to invest more in the digitalisation of accommodation and food service activities order to decrease the gap and be closer to EU's level.

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INTEGRATION OF ARTIFICIAL INTELLIGENCE IN HOTEL SERVICES: TRENDS AND DEVELOPMENTS (THE ISRAELI CASE)

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Abstract: *The integration of artificial intelligence in hotel services is an important and rapidly developing field. The article "Integration of Artificial Intelligence in Hotel Services: Trends and Developments" explores the current possibilities and trends in utilizing advanced artificial intelligence technologies in the hotel industry. The article discusses the use of smart algorithms for data analysis, the implementation of robots and smart technologies to enhance guest experiences, the utilization of support systems and personalized self-service, and the improvement of management and operational processes in hotels. It presents examples and research from the industry that demonstrate the benefits of leveraging AI and machine learning in hotel services and offers scenarios and tools for successful implementation of this advanced technology in the field. The article provides an in-depth and up-to-date insight into the use of artificial intelligence in the hotel industry and offers ideas and recommendations for experts and businesses in the field to effectively implement this technology in hotel operations.*

Key words: *Artificial Intelligence, Hotel Services, Trends, Developments, Guest Experience.*
J
el classification: *O10; O31; M11*

1.   Introduction

Artificial intelligence (AI) is increasingly being adopted in the hotel industry to enhance guest experiences, improve operational efficiency, and personalize services. From chatbots and virtual assistants to smart rooms and predictive maintenance, AI is transforming the way hotels operate and interact with guests (Fang, S., Han, X., & Chen, S., 2024). Cruz, M., Hodari, D., & Raub, S, (2024) claims as the technology continues to advance, it is opening new possibilities for innovation and growth in the industry. However, Sánchez-Franco, M. J., & Aramendia-Muneta, M. E., (2023) consider that implementation of AI also brings challenges and ethical considerations that hotels must navigate carefully.

2.   Main Materials Chatbots and Virtual Assistants

One of the most prominent applications of AI in the hotel industry is the use of chatbots and virtual assistants. These AI-powered tools are designed to handle guest inquiries, make reservations, and provide personalized recommendations, offering a convenient and efficient way for guests to interact with the hotel (Lukanova & Ilieva, G. , 2019) . Mariani, M., & Borghi, M. , (2021) claims that Chatbots can be integrated into hotel websites, mobile apps, or messaging platforms, allowing guests to ask questions and receive instant responses 24/7. This not only enhances the guest experience by providing quick and accurate information but also frees up hotel staff to focus on more complex tasks that require human intervention. Virtual assistants, such as Amazon's Alexa or Apple's Siri, can be deployed in hotel rooms to offer voice-controlled services. Guests can use these assistants to control room settings (e.g., temperature, lighting), request hotel services, or get

recommendations for local attractions and restaurants (Fang, S.,, Han, X., & Chen, S., 2024) .

Major hotel chains have already begun implementing chatbots and virtual assistants. For example, Hilton has introduced "Connie" a concierge robot powered by IBM's Watson AI technology, which can answer guest questions and make personalized recommendations. Similarly, Marriott has launched "Chat Botlr" a chatbot that can handle guest requests and even deliver small items to rooms (Millauer & Vellekoop, M., 2019).

Webb, (2019) indicates that as natural language processing and machine learning technologies continue to advance, chatbots and virtual assistants are becoming increasingly sophisticated, able to understand complex queries and provide more accurate and personalized responses. This trend is expected to grow in the coming years, as more hotels recognize the benefits of these AI-powered tools in enhancing the guest experience and streamlining operations (Cruz, M., , Hodari, D.,, & Raub, S. , 2024).

2.1   Smart Rooms

Tyagi, (2019) found another area where AI is making a significant impact in the hotel industry is in the development of smart rooms. These technologically advanced rooms are equipped with various AI-powered devices and systems that can learn and adapt to guest preferences, providing a highly personalized experience. Smart rooms typically feature voice-controlled devices, such as Amazon Echo or Google Home, which allow guests to control various room functions using simple voice commands. For example, guests can adjust the temperature, lighting, or entertainment systems without having to manually interact with switches or remotes (Yang, Song, H.,, Cheung, C.,, & & Guan, J. , 2021).

In addition, smart rooms may include intelligent thermostats that can automatically adjust the temperature based on guest preferences and occupancy status, as well as smart lighting systems that can adapt to the time of day and guest activity. Some hotels are even experimenting with smart beds that can adjust firmness and temperature based on guest preferences and sleep patterns (Chen & & Liu, Y., 2020).

Buhalis & & Moldavska, I., (2021) presented One notable example of smart room technology in action is the Wynn Las Vegas, which has equipped all its rooms with Amazon Echo devices. Guests can use voice commands to control room functions, request hotel services, and even access virtual concierge services.

The benefits of smart rooms extend beyond guest convenience and comfort. By collecting and analyzing data on guest preferences and behavior, hotels can gain valuable insights into how to improve their services and tailor their offerings to specific segments of guests. This data-driven approach can help hotels optimize their operations, reduce costs, and increase revenue (Tyagi, 2019).

As AI technologies continue to evolve, we can expect to see even more innovative applications of smart room technology in the hotel industry. However, hotels must also be mindful of privacy concerns and ensure that they have robust data security measures in place to protect guest information.

2.2   Predictive Maintenance

AI is also playing a crucial role in transforming hotel maintenance and facilities management. Predictive maintenance, powered by AI algorithms, involves analyzing data from various sources, such as sensors, equipment logs, and guest feedback, to identify potential maintenance issues before they occur (Bisoi, S.,, Roy, M., , & & Samal, A. , 2020). By continuously monitoring the performance and condition of hotel assets, such as HVAC systems, elevators, AI algorithms can detect anomalies and predict when maintenance is required. This proactive approach to maintenance can help hotels reduce equipment downtime, extend asset life, and improve overall operational efficiency (Limna, 2022).

Sánchez-Medina & & Eleazar, C., (2020) claims for example for example, AI-powered predictive maintenance systems can analyze data from HVAC sensors to detect changes in

temperature, humidity, or airflow that may indicate a potential problem. By identifying these issues early on, hotels can schedule maintenance before the equipment fails, minimizing disruption to guests and reducing repair costs.

In addition to improving maintenance efficiency, predictive maintenance can also enhance guest comfort and satisfaction. By ensuring that hotel facilities are always functioning optimally, hotels can provide a more pleasant and seamless experience for guests.

Several hotel chains have already begun implementing predictive maintenance solutions. For instance, Marriott has partnered with IBM to develop an AI-powered predictive maintenance system that analyzes data from over 7,000 hotel properties worldwide. The system has helped Marriott reduce maintenance costs and improve equipment reliability (Cruz, M., , Hodari, D.,, & Raub, S. , 2024).

As the Internet of Things (IoT) continues to expand and more hotel assets become connected, the opportunities for predictive maintenance will only grow. Hotels that invest in these AI-powered solutions will be well-positioned to optimize their operations, reduce costs, and provide a superior guest experience.

2.3   Revenue Management.

AI is revolutionizing the way hotels approach revenue management, enabling them to optimize room rates and maximize revenue in real-time. Traditional revenue management systems relied on historical data and manual analysis to set room rates, but AI-powered systems can process vast amounts of data from multiple sources to make more accurate and dynamic pricing decisions. AI algorithms can analyze a wide range of data points, including historical booking patterns, competitor pricing, weather forecasts, local events, and economic indicators, to predict demand and optimize room rates accordingly. By continuously monitoring market conditions and adjusting prices in real-time, AI-powered revenue management systems can help hotels maximize occupancy and revenue revenue (Fang, S.,, Han, X., & Chen, S., (2024), Buhalis & & Moldavska, I., (2021).

Kazak, A. N.,, Chetyrbok, P. V.,, & & Oleinikov, N. N., (2020) present for example, if an AI system detects a surge in demand for hotel rooms due to a popular event in the area, it can automatically adjust room rates upward to capitalize on the increased willingness to pay. Conversely, if demand is predicted to be low, the system can lower rates to attract more bookings and avoid vacant rooms.

AI-powered revenue management systems can also help hotels optimize their distribution channels, such as online travel agencies (OTAs) and metasearch engines, by continuously monitoring and adjusting inventory allocation and pricing across different platforms. This ensures that hotels are always offering the right room at the right price to the right customer, maximizing revenue and occupancy (Bisoi, S.,, Roy, M., , & & Samal, A. , 2020).

Major hotel chains, such as Hilton and Marriott, have already implemented AI-powered revenue management systems, and the technology is increasingly being adopted by smaller and independent hotels as well. As these systems become more sophisticated and accessible, they are expected to become a standard tool for hotel revenue managers (Webb, 2019).

By leveraging the power of AI in revenue management, hotels can gain a significant competitive advantage, respond more quickly to changing market conditions, and ultimately drive higher profitability. However, it is important for hotels to ensure that their revenue management strategies are aligned with their overall business objectives and that they maintain a balance between maximizing revenue and providing value to guests (Limna, 2022) .

2.4 Personalized Marketing

AI is also transforming the way hotels approach marketing and guest engagement. By leveraging AI-powered tools and techniques, hotels can deliver highly personalized and targeted marketing messages to guests, improving customer loyalty and driving repeat

business (Bulchand-Gidumal, 2022). Bulchand-Gidumal, J.,, William Secin, E., , O'Connor, P., &, & Buhalis, D. , (2023) argued that one of the key applications of AI in hotel marketing is the analysis of guest data, such as demographics, preferences, booking history, and social media activity. By processing this data, AI algorithms can create detailed guest profiles and segment customers based on their characteristics and behaviors. This allows hotels to tailor their marketing messages and offers to specific guest segments, increasing the relevance and effectiveness of their campaigns.

For example, if an AI system identifies a segment of guests who have previously booked spa treatments, it can automatically send targeted promotions for spa packages or discounts to those guests. Similarly, if a guest has expressed interest in local attractions or activities on social media, the system can recommend relevant experiences or partnerships (Huang & & Rust, R. T., 2021).

AI-powered chatbots and virtual assistants can also play a key role in personalized marketing. By engaging with guests through conversational interfaces, these tools can gather valuable data on guest preferences and needs, which can then be used to deliver personalized recommendations and offers. For instance, if a guest asks a chatbot about vegan dining options, the system can recommend nearby vegan restaurants or highlight vegan menu items available at the hotel.

Predictive analytics is another important application of AI in hotel marketing. By analyzing patterns in guest behavior and market trends, AI algorithms can predict future demand and identify opportunities for targeted marketing campaigns. For example, if an AI system predicts a surge in demand for family vacations during a specific period, the hotel can launch a targeted campaign promoting family-friendly packages and amenities (Lukanova & Ilieva, G. , 2019).

Major hotel chains are already investing heavily in AI-powered marketing solutions. For instance, Hilton has partnered with "Persado", an AI-powered content generation platform, to create personalized email subject lines and content for its marketing campaigns. The company has reported significant improvements in email open rates and click-through rates as a result (Buhalis & & Moldavska, I., 2021). As AI technologies continue to advance, we can expect to see even more sophisticated applications of personalized marketing in the hotel industry. However, hotels must also be mindful of data privacy regulations and ensure that they are collecting and using guest data in a transparent and ethical manner. By striking the right balance between personalization and privacy, hotels can build stronger relationships with guests and foster long-term loyalty.

2.5 Contactless Services

The COVID-19 pandemic has accelerated the adoption of contactless services in the hotel industry, and AI is playing a key role in enabling these services. Contactless services, such as mobile check-in/out, digital keys, and facial recognition for payments, allow guests to interact with the hotel and access services with minimal physical contact, enhancing both convenience and safety (Mukherjee & Venkataiah, 2021).

Hao, F., Qiu, R. T., Park, J.,& Chon, K. (2023) find that AI-powered mobile apps and digital platforms are at the forefront of contactless services in hotels. These apps allow guests to check-in and check-out remotely, access their rooms using digital keys, and make requests or reservations through their mobile devices. AI chatbots and virtual assistants integrated into these apps can provide instant support and guidance to guests, reducing the need for face-to-face interactions with hotel staff. Facial recognition technology, powered by AI algorithms, is also being used to enable contactless payments and access control in hotels. By linking guest facial data to their payment information and room details, hotels can allow guests to make purchases or access their rooms simply by scanning their faces. This not only reduces the need for physical contact but also streamlines the payment and access processes, saving time and improving efficiency. In addition to enhancing guest convenience and safety, contactless services can also help hotels optimize their operations and reduce

costs. By automating processes such as check-in and check-out, hotels can reduce staffing requirements and improve resource allocation. AI-powered data analytics can also help hotels track and analyze guest behavior and preferences related to contactless services, enabling them to continuously improve and tailor their offerings (Li, Yin, & Qiu, 2022).

Major hotel chains have been quick to adopt contactless services in response to the pandemic. For example, Hilton has introduced its "Digital Key" feature, which allows guests to access their rooms using their smartphones, while Marriott has launched its "Mobile Key" and "Mobile Dining" features for contactless room access and food ordering.

As the demand for contactless services continues to grow, we can expect to see more hotels investing in AI-powered solutions to enhance guest safety and convenience. However, hotels must also ensure that these services are reliable, secure, and user-friendly, and that they are integrated seamlessly with existing hotel systems and processes. By getting the balance right, hotels can leverage contactless services to differentiate themselves in a highly competitive market and build stronger relationships with guests.

2.6   Challenges and Considerations

While the integration of AI in hotel services offers numerous benefits, it also presents several challenges and considerations that hotels must address. One of the primary challenges is the complexity and cost of implementing AI systems. Developing and deploying AI solutions requires significant investment in technology, infrastructure, and talent, which can be a barrier for smaller and independent hotels. Data privacy and security are also major concerns when it comes to AI in hotels. As AI systems rely on the collection and analysis of vast amounts of guest data, hotels must ensure that they have robust data protection measures in place to safeguard guest information from breaches and unauthorized access. This includes complying with data privacy regulations such as the [1]General Data Protection Regulation (GDPR) and the [2]California Consumer Privacy Act (CCPA) (Milton, 2024)

Another challenge is the potential impact of AI on employment in the hotel industry. As AI automates certain tasks and processes, there are concerns that it may lead to job displacement, particularly in areas such as front desk operations and customer service. However, it is important to note that AI is also creating new job roles and opportunities, such as data analysts and AI system managers, which require a different set of skills and expertise. Hotels must also consider the ethical implications of using AI, particularly in areas such as personalization and targeting. While AI can enable highly personalized experiences and marketing, hotels must ensure that they are not crossing ethical boundaries or infringing on guest privacy (Hussein Al-shami, Mamun, & Ahmed, 2022). This requires developing clear guidelines and policies around the use of AI and ensuring that guests are informed and have control over how their data is used.

3.   Conclusion

The integration of AI in hotel services is transforming the industry, enabling hotels to deliver more personalized, efficient, and convenient experiences to guests. From chatbots and virtual assistants to smart rooms and predictive maintenance, AI is being applied across a wide range of hotel operations to enhance guest satisfaction, optimize operations, and drive revenue growth.

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[1]The General Data Protection Regulation (GDPR) is a comprehensive data protection regulation that came into effect in the European Union in May 2018. The GDPR aims to protect the personal data and privacy of EU citizens and residents. It sets out strict guidelines for how organizations should collect, process, store, and protect personal data.

[2] The California Consumer Privacy Act (CCPA) is a data privacy law that was enacted in California and came into effect on January 1, 2020. The CCPA aims to enhance privacy rights and consumer protection for residents of California. It grants consumers more control over their personal information and requires businesses to be more transparent about their data collection and sharing practices.

As the technology continues to advance, we can expect to see even more innovative applications of AI in the hotel industry. However, hotels must also navigate the challenges and considerations associated with AI, including data privacy, ethical concerns, and the impact on employment. By striking the right balance between innovation and responsibility, hotels can leverage AI to stay competitive and meet the evolving needs and expectations of guests.

Looking ahead, the successful integration of AI in hotel services will require a collaborative effort between hotels, technology providers, and policymakers. Hotels must invest in the necessary technology and talent, while also developing clear strategies and guidelines for the ethical and responsible use of AI. Technology providers must continue to develop and refine AI solutions that are tailored to the specific needs and challenges of the hotel industry. And policymakers must establish clear regulations and standards to ensure that the use of AI in hotels is transparent, accountable, and aligned with the public interest.

By working together and embracing the opportunities and challenges of AI, the hotel industry can unlock new levels of innovation, efficiency, and guest satisfaction, and set the stage for a more personalized, sustainable, and successful future.

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CURRENT APPROACHES TO ECONOMIC SCIENCE. THE COLLABORATIVE ECONOMY VERSUS THE CIRCULAR ECONOMY

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Abstract: *This paper examines the current approaches to economic science, particularly on collaborative and circular economies. Economic science is closely related to the concept of limited resources. This is because economics is concerned with managing limited resources to satisfy unlimited human needs and wants. The idea of limited resources is central to economic science because it influences every aspect of how people make economic decisions and manage economic activities. Effective management of these resources is essential to achieving long-term economic and social goals. The collaborative economy and the circular economy are two key economic concepts that address how resources are used and distributed sustainably and efficiently in society. Both concepts are frameworks that aim to address the challenges of sustainability and resource efficiency, albeit in different ways. The collaborative economy is characterised by individuals and organisations sharing resources through digital platforms, such as goods, services, or information. This model promotes resource optimisation, cost-sharing, and social cohesion. On the other hand, the circular economy is an economic model that seeks to systematically reduce waste and maximise resource efficiency by designing products, services, and systems that prioritise the longevity and recyclability of materials. The paper explores collaborative and circular economies' theoretical foundations and practical applications. Although they have some overlap, these two concepts have different perspectives and approaches regarding resource management and sustainable economic growth. While the collaborative economy focuses on sharing and exchanging existing resources, the circular economy focuses on reshaping systems and products to reduce waste and sustainably optimise resource use. The study findings are based on a comprehensive literature review and empirical research on collaborative and circular economies. The analysis reveals that collaborative and circular economies have unique strengths and limitations. However, they also share common objectives, such as promoting sustainability, resource efficiency, and social inclusivity. These concepts have the potential to complement each other and contribute to a more sustainable and resilient economy.*

Keywords: *economic science; collaborative economy; circular economy.*

JEL Classification: *F63; F64; P18; Q51; Q56.*

1. Introduction

Economic science is a social science. It studies the subject-object relationship (the subject is not differentiated from the interrogated object) and seeks to understand the events. In this situation, the principle of observability is no longer valid (its presence would imply that the interrogated subject would become an object and thus no longer have other manifestations of will and be perfectly controllable, which is impossible), but the principle of

intelligibility manifest (Dinga, 2010). This principle ensures that human actions closely related to the real world can be rationally ordered and explained. In this human activity, the interrogating subject and the interrogated object logically "merge" into the subject-object unit. Economic science appeals to a formula in which a priori theory and the interpretation of historical data intertwine. (von Mises)

Economic theory has the power to influence and even transform the behaviour of economic agents, who in turn have the power to transform reality according to their understanding and action. Human action occurs globally, but it is divided into the external world of the questioning subject and his inner world. By reflecting on the global world, patterns are formed. (Părean, 2014, p. 47)

Economic science starts with the tense relationship between unlimited needs and limited resources. If, in the beginning, no emphasis was placed on this relationship and only the development of economic activities was pursued to satisfy financial requirements, later, over time, concerns were also quickly focused on how these activities were carried out and their effect on people and future generations.

2. Economic science

Economic science encompasses various subfields and approaches, including microeconomics, macroeconomics, development economics, behavioural economics, and environmental economics. Microeconomics focuses on the behaviour and decision-making of individual economic agents, such as consumers and firms, and how their choices affect prices, quantities, and market outcomes. It also examines how resources are allocated within specific industries and markets. Macroeconomics, on the other hand, studies the overall behaviour and performance of an economy as a whole. It analyses factors such as economic growth, inflation, unemployment, and government policies that impact the aggregate level of output and employment. Development economics focuses on understanding the factors contributing to economic growth and development in low-income countries. Behavioural economics explores the psychological and cognitive factors that influence economic decision-making, challenging traditional assumptions of rationality. Environmental economics examines the interactions between the economy and the natural environment, addressing sustainability and resource management issues. Economic science has evolved significantly, adapting to new challenges and incorporating insights from other disciplines. (Christensen et al., 2018)

Economic science aims to provide a theoretical framework for understanding and predicting economic behaviour. This framework allows economists to develop models and theories that can be tested and validated through empirical research. The future of economic science holds immense potential for advancements and innovations. As the world continues to evolve, so does the field of economics. New technologies, data analytics, and interdisciplinary approaches are expected to play a crucial role in shaping the future of economic science.

Economic science has evolved significantly over time, adapting to changes in the global economy and incorporating new methodologies and approaches. One of the critical areas of future development in economic science is integrating big data and advanced analytics. With the increasing digitisation of financial activities, vast amounts of data are generated daily. This data provides researchers valuable insights into economic trends, consumer behaviour, and market dynamics. Additionally, interdisciplinary approaches will likely influence the future of economic science.

Collaborations between economists and experts from other fields, such as psychology, sociology, and computer science, can lead to a more comprehensive understanding of economic phenomena and more effective solutions to financial challenges. For example, incorporating behavioural economics into economic research can provide insights into

individuals' decision-making processes and how they deviate from traditional rational behaviour.

This can help economists better understand economic phenomena and design policies that account for these behavioural biases. Furthermore, the future of economic science will likely see an increased focus on sustainability and environmental economics. With growing concerns about climate change and resource depletion, economists recognise the importance of integrating environmental considerations into economic analysis. This involves identifying the impact of economic activities on the environment and creating plans to achieve sustainable economic growth. Another critical aspect of the future of economic science is the exploration of alternative economic models. This includes considering alternative measures of economic well-being, such as happiness and well-being indicators, instead of solely relying on traditional measures like GDP.

There is a growing interest in exploring alternative economic systems prioritising resource efficiency and social welfare, such as the sharing economy and circular economy. Overall, the future of economic science is likely to be characterised by a multidisciplinary approach, incorporating insights from various fields and addressing pressing societal issues such as sustainability and well-being. However, it is essential to note that economic science itself is a constantly evolving field, and its future trajectory will depend on various factors such as technological advancements and societal changes. In today's rapidly changing world, the significance of accurate economic science and forecasting cannot be overstated. (Prieto-Sandoval et al., 2018)

The sharing and circular economies operate on economic science principles, prioritising efficiency, sustainability, and optimal resource allocation. The circular economy concept is becoming more relevant and gaining attention in several domains, such as strategic management, operations management, and technology management.

By studying economic science, researchers can better understand how individuals, firms, and governments make decisions and interact in various economic environments. This knowledge can inform policy decisions, optimise resource allocation, and promote economic growth and development.

2.1 Economic science – collaborative economy

The sharing economy, or collaborative consumption or peer-to-peer economy, is based on economic principles that emphasise efficient resource allocation and utilisation through sharing underutilised assets. The sharing economy recognises the potential for individuals and businesses to share their resources, skills, and services with others in a mutually beneficial way. This concept is guided by optimising resource allocation, reducing waste, and creating a more sustainable and inclusive economic system.

Economic science emerged and developed based on facts in people's daily lives. Economic activities involve the consumption of resources, and man carries out these activities to satisfy his needs. Emancipation led to a multiplication and diversification of needs. Because resources were limited and needs were numerous, people started collaborating to help each other meet these needs.

For centuries, it has been a tradition for people to help each other in critical moments of their lives (of joy, sadness, and even in different economic activities such as tilling the land). These collaborations were/are being made against people's desire to satisfy their needs better, efficiently, and cheaply.

As a result of the development of technologies and people's strategies, there is currently talk of the collaborative economy, the shared economy, and the "peer-to-peer" economy. Conceptualising the collaborative economy is difficult because there is no single and precise definition to establish this phenomenon, and therefore, there are multiple and heterogeneous definitions. (Sastre - Centeno, Inglada - Galiana, 2018)

The conceptualisation of the collaborative economy is the consequence of several elements that have enabled the efficiency and improvement of several economic practices. The sharing economy involves sharing resources among individuals and organisations to create, produce, distribute, trade, and consume goods and services. (Goudin, 2016, p. 10 apud Sastre - Centeno, Inglada - Galiana, 2018, p. 227)

The sharing economy gained popularity among the general public in 2011, with Airbnb and Uber achieving significant success (Martin, 2016). Since then, this system has been studied from various angles, including consumption practices, lifestyle, mobility, social movements, disruptive innovation, sharing paradigms, travel patterns, trust, and motivation. (Cheng, 2016; Mauri et al., 2018; Hossain 2020).

In the sharing economy, individuals participate in various activities such as bartering, borrowing, renting, trading, exchanging, and transporting. (Heo, 2016; Möhlmann, 2015; Hossain, 2020).

Moreover, it is a complementary approach to solving the problems arising from the market economy (Heylighen, 2017; Joo, 2015; Hossain, 2020). The participatory economy is based on the active involvement of citizens in the economy and their ability to influence the market. The trade flow is organised as a horizontal relationship between parties (peer-to-peer economy). These new ways of economic collaboration create diverse legal relationships that are often difficult to integrate into traditional legal systems and make it challenging to identify a correct legal qualification (Pană, 2022).

The collaborative economy is emerging as a global movement characterised by a context in which young entrepreneurs develop new products, services and solutions based on new business opportunities (Gansky, 2011).

A participatory economy is a possible solution for recovering the business environment where industrial production faces significant problems caused by the lack of raw materials. The collaborative economy relies on digital platforms and online marketplaces that connect buyers and sellers, allowing them to collaborate and share resources. These platforms act as intermediaries, facilitating user transactions and enabling them to exchange goods and services more quickly and efficiently. The concept depends mainly on the Internet and collaborative platforms, where producers and consumers trade almost anything, from physical goods, products, and accessories to experiences. Some popular economic sectors developed through these digital platforms are tourism (short-term accommodation), passenger transport, professional and technical services, education, and crowdfunding.

In this context, sharing can benefit consumers, the environment, the community, and innovative and forward-thinking businesses.

The uniqueness of this recent economic movement lies in the fact that sharing takes place and is mobilised according to people's strategies and movements. This movement takes place through technological factors that are more accessible in the market and that bring new, more conscious, and sustainable consumption behaviours into the social environment. So, the main characteristics of the sharing economy include:

- Digital platforms: Digital intermediaries such as mobile applications and websites facilitate user transactions and exchanges.
- Resource sharing: Individuals can share their resources, such as cars, homes, skills, or free time, with others to maximise their use and reduce individual costs.
- Accessibility: The sharing economy allows users to access services and goods on-demand and pay for their use instead of buying or owning them.
- Community-based economy: Some aspects of the sharing economy are community-based, encouraging interaction between members and creating a sense of belonging.

2.2 Economic science – circular economy

The circular economy builds upon the principles of economic science by advocating for a system that minimises resource consumption, waste generation, and environmental impact while maximising resource efficiency and financial value. The circular economy promotes a regenerative and restorative economic system, where products and materials are designed to be reused, repaired, or recycled instead of disposed of after a single use. This concept is rooted in the principles of economic science, specifically the study of resource allocation, production, and consumption patterns.

The collaborative economy considers developing economic activities to satisfy needs while respecting the environment. In contrast, the circular economy, which mainly focuses on respect for the environment in economic activity, is a concept that emphasises the sustainable and efficient use of resources through closed-loop systems of production and consumption.

The fact that people are free to adopt specific values and determine their actions should not be understood as people having the power to subordinate the laws of nature. It is not suitable for people's "freedom" to be explained in terms of their ability to carry out activities contrary to human nature. The fact that man is not omnipotent and omniscient does not mean that he is not "free"; the laws of nature limit the ability of each individual to carry out specific actions, but these do not affect the freedom of the individual will.

The economic value of the goods and services offered by the environment to society has been consistently overlooked or underestimated. They remained outside the mechanism of the market and the price system or were conjecturally connected to the system of economic levers from the dominant monetary policy positions, even if they continuously and everywhere manifested their vital character. (Părean, 2009, p. 40 – 41)

Thomas Robert Malthus raised the first alarm signal regarding environmental problems with the "law of population": food resources increase in arithmetic progression, while population increases in arithmetic progression. The traditional model of running economic activities was a linear one, according to the "take-produce-use-throw" model. Later, the approaches became very nuanced. Thus, within the Club of Rome, through the "Limits of Growth" Report (1972), the foundations of the circular economy models were laid, and alarm signals were raised regarding the management of the resources provided by the environment. (Meadows et al., 2004)

While several interpretations of the circular economy exist, a widely accepted definition is yet to be established. The Ellen MacArthur Foundation, revered as a prominent figure in circular economy practices, has presented a definition that is often referenced. Per this definition, the circular economy is an industrial model created to be vital and sustainable. (Ellen MacArthur Foundation, 2013). Kirchherr et al. provide a notable definition of the circular economy. They define it as an economic system that eliminates the "end of life" concept by promoting the reduction, reuse, recycling, and recovery of materials throughout the production, distribution, and consumption. This system operates at various levels, including the micro level (involving products, companies, and consumers), the medium level (in eco-industrial parks), and the macro level (encompassing cities, regions, nations, and beyond), with the ultimate goal of achieving sustainable development while also promoting environmental quality, prosperity, and social equity for present and future generations. (Kirchher et al., 2017)

The circular economy represents one response to the global trend of depleting natural resources. It aims to use the most significant possible volume of biodegradable materials that can be returned to nature and reused without polluting the natural environment.

Therefore, the circular economy is based on collecting, reusing, repairing, renovating, and recycling materials and products. This extends the life cycle of products and considerably

reduces the volume of waste people produce. Products that reach the end of their life and the materials from which they are made are preserved within the economy as many times as possible.

The circular economy is distinguished from other visions and paradigms of reducing energy and material consumption through a holistic (unitary) approach. It creates circular loops of flows of resources, materials, energy, and waste, including all activities in a society.

The circular economy is a production and consumption model that involves multiple cycles of use, reuse, repair, renovation, and recycling of existing materials and products. This model aims to extend the life cycle of products through the reuse and recycling of goods. Developing a closed-cycle economy allows for more sustainable use of resources and reduces waste. (Popa, 2021, p. 208)

3. The collaborative economy versus the circular economy

The sharing economy is an innovative economic model that facilitates sharing resources, time and skills among people. This model maximises the efficient use of resources and benefits the participants by providing ample opportunities to collaborate and support each other. The principles include:

- Sharing: People share their goods, spaces, and resources with others in their community. This can include sharing cars, homes, tools, sports equipment, and more.
- Access instead of ownership: People can access resources through sharing or rental platforms instead of buying goods or services. For example, people can use car-sharing or ride-sharing services to travel instead of buying a car.
- Community: The collaborative economy promotes creating and strengthening connections between people within local communities. Sharing and collaboration platforms facilitate interaction and cooperation between community members.
- Efficient use of resources: Sharing resources in the collaborative economy can help us use them more efficiently by avoiding duplication.
- Sustainability: The sharing economy can help reduce environmental impact and promote a more sustainable lifestyle by reducing overconsumption and promoting the sustainable use of resources.

The sharing economy changes consumer mindset, fosters community and addresses resource issues.

Regarding the circular economy, its principles can be summarised as follows:

- Product design for durability and recyclability: Products are designed to be easily repaired, upgraded and recycled.
- Prolonging product lifespans: Encouraging the extended use of goods and services through upkeep, fixing, and recycling.
- Recycling and recovering materials: Reintroducing materials and components into the economic circuit through recycling and recovery.
- Renewable energy: Promoting renewable energy and reducing dependence on finite resources.
- Circular exchanges: Encouraging closer relationships between companies to harness the waste and by-products of one industry as resources for another.

These principles aim to alleviate the strain on resources and minimise environmental impact. They are a crucial solution to climate change, resource depletion, and environmental pollution.

Collaborative and circular economies are separate ideas, but they can work together to promote effective resource use and minimise environmental harm. Ultimately, these concepts complement each other and can be used in tandem to achieve their goals.

The main objective in the "peer-to-peer" economy is to use existing resources efficiently and in collaboration with other consumers. It emphasises the sharing and access of resources between individuals and communities. In contrast, the circular economy aims to optimally use resources and minimise waste by remodelling products, recycling, and reusing materials and components in a closed economic loop.

Regarding consumption, the collaborative economy focuses on changing how consumers use goods and services, promoting free access instead of individual ownership of goods (with all the following legal implications) and sharing existing resources. The circular economy emphasises transforming how goods are produced, used and managed, focusing on creating more sustainable and resource-efficient systems.

Regarding the social aspect, the collaborative economy is based on the interaction between people, encouraging solidarity and cooperation. It promotes community. The circular economy is more oriented towards resource management's technical and economic aspects, although it also involves collaboration between stakeholders, including local communities.

In the collaborative economy, implementing the principles of the two concepts usually involves turning to digital platforms and social networks that facilitate sharing and access to resources. Conversely, the circular economy encompasses modifications throughout the whole supply chain and production systems, as well as recycling and waste management. These changes frequently necessitate governmental policies and regulations to promote and facilitate them.

5. In conclusion

It must be recognised That economic science involves the social, cultural, political, and even individual aspects of people within a given community.

Economic activities in the collaborative economy benefit individuals and society by promoting the efficient use of resources, increasing sustainability and developing local communities. However, addressing and resolving regulatory, privacy and economic justice challenges is essential to ensure this emerging economic model's fair and sustainable evolution.

The relationships that are established between man and nature depend to a large extent on the applied economic model. To overcome or alleviate the problems within this relationship, the classical or "linear" financial model, based on the "resource consumption - product - waste" principle, must be gradually replaced by the "circular" model, which assumes the "resource consumption" principle resources - product - the valorisation of waste that becomes a secondary resource". The circular economic model significantly contributes to developing novel economic ethics grounded in the holistic principle. This model emphasises the interconnectedness and interdependence of economic, social, and environmental factors in a way that aligns with the current global discourse on sustainable development. Adopting such a model could create new opportunities for businesses to promote circularity, reduce waste, and enhance resource efficiency while also contributing to realising broader societal goals. Accordingly, exploring the potential implications of this approach is invaluable for advancing our understanding of the intersection between economics and ethics in the modern era.

Collaborative and circular economies are two distinct but complementary approaches to promoting more efficient resource use and improving society's economic and ecological sustainability. Their combination can help create a more sustainable and resilient economy in the future.

The shared economy approaches the issue of resource consumption from the consumer's perspective, that is, the efficient and collaborative use of goods to have as little impact on natural resources as possible. In contrast to other approaches, the circular economy approach gives the producer's perspective prominence. It should produce goods so that

their use allows reuse (presupposing the wide competition of consumers) so that as few natural resources are used as possible, allowing future generations to enjoy the natural resources existing today.

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INCOME INEQUALITY, ECONOMIC GROWTH, AND INSTITUTIONAL FACTORS: A COMPARATIVE ANALYSIS AT THE EUROPEAN UNION (EU) LEVEL

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Abstract: *The rising income inequality around the world and its persistence represent a social phenomenon raising concerns at all levels (global, regional and country) for governments and pose huge challenges to master it and to identify effective solutions. The aim of the paper is to provide a comparative insight at the European Union (EU) level involving 25 Member States regarding the interplay between income inequality, economic growth, and institutional quality. Gini Index sourced from World Income Inequality Database, GDP per capita series extracted from the World Bank database, and institutional indicators collected from the World Governance Indicators database represent the examined variables over the period 1990-2022. Their dynamic is comparatively analysed and discussed. The clustering method is applied to identify similarities and differences between European Union countries in terms of the interplay between income inequality, economic growth and institutional factors and to draw relevant conclusions for future effective policy measures meant to reduce inequality and to boost economic growth. The clustering analysis based on the average growth rate of income inequality and per capita GDP revealed that European Union countries are differently facing the challenge of income inequality rising. Six groups of countries with similar paths regarding the income inequality and economic growth were identified. High-income countries face low levels of income inequality but with an upward trend. Economic growth is accompanied with high levels and increasing levels of income inequality. The institutional quality level may strength the capacity of a country to address the problem of rising income inequality, but it remains unclear the interplay of institutional quality dynamic in reducing income inequality. The implications of the paper's findings are framed in the context of the European policies.*

Key words: economic growth, income inequality, institutional factors

JEL Classification: O15, O17

1.Introduction

Income inequality is a major topic of recent debates (i.e., Stiglitz, 2013; Milanovic, 2016) for economists, researchers and governments. Inequality represents a central point of the European policies (European Commission, 2022) from several point of view: (1) *moral perspective* - according to the United Nation Human Rights Declaration, the persistence of inequality, meaning a large gap between rich and poor is wrong, meaning that governments have the moral and political duty to ensure an equal access to opportunities; (2) *poverty perspective* – inequality is a barrier to eradicate poverty, less inequality means that the economic growth benefits reach the poorest population, while a unequal distribution of resources in the economy will favour the rich and the benefits of development are hardly reached by the poor; (3) *efficiency perspective*- even public policies favour those who are

already rich, the distribution of companies and communities with improved economic performance is more equitable; (4) *Kuznets perspective*- Simon Kuznets (1955) believed that inequality is a inevitable part of economic development process; in early stages of economic development, inequality is expected to increase and then, over time, decrease; (5) *political economy perspective*-inequality is barrier for economic growth, resources are captured by elites inducing market and governments failure, social instability; moreover, high levels of inequality undermines the population trust in governments and public policies.

In this context, studies on income inequality in the interplay with economic growth and institutional factors is of great interest for researchers and policy makers. Moreover, the rising levels of economic inequality around the world and also, in all the European Union countries (based on data from WIID, 2023) is a reason for great concern due to ethical considerations, social consequences (Solimano, 1998; Klasen, 2008; Dabla-Noris et al., 2015) and also, because it is part of the Sustainable Development Goals of the United Nations (i.e., goal 10 refers to reduce inequality among and within countries). Governments are under pressure to take action meant to master and reduce income inequality.

The present study develops an exploratory analysis of the income inequality in relationship with economic growth and institutional factors in the European Union countries. Gini Index sourced from World Income Inequality Database, GDP per capita series extracted from the World Bank database, and institutional indicators collected from the World Governance Indicators database represent the examined variables over the period 1990-2022. Their dynamic is discussed and the clustering method is applied to identify similarities and differences between European Union countries in terms of their interaction and to draw relevant conclusions for future effective policy measures meant to reduce inequality and to boost economic growth. The study provides a comparative insight on the interplay between income inequality and economic growth together with institutional factors, adding a recent view to the literature on economic inequality in the European Union countries, suggesting some recommendations for the European policy makers.

2. Literature review on the relationship between income inequality and economic growth, and institutional factors

Income inequality and economic growth

The literature focused on the relationship between income inequality and economic growth is very extended, and somehow, non-conclusive. The topic is of interest to policy makers with the emergence of the concepts of social cohesion and inclusive growth and development.

The first studies (Lewis, 1954; Kuznets,1955; Kaldor, 1956; Sollow, 1956) suggest that income inequality is generated by the economic development level and in the first stages of economic development, income inequality increases, and after a certain level of economic development, the effect is reverses (Kuznets' inverted U-shaped curve).

The studies on the relationship between income inequality and economic growth can be divided into four categories, revealing: (1) a negative correlation; (2) a positive correlation; (3) the absence of any correlation, and (4) inconclusive findings.

Alesina and Rodrik (1994) and Persson and Tabellini (1994) concluded that increasing levels of income inequality is correlated with economic growth. Perotti (1996) found that countries with a low level of income inequality tend to invest more in human capital, that stimulates economic growth. Similar results were obtained by Panizza (2002) for USA, Wan et al. (2006) for China, (Cingano, 2014) for OECD countries, Royuela et al. (2019) and Braun et al. (2019) for OECD regions, and Breuning and Majeed (2020) for a panel of 152 countries.

A positive correlation between income inequality and economic growth was identified by Frank (2009) in the case of the U.S. economy, Bhorat and Van der Westhuizen (2012) for South-Arican countries, Shahbaz (2010) and Majeed (2016) for Pakistan's economy, Scholl and Klasen (2019) for the states from the former Soviet Union.

The absence of the relationship between income inequality and economic growth was revealed by Niyimbanira (2017) in the South-African countries, by Benos and Karagiannis (2018) for a panel of American countries, Ravallion (2014) for developing economies, and Marques (2022) for Brazilian cities.

Inconclusive results were obtained by Deininger and Squire (1998). Also, Castello-Climent (2010) confirmed that in income inequality is positively correlated with economic growth in higher-income countries while in middle- and low-income countries, the relationship is negative. Shin (2012) believes that both relationships are possible, and a high-income inequality level in the early stages of economic development can delay the economic growth, the redistribution policies being not always effective in reducing inequality. In the short run a high level of income inequality can stimulate economic growth, but on long-term, the effect is reversed (Halter et al., 2014). This is similar with findings of Ostry et al. (2018) and Brueckner and Ledereman (2018), Fereira et al. (2019) and Marrero and Serven (2021).

Institutional factors

Institutional factors are considered in the literature as having a significant impact on resources allocation in economy and affecting the economic growth level. Institutions represent a key factor of economic growth (Nsouli, 2004), and differences in institutional quality can explain differences in the macroeconomic results (Hall and Jones, 1999). The importance of institutions in the economy is well evidenced within the „institutional economy theory", where institutions have the role to provide efficient solutions to economic problems (Rutherford, 2001). According to North (1994, 2005), institutions establish the „rules of the game", meaning the rules, limits and incentives shaping the human interactions. Institutions refer to formal and informal rules that introduce order into economic and social life and create a mechanism for monitoring and reinforcing these rules, aiming to improve economic and social performance (Iancu et al., 2009). The relationship between income inequality and institutional factors seems complex, less studied and explained. Clearly, the regulations put in place by institutions are designed to reduce income inequality, and governments are acting to a fairer income distribution through fiscal and transfer policies (i.e., Røed & Strøm, 2002; Szczepaniak, 2020). A high level of income inequality can induce political instability and negatively affects the quality of institutions (Stiglitz, 2013). Income inequality can slow down the economic growth due to the fact that quality of institutions is a channel through which the impact of income inequality manifest itself on economic growth (Easterly, 2001, 2002). The low quality of institutions is accompanied by a rise in the inequality of income distribution (Rodrik, 1999). It is also possible to raise the quality of institutions with no impact in reducing income inequality (Batuo et al., 2012). Institutions are seen as a cause of income inequality (Chong and Gradstein, 2004). Corruption affects the income inequality in economy (Ullah and Ahmad, 2016) and political freedom contributes to the inequality reduction (Kuzmar and Piatek, 2019). The improvement in institutional quality significantly reduces the income inequality (Szczepaniak, et al. 2022).

Taking into consideration the above discussion, the present study intends to add to the existing knowledge new insights regarding the interplay between economic growth, income inequality and institutional factors in the European Union (EU) countries.

3.Data and Methods

This study considers the analysis of the following economic variables for 25 European Union (EU) countries: income inequality, economic growth and institutional factors (Malta and Cyprus were excluded due to incomplete data series). Income inequality is expressed by the Gini index, with values taken from the World Income Inequality Database (WIID) for the period 1996-2022. The Gini index is computed based on the annual disposable income of households. Data series on Gross Domestic Product per capita are taken from the World Bank database for the same period, 1996-2022.As regards the institutional factors, we worked with selected data from the Worldwide Governance Indicators database. In this

database, the quality of institutions (as it is defined by Kaufmann et al., 2011) is expressed through six indicators: *rule of law, effectiveness of governance, voice and accountability, political stability and absence of violence/terrorism, quality of regulation and control of corruption*. After selecting the available data, for European Union countries, we calculated their arithmetic mean, for each year, resulting in an indicator that we called *institutional factors*, following the example of some authors (such as Law et al., 2014; Chen and Kinko, 2016). Its values are used in the comparative analysis carried out for the EU countries over the period 1996-2021, as well as in the panel data analysis.

The main analysis methods used are: interpretation of data series dynamics based on graphical representations, correlation coefficient analysis between data series, and cluster analysis.

4. Comparative analysis of income inequality, GDP per capita and institutional factors

4.1. Income inequality
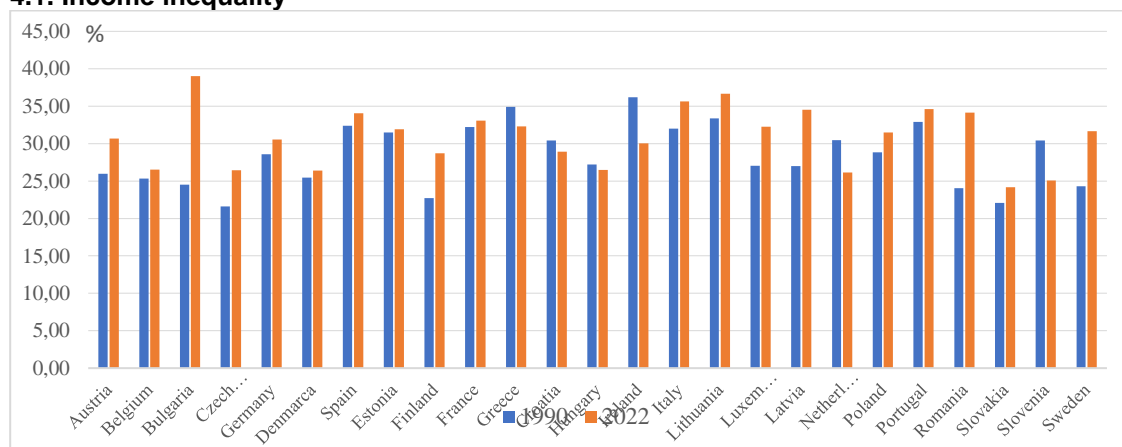
Figure 1: Income inequality index in 1990 and 2022 in EU countries
Source: data series from the World Income Inequality Database (WIID, 2023)

Income inequality increased in almost all the EU countries between 1990 and 2022. Only in five countries: Greece, Croatia, Hungary, Slovenia and Ireland did income inequality fall, with Ireland reporting the largest reduction of 6.14 percentage points, followed by Slovenia (5.33 percentage points). The highest increase in the Gini index value was recorded in Bulgaria, at 14.48 percentage points, followed by Romania, with an increase of 10.09 percentage points. The countries where income inequality increased the least are: Estonia, France, Denmark (Figure 1).

Over the period 1990-2022, Gini index values ranged from 21.61% (Czech Republic) to 36.19% (Ireland) in 1990 and from 24.17% (Slovakia) to 36.64% (Lithuania) in 2022. The average level of the Gini index increased from 28.46% in 1990 to 30.86% in 2022, reflecting the increase in income inequality across the EU. The EU average Gini index for the period 1990-2022 is 30.98. Countries are above this average level: Bulgaria, Spain, Estonia, France, Greece, Italy, Lithuania, Latvia, Poland, Portugal and Romania. Countries such as Austria, Belgium, the Czech Republic, Germany, Denmark, Finland, Croatia, Hungary, Luxembourg, the Netherlands, Slovakia, Slovenia and Sweden are below the EU average. It can be seen that not only Central and Eastern European countries face high levels of income inequality, but also Western European countries such as France and Portugal (Figure 2).
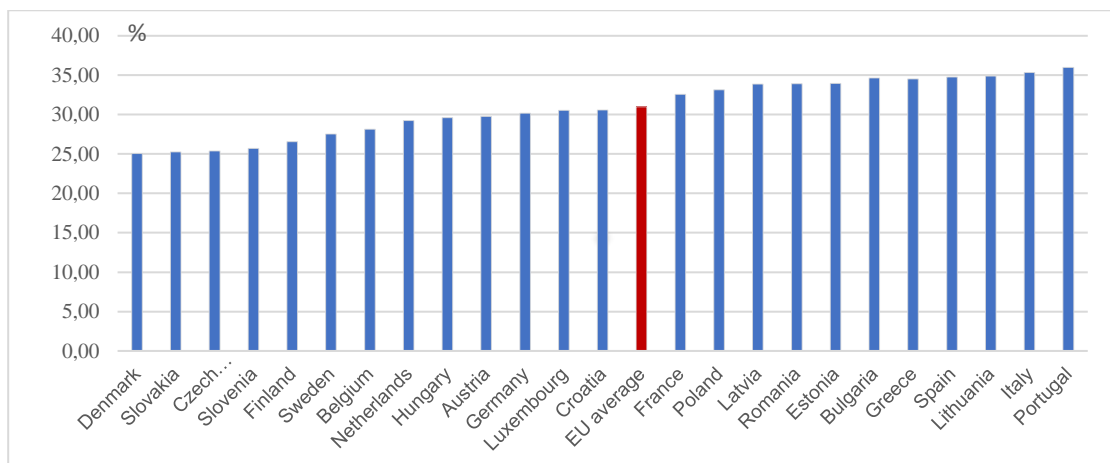
Figure 2: Average Gini index over the period 1990-2022 in EU countries
Source: World Income Inequality Database (WIID, 2023) data series

The increase in income inequality in EU countries over the period 1990-2022 is also reflected in the diagrams in Figure 4.3, which shows the expansion in 2022 of the area delimited by the points corresponding to the Gini index values compared to 1990. For example, while in 1990, Ireland had the highest Gini index value of 36.19, in 2022, Bulgaria is at the extreme value of 39.01.
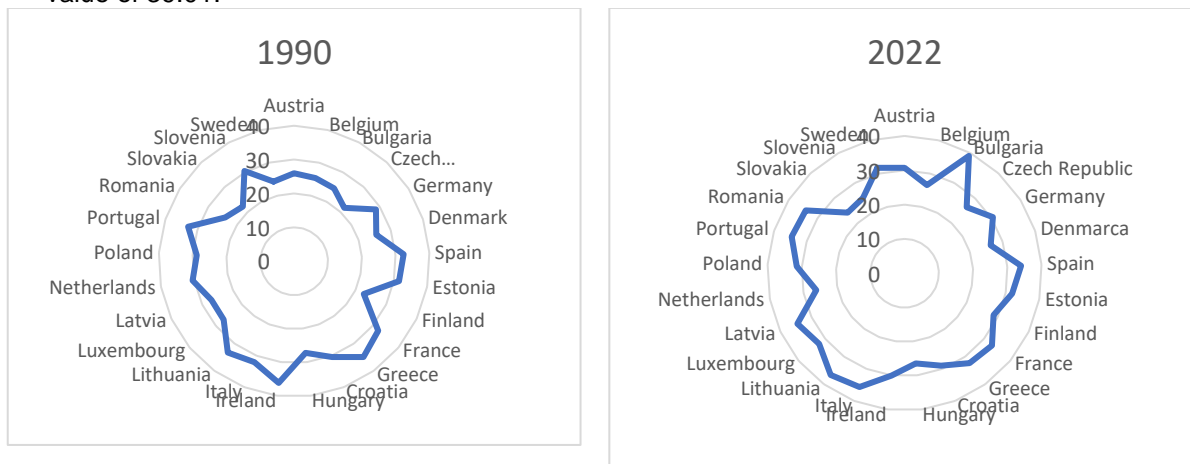
Figure 3: Expansion of the income inequality index in EU countries in 2022 compared to 1990
Source: data series from the World Income Inequality Database (WIID, 2023)

4.2. Gross Domestic Product per capita (GDP)
GDP per capita values increased in all the EU countries in the period to 2022 compared to 1996, as can be seen in Figure 4.
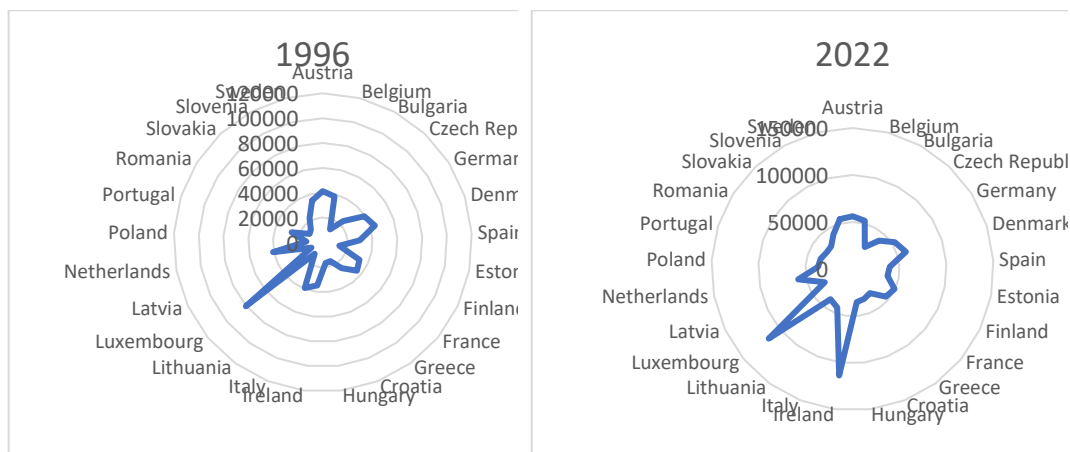
Figure 4: Level of GDP per capita in European Union countries in 2022 compared to 1996, in constant international dollars, 2017, at Purchasing Power Parity (PPP)
Source: World Bank data series (2023)

In terms of absolute increases, the biggest jump was recorded by Ireland at 79027 dollars followed by Luxembourg with an increase of 35151 dollars. In Lithuania and Latvia GDP per capita increased more than 3 times, Estonia and Poland were also close (2.7 times), and in Romania GDP per capita increased 2.57 times. In Eastern and Central European countries, the increases are much higher (2-3.5 times) than in Western European countries (1.1-2), Ireland being the exception with 3.26 times increase.

4.3. Institutional factors
According to the values calculated for the institutional factors as the arithmetic mean of the six indicators: voice and accountability, political stability and absence of violence/terrorism, governance effectiveness, regulatory quality, rule of law and control of corruption (World Governance Indicators, 2023), recorded in 1996 and 2022, the dynamics of the quality of institutions indicator differ by country category.
Thus, the values of the indicator range from a minimum of -0.24 (Croatia, 1996) to a maximum of 1.8888 (Finland, 2005). Based on the average values of this indicator over the period 1996-2022, the EU countries can be divided into four groups: (1) above 1.5, (2) between 1 and 1.5, (3) between 0.5 and 1, (4) below 0.5. The first group of countries with very high institutional quality includes Austria, Denmark, Finland, Luxembourg, the Netherlands and Sweden. In the second group of countries with high institutional quality are Belgium, Germany, Estonia, France, Ireland, Portugal and Slovakia. The Czech Republic, Spain, Greece, Hungary, Italy, Lithuania, Latvia, Poland and Slovenia are in the medium institutional quality group. In the last group of countries with low institutional quality are Bulgaria, Romania and Croatia. They are also the last to join the European Union.
Over the period analysed (1996-2022) the quality of institutions declined in all EU countries. Figure 5 shows the compression of institutional factor values in almost all countries.

Figure 5: Institutional factors in EU countries 1996 and 2022
Source: calculations based on data series from Worldwide Governance Indicators

Several countries have managed to increase the values of this indicator, namely Bulgaria, Czech Republic, Denmark, Estonia, Croatia, Lithuania, Latvia, Romania and Slovakia. Of these, Croatia stands out with an increase of 0.71 units in the average calculated for the six institutional indicators, followed by Estonia with an increase of 0.53 units (Figure 4.6). Among the countries where the quality of institutions deteriorated, Hungary stands out with a reduction of almost 0.5 units, Spain and Portugal with almost 0.4 units. Countries with very high institutional quality, such as Austria, Luxembourg, the Netherlands, Sweden and Finland, have undergone societal transformations that have also resulted in a reduction in the values of this indicator.
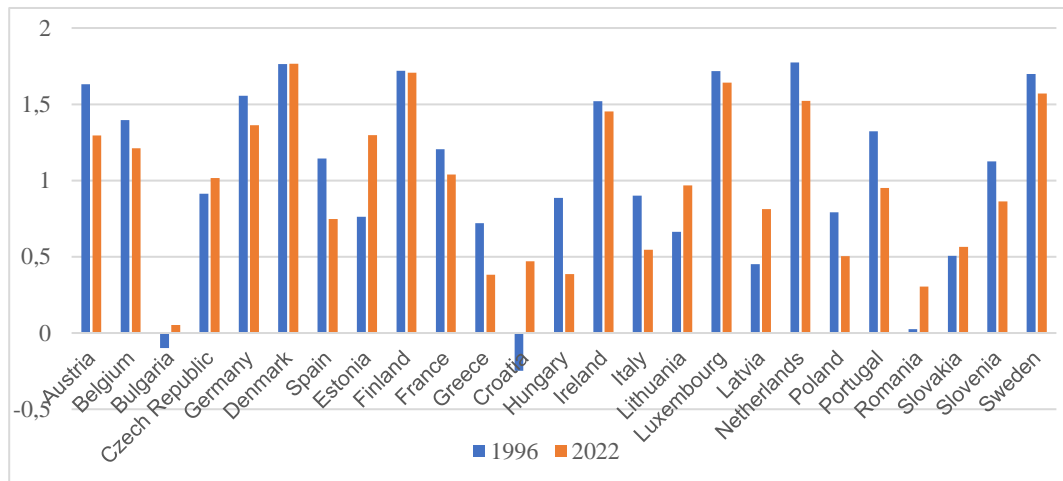
Figure 6: Differences between institutional factors in EU countries 1996 and 2022
Source: calculations based on data series from Worldwide Governance Indicators

4.4. Correlations between dynamic of GDP per capita, income inequality, and quality of institutions
The correlation coefficient between GDP per capita and income inequality is positive and very high in Western European countries (with a high level of development), but also in some Central and Eastern European countries such as Bulgaria, Croatia, Romania, Lithuania and Latvia. In the other Central and Eastern European countries (Hungary, Poland, Czech Republic, Slovakia, Slovenia) with also GDP per capita levels below the EU average, the

correlation coefficient values are negative, reflecting the fact that income inequality increases when GDP per capita decreases and vice versa. Also, Greece, Italy, Portugal, Ireland show negative values, together with Belgium (Table 1). In 17 of 25 countries under examination, institutional factors are positively corelated with income inequality and in 8 of them (Austria, Germany, Demark, Spain, Estonia, Luxembourg, Slovenia and Sweden) the correlation is inverse. This last result suggests that, when quality of institution increases, the reduction of income inequality is possible.

Table 1: Correlations between GDP per capita evolution, Gini index and institutional factors in EU countries (1996-2022)

Country	Correlation coefficient between GDP per capita and Gini index	Correlation coefficient between the Gini index and institutional factors	Institutional quality	GDP per capita	Gini index
Austria	0.30	-0.39	very high	Above the EU average	Below the EU average
Belgium	-0.45	0.59	high	Above the EU average	Below the EU average
Bulgaria	0.84	0.05	high	Below the EU average	Above the EU average
Czech Republic	-0.01	0.09	medium	Below the EU average	Below the EU average
Germany	0.94	-0.57	high	Above the EU average	Below EU average
Denmark	0.84	-0.42	very high	Above the EU average	Below EU average
Spain	-0.12	-0.32	medium	Below the EU average	Above the EU average
Estonia	-0.89	-0.85	high	Below the EU average	Above the EU average
Finland	0.83	0.36	very high	Above the EU average	Below EU average
France	0.57	0.01	high	Above the EU average	Above the EU average
Greece	-0.57	0.12	medium	Below the EU average	Above the EU average
Croatia	0.29	0.62	reduced	Below the EU average	Below the EU average
Hungary	-0.92	0.82	medium	Below the EU average	Below the EU average
Ireland	-0.82	0.56	high	Above the EU average	Above the EU average
Italy	-0.47	0.02	medium	Above the EU average	Above the EU average
Lithuania	0.29	0.37	medium	Below the EU average	Above the EU average
Luxembourg	0.69	-0.21	very high	Above the EU average	Below the EU average
Latvia	0.58	0.52	medium	Below the EU average	Above the EU average
Netherlands	-0.40	0.14	very high	Above the EU average	Below the EU average
Poland	-0.60	0.19	medium	Below the EU average	Above the EU average

Portugal	-0.56	0.56	high	Below the EU average	Above the EU average
Romania	0.50	0.39	reduced	Below the EU average	Above the EU average
Slovakia	-0.37	0.22	high	Below the EU average	Below EU average
Slovenia	-0.14	-0.27	medium	Below the EU average	Below the EU average
Sweden	0.86	-0.41	very high	Above the EU average	Below the EU average

Source: calculations based on data series from World Bank, World Income Inequality Database and Worldwide Governance Indicators

In order to study the link between the evolution of GDP per capita and the Gini index in the European Union countries, we calculated the average growth rate of both indicators for the period 1996-2022 and applied the cluster analysis method by using the SPSS econometric software. We considered a number of 6 clusters. To validate that this clustering is statistically significant we used the ANOVA test for a 1% significance threshold. In this case, the Sig value is 0.000, for both variables, indicating that there is a significant difference between the clusters.

Table 2: Groups of European Union countries, by average GDP per capita and Gini index growth rate, over the period 1996-2022

Cluster (number of member countries)	Countries	GDPpc growth rate (average)	Gini index growth rate (average)
Cluster 1(3)	Lithuania, Latvia, Poland	4.26	0.39
Cluster 2 (2)	Estonia, Ireland	4.01	-0.33
Cluster 3(2)	Bulgaria, Romania	3.19	1.17
Cluster 4(5)	Austria, Czech Republic, Finland, Luxembourg, Sweden	1.57	0.63
Cluster 5 (9)	Belgium, Germany, Denmark, Spain, France, Greece, Italy, Netherlands Portugal	1.01	0.3
Cluster 6 (4)	Croatia, Hungary, Slovakia, Slovenia	2.77	-0.21

Source: processing of GDP per capita and Gini index data series with SPSS software

The first cluster consists of Lithuania, Latvia and Poland, with the highest level of GDP per capita growth and an average level of Gini index growth rate. In these countries, economic growth is accompanied with rising income inequality, and the speed of Gini index is lower than the economic growth rate. These countries have the GDP per capita below the EU average, a higher Gini index as the EU average, and a mediul level of institutional quality. The second cluster includes two countries, Estonia and Ireland, with a high GDP per capita growth rate, correlated with a negative Gini dynamic, indicating that as economic growth accelerates, income inequality reduces faster. The common elements for these countries are the high level of income inequality and institutional quality, while the Ireland is a high-income country, and Estonia has an income level under the EU average.The situation is somewhat similar in the sixth cluster, which includes Croatia, Hungary, Slovenia and Slovakia, excepting that the dynamics of the two variables are lower. All these countries are facing levels of income inequality and of GDP per capita below the EU average. Croatia, the last country that joined the European Union, has caught up in economic development,

managed the incomed inequality with effort to increase the institutional quality. Hungary and Slovenia have a medium level of institutional quality. Hungary is challenged with a fall of institutional quality in the examined period of time amid an improvement in income distribution. In Slovenia, a visible downward trend in institutional quality is associated with a relatively stable dinamic of income inequality, suggesting that the mastery of income inequality may not necessarily be a result of institutional quality. In Slovakia, institutional quality evolves in a positive dynamic with a reduction of income inequality amidst rapid economic growth. The third cluster includes Bulgaria and Romania, countries under the EU average as GDP per capita and institutional quality, which have relatively high average GDP growth rates associated with accelerating growth in income inequality while quality of institutions increased. Clusters 4 and 5 include Western developed European countries, excepting Czech Republic, with moderate growth rates for both, GDP per capita and income inequality. The level of institutional quality is high in these Western developed countries. With medium level of institutional quality and GDP per capita under the EU level, Czech Republic has succeeded in reducing income inequality while reducing the quality of institutions. In the countries of cluster 4 (Austria, Finland, Luxemburg and Sweden) the falling institutional quality is associated with growth of income inequality, similarly with Germany, Denmark, Spain and France from cluster 5. Within cluster 5, in Belgium, Greece, Netherlands and Portugal, the downward trend of institutional quality is correlated with reduction in income inequality.

5.Conclusions and Policy Implications

The aim of the paper was to provide comparative insights of the relationship between economic growth and income inequality among the European Union (EU) countries. In almost all the European Union countries, economic growth was accompanied with rising income inequality over the period of 1990 to 2022, excepting Greece, Croatia, Hungary, Slovenia and Ireland.

The present study explores the levels and the dynamic of GDP per capita, Gini index and institutional quality in the European Union countries over the period 1990-2022. The analysis shows that: (1) in almost all high-income countries, the level of income inequality is lower than in low-income countries; (2) mostly, higher income (GDP per capita) is accompanied by higher quality of institutions; (3) rising income inequality may occur in the process of economic growth, and its growth rate and is different, according to the economic development level: the growth rate of income inequality is higher in low-income countries, while high-income countries have the capacity to address high growth rate of income inequality; (4) economic growth is accompanied by rising levels of income inequality in countries with low-income and high-income inequality levels (Romania, Bulgaria), in line with the findings of Rodrik (1999) and Batuo et al. (2012); (5) high institutional quality level is accompanied by moderate income levels and growth of income inequality; (6) falling institutional quality is correlated with rising income inequality in some high-income countries (e.g. Austria, Finland, Luxembourg, Sweden, France, Spain, Italy, Germany, Denmark), as it was revealed by Chong and Gradstein (2004); (6) moderate economic growth rates are correlated with moderate growth in income inequality, in high-income countries; (7) it remains unclear the interplay of institutional quality dynamic in reducing income inequality (countries as: Belgium, Netherlands, Portugal, Ireland, and Greece succeeded to reduce income inequality when their quality of institutions decreased while Czech Republic obtained similar result with an increase in quality of institutions; in other countries, the increase in quality of institutions evolves together with income inequality growth-no impact being identified).

It is not possible to draw a general valid conclusion on the relationship between economic growth and income inequality in the European Union countries. It is expected that economic growth generates a fairer distribution of income in the society, but also higher income

countries are faced with rising income inequality (e.g., Germany, Finland, France, Luxemburg, Netherlands). These countries have a high institutional quality and, as Kranzinger (2020) highlighted, they have the capacity to develop effective mechanisms to reduce income inequality. Persistence of income inequality in the European Union countries would hamper economic growth and can lead to social conflicts, reducing citizens' participation in the society and high social exclusion. The concept of inclusive growth is placed in the centre of the EU policy on inequality, and reducing inequality is a clear priority. In the frame of the European social and cohesion policy, as consequence of the study's findings, the following implications can be drawn: (1) more effective fiscal and transfer policies are needed in low-income countries in order to reduce the rising levels of income inequality; (2) more effective labour market institutions and public measures focused on low-income workers or groups; (3) promoting policy measures focused on „pre-distribution" and less on re-distribution of income among groups/households) in all the EU countries.

It must be mentioned that the present study is an exploratory one, and it should be followed by a deeper and detailed analysis of the European Union countries regarding determinants of income inequality and possible social and economic mechanisms meant to curb the rising income inequality.

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THE IMPACT OF DEBT SERVICE ON ECONOMIC GROWTH IN A SMALL ISLAND DEVELOPING STATE: A CASE STUDY OF ZANZIBAR

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Abstract: *This study examines the relationship between Zanzibar's debt service and economic growth (GDP per capita) from 1987 to 2022. Employing a Vector Error Correction Mechanism (VECM) with time series data, we analyze the long-run impact of debt service on growth. While our results show a positive correlation, it's not statistically significant. This suggests that effective debt management, fostering investor confidence and stability, can potentially stimulate growth. The study emphasizes the importance of balanced debt strategies and informed policymaking for Zanzibar's sustainable development. It highlights the complexities of debt-growth dynamics, underlining the need for fiscal discipline and prudent debt management for long-term prosperity. This research offers valuable insights for policymakers navigating debt and economic policy in island economies.*

Keywords: *Debt service, Economic growth, SIDS*

JEL Classification: *H69*

1. INTRODUCTION

The utilization of national debt as a fiscal tool to fund government spending plays a vital role in driving infrastructural development and stimulating economic growth. However, an excess of such debt can pose threats to economic stability and hinder growth. Theoretical frameworks like neoclassical growth theory and Keynesian theory suggest that external debt could positively impact the economy through increased investment and productivity. Yet, the potential misallocation of internal loans toward short-term needs rather than long-term projects poses a challenge [1].

Zanzibar's economic growth faces challenges due to inadequate revenue collection, leading to a fiscal deficit. The region relies on diverse internal revenue sources but explores external debts to bridge financial gaps. Zanzibar can independently secure domestic loans but requires Tanzanian government involvement for external loans. The process involves documentation submission to Tanzania; subsequent loan negotiations and agreements are managed by the Tanzanian government. Zanzibar can access external loans from various sources but is responsible for repaying domestic debts, while Tanzania oversees external debt repayment. Revenue-sharing mechanisms between Zanzibar and Tanzania allocate portions of Tanzanian revenue to Zanzibar, as outlined in [2].

In 2020, Zanzibar, like many developing nations amid the COVID-19 pandemic, faced reduced economic activities, leading to limited borrowing capacity and hindering economic growth. The absence of loans from developed countries exacerbated these challenges (as shown in the Figure 1). However, in 2021, Zanzibar obtained debt relief from developed nations, notably reducing interest payments from 122.8 billion to 116.4 billion [3]. This relief granted vital fiscal flexibility, enabling efforts to stimulate economic growth and foster sustainable development. The economic slowdown in 2020 hindered debt obligations and restricted new borrowing avenues, mirroring a global trend of reduced economic activities impacting borrowing capabilities. Subsequently, in 2022, Zanzibar received financial aid

aimed at mitigating pandemic repercussions and boosting economic growth. This assistance included grants from the Tanzanian Government, facilitated by Tanzania through an IMF-backed loan, signaling a collaborative approach to stabilize and rejuvenate Zanzibar's economy amid the pandemic's challenges [4].

The Revolutionary Government of Zanzibar had accrued a total debt of TZS 330.40 billion by March 2023, predominantly comprising domestic debt (96%) amounting to TZS 317.17 billion, and external debt (4%) totaling TZS 13.20 billion [5]. Notably, concerns arise from the discrepancy between escalating national debt and inconsistent economic growth rates between 2016 and 2019. Despite consistent growth in both internal and external debt during this period, GDP growth rates remained inconsistent. Zanzibar's economic growth persists in the single-digit range, casting doubt on the government's feasibility to achieve double-digit economic growth by 2025 amidst the continuous rise in national debt [2].

Zanzibar grapples with substantial challenges, including high debt servicing costs of 144 billion TZS in the 2021/2022 fiscal year (Zanzibar Statistical Abstract, 2022). This strains investment capacity, leading to a growing fiscal deficit and increased reliance on external borrowing surpassing internal debt (Figure 2). These issues hinder economic growth and impede overall development. A comprehensive study spanning 1987 to 2022 aims to explore the relationship between debts service and economic growth in Zanzibar, offering crucial insights for policymaking in managing finances to balance development borrowing with sustainable debt amidst rising debt levels and susceptibility to external shocks. This study investigates the intricate relationship between debt service and economic growth in a Small Island Developing State (SIDS) – Zanzibar. National debt is a crucial fiscal tool, driving infrastructure development and potentially stimulating economic growth. However, excessive debt can threaten economic stability.

The rest of the paper is organized as follows: In the next section, we present a brief review of literature on the linkage between debts service and economic growth. In section 3, we provide the empirical methodology and in section 4, we discuss the empirical results. The last section contains concluding remarks of the study.

2. LITERATURE REVIEW

The relationship between debts and economic growth has been an issue of controversy and verification by academics and researchers in recent years. This literature review examines the intricate relationship between debt service and economic growth, with a specific focus on Small Island Developing States (SIDS) like Zanzibar.

Ali, Kousar & Sohail [9] aimed to assess the connection between domestic debt and sustainable economic growth in Pakistan. The study used secondary data from the period of 1990-2021 and employed the autoregressive distributed lag (ARDL) approach to analyze the relationship between domestic debt and economic growth. The results indicated that domestic debt had a negative impact on economic growth in the short run, but a positive impact in the long run.

Akanbi, Uwaleke & Ibrahim [10] scrutinized Nigeria's external debt service and its relation to economic growth in Nigeria from 1981 to 2020, utilizing the ARDL model. Their analysis revealed a depletion effect of external debt services on growth, with external debt stock displaying a positive yet insignificant relationship with growth.

Salmon [11] conducted a survey covering economic literature from 2010 to 2020, highlighting that elevated public debt levels had a detrimental impact on economic growth. The research also supported claims of a nonlinear debt threshold, beyond which debt significantly hampers growth rates.

Yusuf & Mohd's [12] investigated on Nigeria's government debt from 1980 to 2018, using the Autoregressive Distributed Lag technique which discovered that external debt impeded long-term growth but had short-term benefits. Domestic debt had a notably positive impact on long-term growth but a negative effect in the short term.

Lelya and Ngaruko [13] examined the impact of national debt on economic growth in Tanzania from 1980 to 2019 using Vector Error Correction model (VECM) to estimate the time series data. The study found that both external and domestic debt significantly affects the economic growth of Tanzania.

Olusegun, Oladipo & Omotayo [14] examined debt service's impact on Nigeria's economic growth from 1990 to 2020, demonstrating that appropriately managed debt servicing positively affected economic growth. They noted a clear long-run relationship indicating a positive and significant impact of debt servicing on economic growth.

Law, Ng & Kutan [15] delved into the threshold value of public debt to GDP in seventy-one developing countries from 1984 to 2015. Their study revealed a negative and statistically significant impact of debt on economic growth at high debt levels but an insignificant effect at lower levels. Additionally, they found that better institutions helped mitigate the negative impact of public debt on economic growth.

Furthermore Didia & Ayokunle [16] used the Vector Error Correction Model (VECM) to analyze the impact of external and domestic debt on economic growth in Nigeria. The study found that domestic debt had a statistically significant positive relationship with economic growth in the long run, while external debt had a negative relationship with economic growth but was not statistically significant.

Padda, [17] conducted a study that examined the relationship between public debt and economic growth in Pakistan using time series data and the Autoregressive Distributed Lag (ARDL) model. The study found that the optimal level of public debt for economic growth in Pakistan was 60% of GDP, and that the relationship between public debt and economic growth was nonlinear.

Awan & Qasim's [18] studied on the impact of external debt on Pakistan's economic growth from 1980 to 2017 showcased that external debt, debt services, imports, and population growth rate negatively affected GDP. Conversely, exports, gross capital formation, and employed labor force participation had positive effects.

Saungweme & Odhiambo [19] examined impact of public debt service on economic growth in Zambia using time-series method, covering the period from 1970 to 2017. The study employed the autoregressive distributed lag (ARDL) analysis technique. Overall, the empirical results revealed that the impact of government debt service on economic growth, in Zambia, was time-variant. Whereas the neutrality of public debt service on economic growth was confirmed in the long run, in the short run the relationship was negative.

Ibrahim & Khan [20] investigated the long-term relationship between domestic debt and Nigeria's fiscal policy from 1981. They used the ARDL approach and bounds test, finding that while negative domestic debt had an overall adverse effect on the economy, it positively impacted total government revenue and economic growth in Nigeria during the research period.

Moh'd AL-Tamimi & Mohammad [21] investigated the effect of external debt on economic growth in Jordan by using annual data for the period (2010-2017) and using external debt as a percentage of gross domestic product (GDP) as an independent variable, and GDP per capita as a dependent variable. The study found the same conclusion as previous studies that there was a negative and significant impact of external debt on economic growth during the study period.

Mohamed [22] examined Sudan's economic growth concerning external debt, exports, exchange rates, and foreign direct investments from 1969 to 2015 utilizing econometric techniques like ADF unit root tests and the VECM. The study established a long-run equilibrium relationship among the variables. The findings indicated a positive contribution of external debt to Sudan's economy.

Lotto & Mmari [23] explored the impact of domestic debt on Tanzania's economic growth from 1990 to 2015 using OLS regression. They found an inverse but statistically insignificant relationship between domestic debt and Tanzania's GDP annual growth.

Kharusi & Ada, [24] analyzed the impact of external debt on economic growth in Oman during the period of 1990-2015. The study utilized secondary data from the World Bank and employed the Autoregressive Distributed Lag integration approach to analyze the data. The study found a negative and significant influence of external debt on economic growth in Oman. However, the results aligns with the study by Shkolnyk & Koilo [25], which examined the relationship between external debt and economic growth in emerging economies from 2006 to 2016 using the ADL model and found that high external debt levels, coupled with macroeconomic instability, hindered economic growth in these economies.

Lastly, Yusuf and Said [26] examined the impact of public debt on economic growth in Tanzania for the period 1970 to 2015. The study utilized co-integration and Vector Error Correction Mechanism (VECM) Approach to test the relationship between public debt and economic growth and granger causality test to examine the causal relationship between variable. The VECM estimate showed that there was a negative relationship between public debt and economic growth in Tanzania over the study period. In addition, granger causality test revealed that there was no causal relationship between public debt and economic growth.

In summary, the existing literature presents a mixed picture regarding the impact of debt service on economic growth. Some studies reveal a negative impact (e.g., [6], [10], [13], [18], [21], [26]), while others suggest a positive long-term effect ([7], [9], [14], [16], [22]). Several studies highlight a non-linear relationship, where debt may have a positive effect up to a certain threshold before hindering growth ([15], [17]). Factors like debt type (domestic vs. external) and methodological approaches also influence the findings ([11], [12], [19], [20])

While a substantial body of research exists on debt and economic growth, there's a lack of studies specifically focused on SIDS like Zanzibar. This study aims to bridge this gap by examining the impact of debt service on Zanzibar's economic growth. By analyzing Zanzibar's data and applying appropriate methodologies, the research will contribute to a better understanding of how debt service affects economic growth in this context

3. METHODOLOGY
3.1 Model Specification
To effectively gauge how debt service influences Zanzibar economic progress, this study employs the linear specification based on Cobb-Douglas production function growth models by [26]. It is a fundamental economic model that describes the relationship between inputs (typically labor and capital) and output in production. It is represented by an equation that factors in labor, capital, and a constant for technological progress, allowing for the analysis of how different combinations of inputs affect production levels. The model has been crucial in economics, aiding in the understanding of production and growth, and it has applications in both macroeconomics and microeconomics. While the original model assumed constant output elasticities, subsequent research has extended its applicability to various economic scenarios, making it an enduring and versatile tool in economic analysis.

$$Y_t = A_t L_t^{\beta_1} K_t^{\beta_2} \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(1)}$$

By applying the logarithm to the equation 1, yields the following expression

$$\log Y_t = \log A_t + \beta_1 \log K_t + \beta_2 \log L_t \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(2)}$$

While $\log A_t$ are the other factors that promote economic growth and assumed to have a linear relationship with growth.

$$\log A_t = \beta_0 + \beta_3 \log FDI_t + \beta_4 \log DEBS_t + \varepsilon_t \dots\dots\dots \text{(3)}$$

Thus, by replacing $logA_t$ in the equation 2 the general model for this study is

$$logY_t = β_0 + β_1logK_t + β_2logL_t + β_3logFDI_t + β_4logDEBS_t + ε_t \dots\dots (4)$$

Whereby $β_0$ is the constant term and the parameter $β_1, β_2, β_3,$ and $β_4$ explained the coefficient values of independent variables. $ε_t$ is the stochastic error term which explain other factors that influenced the economic growth but are not included in the model and is assumed to fulfill all the assumptions of classical linear regression model, and t = 1, 2… is the time index for the years from 1987 to 2022. Y represents economic growth measured by real GDP per capita, K represents gross capital formation, L represents labour forces in an economy, FDI is Foreign Direct Investment and DEBS represents the Debt Service.

3.4 Variables Description and Their Measures

Table 1 Variables description and their measures

Variable	Description	Measurement
Y	Economic Growth	(GDP per capita)
L	Labour forces in an economy	Labour forces Growth rate
K	Gross Capital Formation	K/GDP
DEBS	Debt service	Debt service ratio, which is the amount of money a country pays towards the principal and interest on its outstanding debt as a percentage of its GDP in US dollar Million
FDI	Foreign direct investment	Sum of equity capital, reinvestment of earnings, and other capital (FDI/GDP)

Source*: Researcher(2023)*

3.3 Estimation Technique
3.3.1 Unit root test
To verify whether the data are stable for further analysis, it is important to test the order of integration of each variable in a model. This is to establish whether the data are non-stationary and how many times the variable needs to be differenced to derive stationary series. There are many tests for determining whether a series is stationary or non-stationary, but this study used Augmented Dickey-Fuller (ADF).

3.3.2 Cointegration test
Following the examination of each time series' stationarity, the subsequent phase involves investigating the level of co-integration among the variables using the Johansen test. This step specifically delves into whether the stochastic trends in the variables, anticipated to contain unit roots, possess a long-term relationship. The Johansen test, chosen for its capacity to identify more than one long-term association, stands as a more suitable choice compared to the Engle and Granger test, which considers only a single long-term association based on the ADF test.

3.1.3 Vector Error Correction Model (VECM)
The appropriate econometric model for variables which are integrated at order one (I(1)) and have co-integration (long-run) relationship is Vector Error Correction Mechanism (VECM).

This approach allowed for the separation of long-run and short-run impacts, as well as the inclusion of an error correction term (ECT) that indicated the speed of adjustment of the variables towards the equilibrium position. The empirical VEC model, based on the representation theorem of Engle and Granger (1987), could be expressed as follows:

$$\Delta GDPpc_t = T_1 \sum_{i=1}^{k-1} u_{1i}\Delta GDPpc_{t-i} + \sum_{i=1}^{k-1} v_{1i}\Delta DEBS_{t-i} + \sum_{l=1}^{k-1} w_{1i} \Delta FDI_{t-1} + \sum_{t=1}^{k-1} X_{1i}\Delta K_{t-1} + \sum_{t=1}^{k-1} X_{1i}\Delta L_{t-1} + Z_{1i} ECT_{t-i} + e_t \dots\dots\dots\dots\dots\dots\dots$$

$$\Delta DEBS_t = T_2 \sum_{i=1}^{k-1} u_{2i}\Delta GDPpc_{t-i} + \sum_{i=1}^{k-1} v_{2i}\Delta DEBS_{t-i} + \sum_{i=1}^{k-1} w_{2i} \Delta FDI_{t-1} + \sum_{t=1}^{k-1} X_{2i}\Delta K_{t-1} + \sum_{t=1}^{k-1} X_{1i}\Delta L_{t-1} + Z_{2i} ECT_{t-i} + e_t \dots\dots\dots\dots\dots\dots\dots\dots$$

$$\Delta FDI_t = T_3 \sum_{i=1}^{k-1} u_{3i}\Delta GDPpc_{t-i} + \sum_{i=1}^{k-1} v_{3i}\Delta DEBS_{t-i} + \sum_{l=1}^{k-1} w_{3i} \Delta FDI_{t-1} + \sum_{t=1}^{k-1} X_{2i}\Delta K_{t-1} + \sum_{t=1}^{k-1} X_{1i}\Delta L_{t-1} + Z_{3i} ECT_{t-i} + e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots$$

$$\Delta K_t = T_4 \sum_{i=1}^{k-1} u_{4i}\Delta GDPpc_{t-i} + \sum_{i=1}^{k-1} v_{4i}\Delta DEBS_{t-i} + \sum_{l=1}^{k-1} w_{4i} \Delta FDI_{t-1} + \sum_{t=1}^{k-1} X_{4i}\Delta K_{t-1} + \sum_{t=1}^{k-1} X_{1i}\Delta L_{t-1} + Z_{4i} ECT_{t-i} + e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$$

$$\Delta L_t = T_5 \sum_{i=1}^{k-1} u_{5i}\Delta GDPpc_{t-i} + \sum_{i=1}^{k-1} v_{5i}\Delta DEBS_{t-i} + \sum_{l=1}^{k-1} w_{5i} \Delta FDI_{t-1} + \sum_{t=1}^{k-1} X_{5i}\Delta K_{t-1} + \sum_{t=1}^{k-1} Y_{5i}\Delta L_{t-1} + Z_{5i} ECT_{t-i} + e_t \dots\dots\dots\dots$$

$Z_1 ECT_{t-i}$ was the error term which explains the long run relationship between variables. Where ε_t is the Error Correction Term which reflects the deviation from the long-run equilibrium path.

FINDINGS AND DISCUSSION
4.1 DESCRIPTIVE STATISTICS
Before estimating a regression model, it's essential to verify if the variables involved follow a normal distribution. Traditionally, descriptive statistics are used to check for normality. Table 2 presents the estimated mean, median, skewness, kurtosis, and probability values for each variable.
One indicator of normality is a mean-to-median ratio close to one. In this case, the ratios in Table 2 suggest that the data may be normally distributed.
Furthermore, the Jarque-Bera test statistics with p-values greater than 0.05 (not shown) fail to reject the null hypothesis of normality for each variable. This statistically confirms the normality assumption.
Finally, kurtosis values close to 3 also support the normality of the data.
In conclusion, based on the descriptive statistics and the Jarque-Bera test, the study has established that the variables are likely normally distributed.

Table 2: Descriptive statistics of variables

	LOGDEBS	LOGFDI	LOGGDP	LOGK	LOGL
Mean	22.64620	24.38926	1.676612	6.73675	11.80679
Median	22.45210	24.74769	1.793425	6.43425	11.53038
Maximum	24.52937	27.84456	2.229183	9.60377	18.11579
Minimum	21.41495	19.11083	0.262364	4.79259	4.29878
Std. Dev.	0.718408	2.184929	0.420712	1.13912	3.94623
Skewness	1.015010	-0.385201	-2.020962	-0.74792	-0.67021
Kurtosis	3.558859	2.222244	7.327288	2.57456	2.95640

Jarque-Bera	6.465234	1.747701	51.13292	1.77962	1.84541
Probability	0.039454	0.417341	0.000000	0.41073	0.73069
Sum	792.6172	853.6240	58.68143	915.5292	72.60208
Sum Sq. Dev.	17.54774	162.3131	6.017944	31.15681	28.72835

Source: Researcher's computation, 2023

4.2 Unit Root Test

This study employs Augmented Dickey-Fuller (ADF) tests to examine the presence of unit roots initially at levels and subsequently through first differences. The findings indicate that the series were non-stationary in their level form with varying mean, variance, and covariance over time, as illustrated in Table 3. However, after undergoing the first difference transformation (as shown in Table 3), all variables achieved stationarity with significantly low P-values ($P<0.05$), leading to the rejection of the null hypothesis. Consequently, it is concluded that all variables are integrated at order one, denoted as I(1)

Table 4.2: Results for Unit Root Test

Variable	Augmented Dickey Fuller test			
	At level		**At first difference**	
	Constant		**Constant**	
	Test statistics	P-value	Test statistics	P-value
LOGDEBS	-1.167078	0.6778	-10.23841	0.0000
LOGGDP	-0.372210	0.9041	-7.468819	0.0000
LOGFDI	-0.827586	0.9004	-6.417025	0.0000
LOGK	0.581785	0.9874	-5.855837	0.0000
LOGL	-1.368215	0.6500	-10.28021	0.0000

4.3 Co integration Test

Following the confirmation of integrated variables at the same order I (I), the Johansen-Juselius procedure was employed to identify potential cointegration relationships among these variables. The test results, comprising both the Trace test and the Maximum Eigenvalue test, consistently indicate the presence of 4 cointegrating equations at the 0.05 significance level among the variables This signifies the rejection of the Null hypothesis stating a non-cointegration of series at a 5% significance level. Hence, it's established that the series are indeed cointegrated, indicating a long-term relationship among the variables. Consequently, the Vector Error Correction Mechanism (VECM) was employed accordingly (see table 4)

Table 4: Co integration test Results

Hypothesized Number of CE (s)	Trace				Max-Eigen			
	Eigenvalue	Trace Statistics	Critical value (0.05)	Prob	Eigenvalue	Max-Eigen Statistic	Critical value (0.05)	Prob
r = 0	0.861489	196.5173	125.6154	0.0000	0.861489	63.25783	46.23142	0.0004
r ≤ 1	0.749672	133.2594	95.75366	0.0000	0.749672	44.31945	40.07757	0.0157
r ≤ 2	0.665557	88.93998	69.81889	0.0007	0.665557	35.04927	33.87687	0.0361
r ≤ 3	0.618624	53.89071	47.85613	0.0122	0.618624	30.84703	27.58434	0.0184
r ≤ 4	0.432556	23.04368	29.79707	0.2439	0.432556	18.13164	21.13162	0.1250
r ≤ 5	0.141845	4.912032	15.49471	0.8181	0.141845	4.895049	14.26460	0.7550
r ≤ 6	0.000531	0.016982	3.841465	0.8962	0.000531	0.016982	3.841465	0.8962

4.4 VECM Estimates

Given the results of the co integration test which revealed the existence of cointegration among the variables in the debt service - growth models, vector error correction model (VECM) was considered appropriate for the analysis of the objectives based on the nature of the objectives of the study In the context of this study, which aims to analyze the impact of debt service on the economic growth of Zanzibar, VECM provides insights into these relationships as follow:

The estimated equation indicated a constant coefficient of 13.91436, denoting that at zero performance of explanatory variables, economic growth stands at 13.91436 units. The R-squared (0.802264) explained 80.23% of growth fluctuations, showcasing strong explanatory capability. The Adjusted R-squared (0.693509), even after adjusting for unnecessary variables, explained 69.35% of growth variation, maintaining strength. The heteroscedasticity test's Chi-square probability (0.6531) confirmed consistent residual variance. The Durbin-Watson statistic (2.9712) suggested no serial correlation. The Jarque-Bera probability (0.6521) supported residual normality. The Ramsey RESET test (p=0.8635) indicated model stability, surpassing the conventional threshold.

Furthermore, the results revealed that there was a positive insignificant relationship between debt service and economic growth in Zanzibar. This means that, the coefficient of LOGDEBS indicates that for every one percent increase in debt service, the GDP is increased by factor of 0.432970. This could suggest that debt repayment does not necessarily hinder economic growth of the Zanzibar Island and might be associated with fiscal discipline, which boost investor confidence and encourage investment, hence boost economic growth However, the lack of statistical significance means, there is no strong enough evidence to confidently conclude that dedicating more resources to debt servicing directly and significantly contributes to economic growth in Zanzibar.

These findings contrast with our initial expectations and with the findings of [30], who found that higher debt service obligations are often associated with financial strain on a country's budget, which can lead to reduced public investment and slower economic growth. However, this finding aligns with [31] who found a statistically positive relationship between debt servicing and economic growth in various developing economies.

In addition, the results shows that (FDI) and labour force were found to have statistically significant positive effects on economic growth, while capital formation exhibits a significantly negative relationship with economic growth when interacted with debt service, (see table 5).

Table 5 Vector Error Correction Estimate Results

Variable	Coefficient	Standard Error	t-statistics
LOGGDP	1.000000		
LOGDEBS	0.432970	0.30829	1.40443
LOGFDI	0.362428	0.10020	3.61700
LOGL	0.335898	0.09733	-3.45121
LOGK	-1.153630	0.32784	-3.51885
C	13.91436		
R-squared	0.802264		
Adj. R-squared	0.693509		
Sum sq. resids	2.691166		
S.E. equation	0.366822		
F-statistic	7.376795		
Diagnostic results			
Durbin-Watson	2.9712		
Heteroscedasticity	13.2246 (0.6531)		
Normality	0.9713 (0.6521)		
Ramsey RESET test	0.1609 (0.8635)		

5. CONCLUSION AND RECOMMENATIONS

This study examines the relationship between debt service and economic growth in Zanzibar using annual data from 1987 to 2022. A Vector Error Correction Mechanism (VECM) was employed to estimate a linear econometric model. Diagnostic tests, including unit root and co-integration analyses, were conducted to ensure the model's validity. The results rejected the null hypothesis of no co-integration, confirming a long-term equilibrium relationship between debt service and economic growth in Zanzibar. It is suggested that Zanzibar should ensure that external and internal debt is primarily used for investments that yield positive returns and contribute to economic growth. Projects should be rigorously assessed for their potential economic benefits before borrowing. Furthermore, Zanzibar should improve domestic revenue collection through better tax administration and compliance measures. This will reduce the reliance on external debt and internal debt issuance. In addition, implementing strict fiscal discipline to ensure that government spending is sustainable and aligned with revenue generation. This includes establishing clear budgetary controls and oversight mechanisms to prevent excessive borrowing. Specifically Since the relationship between debt service and economic growth is not conclusive; policymakers should focus on a variety of strategies to stimulate economic growth. This could include investments in infrastructure, education, healthcare, tourism, and agriculture to drive economic diversification. Given the uncertainty in the relationship, it's crucial for policymakers to

ensure that debt service remains manageable and does not crowd out other essential public expenditures. This involves maintaining a sustainable debt-to-GDP ratio, assessing the long-term impact of new debts, and establishing clear guidelines for borrowing and repayment. Even though the relationship is insignificant, a positive correlation suggests that maintaining fiscal discipline could foster investor confidence. Zanzibar should implement policies that enhance revenue collection, reduce fiscal deficits, and curb unnecessary spending to ensure that debt service does not become a burden on economic growth.

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THE AGREEMENT ON TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS)

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Abstract: *The paper delves into the development and intricacies of international legal frameworks for intellectual property (IP) rights protection and commercialization, focusing on agreements like the Paris and Berne Conventions. It outlines the evolution from initial measures safeguarding industrial property to broader copyright and trademark protections, facilitated by entities such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is highlighted for establishing minimum standards for IP protection and enforcement, integrating provisions for dispute resolution, and managing the balance between IP holders' interests and the public good. TRIPS' role in addressing challenges posed by differing national norms and its efforts to mitigate IP rights abuse through limitations and exceptions, known as the Three-Step Test, are emphasized. This analysis underscores the importance of a fair and balanced IP system that promotes global innovation and creativity, acknowledging the need for a harmonious integration of varied national laws within the global trade and IP protection landscape.*

Keywords: *intellectual; property; agreement patents; copyrights; trademarks*

JEL Classification: *O32*

1. Background

The global legal framework for the protection and commercialization of intellectual property (IP) rights is rooted in a series of international treaties and the establishment of pivotal institutions. The Paris Convention for the Protection of Industrial Property, instituted in 1883, laid the groundwork for international IP protection, covering a broad spectrum of IP aspects such as patents, trademarks, and industrial designs. It led to the creation of a union to safeguard these rights, constantly evolving to meet the dynamic scope of IP protection (https://www.wipo.int/treaties/en/ip/paris/summary_paris.html).

Recognizing the limitations of the Paris Convention in covering all forms of creativity, the Berne Convention for the Protection of Literary and Artistic Works was introduced in 1886. This convention, focusing on copyright, established fundamental principles including national treatment, automatic protection, and the independence of protection. It emphasizes the author's moral rights and sets minimum standards for copyright protection (https://www.wipo.int/treaties/en/ip/berne/summary_berne. html#_ftn3).

The international landscape for IP rights further expanded with the Madrid Agreement in 1891, paving the way for the Madrid System which simplifies trademark protection across multiple countries through a single registration. The administrative foundation for these

conventions was solidified under Swiss oversight in 1893, eventually leading to the formation of the World Intellectual Property Organization (WIPO) by 1970. As a specialized UN agency, WIPO plays a crucial role in fostering a balanced and effective global IP system, boasting 193 member countries and headquartered in Geneva, Switzerland (https://www.wipo.int/about-wipo/en/). Another cornerstone in the international IP regime is the World Trade Organization (WTO), established from the General Agreement on Tariffs and Trade (GATT) in 1948. The WTO, arising in 1995, significantly influences the global commercialization of IP rights, aiming to reduce trade barriers (https://www.wto.org/english/thewto_e/history_e/history_e.html) and facilitate international trade. With 164 member states, it provides a comprehensive legal and institutional framework for multilateral trade rules and IP rights commercialization, addressing the modern and future requirements of global trade and IP protection.

Together, these conventions, agreements, and organizations create a robust international system for IP rights protection and commercialization, balancing the need for innovation and creativity with the commercial interests of IP holders and the broader public good. This system underscores the importance of international cooperation and uniform standards in fostering a conducive environment for the global exchange of goods, services, and ideas.

2. The Agreement on Trade-Related Aspects of Intellectual Property Rights

The international commercialization of intellectual property rights faces challenges due to the varying norms for protecting these rights across different continents. Inconsistencies or lapses in the enforcement of intellectual property rights can lead to an increase in counterfeit and pirated goods, undermining the legitimate commercial interests of rights holders ("Trade in counterfeit and pirated goods: Mapping the economic impact. 2017"). The establishment of new global trade rules for intellectual property rights commercialization was pursued to bring more structure and predictability, as well as to manage financial disputes more systematically. This goal was accomplished during the Uruguay Round with the creation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). TRIPS sets forth minimum standards for intellectual property protection, enforcement procedures, and remedies, and introduces a consultation and monitoring mechanism to ensure adherence to these standards by member countries. The Agreement, which builds on existing international conventions, covers a broad spectrum of intellectual property rights, including patents, copyrights, trademarks, industrial designs, circuit layouts, undisclosed information, and geographical indications.

To prevent intellectual property rights holders from abusing their exclusivity, these rights are subject to a number of limitations and exceptions. The Three-Step Test in international intellectual property treaties is designed to make certain that any limitations and exceptions to intellectual property rights do not unduly infringe on the rights of the holders. This test is designed to prevent limitations and exceptions to intellectual property rights from unfairly impacting the rights of the holders. It emphasizes the importance of maintaining a balance between the rights of the holders and the broader public interest to avoid the abuse of intellectual property rights (Wright, R., 2009).

These aim to balance the legitimate interests of rights holders and users. The object of copyright protection includes literary, scientific, and artistic works, regardless of the mode or form of expression. The main provisions on copyright and related rights are provided in the Berne Convention. The TRIPS Agreement brings clarifications and additions to the Berne Convention on the following aspects: computer programs and databases, rental rights for computer programs, audio and video recordings, rights of performers and phonogram producers, broadcasting organizations' rights. The Agreement stipulates that performers or executors have the right to prevent unauthorized recording, reproduction, and broadcasting of their performance for a period of not less than 50 years. (Correa, C. M., 2020).

The Paris Convention lays out the global framework for trademark regulations, which are further expanded by the TRIPS Agreement in several key aspects. These expansions include clarifying the definition of "trademark," detailing the exclusive rights held by trademark owners, banning the enforcement of specific prerequisites for trademark utilization, and governing the licensing, assignment, and annulment of trademarks. The Agreement mandates that service marks receive the same level of protection as trademarks associated with goods. Trademarks that achieve notable recognition in a given country are afforded extra safeguarding. From the time of initial registration, the rights to a trademark are protected for a minimum of seven years, with the possibility for indefinite renewal of each registration. Article 15.1 of the TRIPS Agreement specifically addresses the requirements for trademarks and their registration under this framework (Zhan, Q., 2016).

Not all countries customarily protect industrial designs, which include ornamental features of products. Industrial designs are mainly protected for consumer goods, such as textiles, leather goods, etc. The TRIPS Agreement requires member states to protect industrial designs that are new or original. Industrial designs and models must be protected for at least 10 years.

Geographical indications aim to inform the consumer that a product possesses certain qualities, reputation, or other characteristics essentially attributable to its geographical origin. A common example of how geographical origin indications can mislead the public is "Champagne," which is not a trade mark but a region in France. The TRIPS Agreement stipulates that member states must prevent the misuse of locality names as trademarks. The Agreement provides a higher level of protection even in cases where there is no risk of confusing consumers.

The Agreement stipulates that for an invention to be patentable, it must be novel, involve an inventive step, and be capable of industrial application. Patent grant refusal can occur if commercial exploitation of the invention is prohibited for reasons of public order or morality (https://www.europarl.europa.eu/portal/en/article/2019 0912STO60951/parliament-says-no-to-patenting-plants-bred-naturally)

Diagnostic methods, therapeutic methods, animals, and essentially biological processes for the production of plants and animals can be excluded from patentability. The Agreement describes the minimum rights that a patent holder may enjoy (Art.28 TRIPS). Inventors must be assured patent protection for at least 20 years.

The basis for the protection of integrated circuit layouts in the TRIPS Agreement is the Washington Treaty on Intellectual Property in Respect of Integrated Circuits (Abbott F.1989). This treaty was adopted in 1989 but has not entered into force. Additional provisions stipulate that unauthorized import or sale of products incorporating a protected integrated circuit will be considered illegal. The minimum duration of protection is 10 years from the date of registration or from the date of first commercial exploitation.

Trade secrets and other types of undisclosed information that have commercial value must be protected against breach of confidentiality and other actions contrary to honest commercial practices. Additionally, test data submitted to governments for the approval of new pharmaceutical or chemical agricultural products must be protected against unfair competition. To ensure that enhanced and increased protection of intellectual property rights does not adversely affect technology transfer under reasonable commercial terms, the Agreement provides that countries may adopt appropriate measures, including legislative ones, to prevent intellectual property rights holders from abusing their rights or adopting protections that unreasonably restrain trade.

The existence of intellectual property laws is not sufficient as they must be implemented, says the TRIPS Agreement in Part III. At the time of the entry into force of the WTO Agreements on January 1, 1995, developed countries were given one year to harmonize their practices and laws in accordance with the TRIPS Agreement. The Agreement provides a transition period of 5 years (i.e., until January 1, 2000) for developing countries and a

transition period of 11 years for the least developed countries. If a developing country does not ensure the protection of patented products in a certain technology field when the TRIPS Agreement came into force (January 1, 1995), it is granted 10 years to introduce such protection. For pharmaceutical products and chemicals used in agriculture, states have accepted the procedure of filing patent applications from the beginning of the transition period, although the patent does not necessarily have to be granted by the end of this period.

The general rule, with some exceptions, stipulates that in accordance with the Agreement, those intellectual property obligations existing at the moment of a country's transition period, as well as new rights will apply.

3. The Patent Granting Procedure

Internationally, Romania has signed and ratified several bilateral and multilateral agreements in economic and commercial fields that include provisions regarding the commercialization of intellectual property rights. Among these are the Final Act of the Uruguay Round GATT including TRIPS and the establishment of the World Trade Organization, the Free Trade Agreement with the European Free Trade Association, and the Association Agreement with the European Union.

An important requirement of the Association Agreement with the European Union, signed in 1993, refers to Romania's need to apply for accession to the European Patent Convention by 1998. To prepare for accession, Romania signed a cooperation agreement with the European Patent Office in 1994, which came into force on October 15, 1996, and provides for the possibility of extending the protection granted by the European patent to Romanian territory.

The 1973 Convention on the Granting of European Patents laid the groundwork for a unified approach to patent granting and commercialization across Europe, carefully balancing this uniformity with the preservation of national legal diversities. This Convention enables member states of the European Patent Organization to issue a European invention patent, which is then recognized and valid in all member states, facilitating the commercialization of these intellectual property rights across borders. Despite this pan-European framework, the Convention does not encroach upon the sovereign rights of member states to protect and commercialize intellectual property within their own territories. States retain the autonomy to issue patents according to their legal standards and to handle disputes domestically, ensuring a rich tapestry of legal practices within Europe.

This document not only standardizes the patent process across member states but also maintains a dialogue between European and national legislative frameworks, illustrating a comprehensive approach to intellectual property rights management. The European Patent Office plays a pivotal role in this system, managing the initial stages of patent application, from granting filing dates to verifying compliance with the Convention's stipulations. This process underscores the principle of impartiality, disallowing any decision overlap and ensuring a fair and transparent evaluation of patent applications.

Significantly, the Convention details the procedural steps for patent granting (Norman, G., Eisenkot, R., 2017) from application to issuance, emphasizing the rigorous standards set out in Articles 90-134. The European Patent Office's responsibilities extend to the compilation and publication of a European documentary research report, pivotal for the patent's commercialization prospects. In instances of non-compliance with the Convention's conditions, applications can be excluded, highlighting the strict adherence to established guidelines.

Moreover, the Grand Board of Appeal serves as a crucial arbiter in disputes of significant financial and legislative importance related to intellectual property rights commercialization. Its involvement ensures the consistent application of law across the European Patent Organization, addressing potential inconsistencies in appellate decisions and focusing on

predetermined legal issues. The Convention also accommodates the revocation of European patents within individual contracting states under specific conditions, reflecting a nuanced understanding of the need for flexibility within the overarching European legal framework for intellectual property rights.

This intricate balance between European-wide standardization and national legal sovereignty encapsulates the Convention's aim to foster an environment conducive to innovation and commercialization, while respecting the legal traditions and prerogatives of individual member states.

- The European patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art;
- The subject matter of the European patent extends beyond the content of the application as it was filed;
- The patent was granted for a European patent application that was a divisional application or for a new application filed under Article 61 of the Convention, beyond the content of the previous application as filed;
- The protection conferred by the European patent was extended;
- The holder of the European patent is not entitled according to Article 60, paragraph 1 of the Convention.

The legislative framework governing the patenting procedure in the Romanian legal system is established by the following normative acts: Law No. 64/1991 on patents for invention, amended and supplemented by Law No. 203/2002, republished, Government Decision No.499/2002 approving the Implementing Regulation of Law No. 64/1991 on patents for invention, Law No. 381/2005 amending and supplementing Government Ordinance No. 41/1998 on fees in the field of industrial property protection and their utilization regime, Law No. 611/2002 on Romania's accession to the Convention on the Granting of European Patents adopted in Munich on October 5, 1973, and to its revision act adopted in Munich on November 29, 2000.

In the Romanian legal system, innovation-related applications must comply with the provisions of Law No. 64/1991 and be addressed to the State Office for Inventions and Trademarks (OSIM). In Romania, the possibility exists for the annulment of the invention patent granted by OSIM, as well as the annulment of a European patent with effects in Romania, if it is determined that: the subject of the patent is not patentable according to Articles 7-10, 12, and 13 of the law; the subject of the patent does not describe the invention clearly and completely enough for a specialist to carry it out; the subject of the patent exceeds the content of the application as it was filed; the protection conferred by the patent was extended; the patent holder was not entitled to the grant of the patent.

The patent holder, as well as the licensee authorized to commercialize the intellectual property rights arising from the invention patent, may request the court to take protective measures when there is a risk of infringement of the rights arising from an act of commercialization of intellectual property rights and if such infringement risks causing irreparable financial harm or if there is a risk of evidence destruction.

An interesting legal provision found also in the legislations of other European countries allows a person who proves they are working on an innovation/invention and fears they might infringe an already granted patent to request a court ruling to determine whether there is indeed such an infringement. Although the objective pursued by instituting such a provision is to avoid misunderstandings, the court's statement does not preclude a subsequent lawsuit for infringement or nullity of the patent as a result of the commercialization of illicit intellectual property rights.

The adoption of the Convention of October 5, 1973, for the Granting of European Patents led to the instruction of a uniform procedure benefiting all European states that chose to be

part of this Convention. However, the European procedure remains optional for the patent applicant, who also has the specific national norms at their disposal.

The second observation is that, despite the nuances generated, as shown, not only by the legislator's vision but also by the financial system's context and the state organization form of each country, there are a series of universally applicable principles for the patent granting procedure, including, as an example, the access of interested persons to remedies at each significant procedural moment, the exhaustive enumeration of cases for the annulment of an invention patent, the establishment of independent entities/organizations to handle applications related to invention patents, and the possibility of judicial review of their decisions.

4. In conclusion

The examination of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) within the context of the evolving international legal framework for intellectual property rights underscores a critical intersection between legal standards for protection and the economic imperatives of globalization. This analysis reveals the dual imperative of safeguarding creators' and innovators' rights while fostering an environment conducive to trade and economic development. As nations strive to harmonize intellectual property laws with the principles enshrined in TRIPS, a delicate balance must be achieved between enforcing stringent protections and ensuring that such measures do not stifle innovation or impede the free flow of goods and services across borders. The paper highlights the instrumental role of entities such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO) in facilitating this balance, emphasizing the importance of international cooperation and the need for a dynamic legal framework that adapts to technological advancements and changing economic landscapes. The TRIPS agreement's minimum standards for intellectual property protection serve not only as a baseline for national laws but also as a catalyst for fostering uniformity in a fragmented global system.

Furthermore, the analysis elucidates the economic implications of intellectual property rights on trade, innovation, and global market integration, arguing that well-defined and enforceable intellectual property rights are pivotal to incentivizing innovation, attracting investment, and promoting economic growth. However, it also cautions against the potential for intellectual property rights to be leveraged in ways that may hinder competition, restrict access to knowledge, and thereby impede economic development in less developed economies. This study calls for ongoing research into the economic impacts of intellectual property rights within the global trade system, suggesting that future policy formulation should be guided by empirical evidence on the interplay between intellectual property protection and economic prosperity. It advocates for a nuanced approach that considers the diverse needs and developmental stages of WTO member countries, ensuring that intellectual property laws do not only serve the interests of the economically dominant but also foster a more equitable global economic environment. Ultimately, this paper underscores the necessity for a harmonious integration of intellectual property rights within the global financial architecture, aimed at realizing the full potential of intellectual property as a driver of innovation, cultural diversity, and economic well-being worldwide.

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FINANCING INNOVATION: THE ROLE OF FUNDING IN THE EFFICACY OF UNIVERSITY TECHNOLOGY TRANSFER ENTITIES

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Abstract: *This study explores the evolving role of universities in the modern economy, focusing on their transformation from traditional centers of education and research to dynamic hubs of entrepreneurship and technology transfer. Drawing from Schumpeter's theory of entrepreneurship, which emphasizes the critical role of innovation and the entrepreneur in catalysing economic change, this paper argues that contemporary universities have adopted a* third mission *of economic development, complementing their foundational roles in teaching and research. The paper introduces the concept of the entrepreneurial university, a term that captures the institution's enhanced involvement in technological innovation and its contribution to economic growth through the commercialization of research. The research discusses various models of innovation that have shaped our understanding of the knowledge transfer process, including the linear model of innovation, the triple helix model, and the open innovation model. These models provide a theoretical framework for analysing the mechanisms through which universities contribute to the economy, highlighting the importance of collaboration between academia, industry, and government. The paper pays particular attention to the role of Technology Transfer Entities (TTEs) within universities, which are instrumental in managing intellectual property, licensing inventions, and fostering partnerships with external stakeholders. Through a comprehensive analysis, the paper reveals that while the financial benefits of knowledge transfer from universities are increasingly recognized, there remains a significant research gap in understanding how university knowledge can be effectively transformed into economic benefits. This gap is particularly pronounced in the context of transition economies, where data on knowledge transfer mechanisms and their impact on innovation and economic growth is scarce. The study emphasizes the need for a multidimensional approach to assess the effectiveness of university TTEs, considering individual, organizational, and ecosystem-level characteristics.*

Keywords: *entrepreneurship; technology transfer; innovation models; knowledge spillover*

JEL Classification: *O32*

Background - Schumpeter's theory of entrepreneurship

If we want to understand the transformations that have taken place in universities and their transformation from *ivory towers* to institutions with a fundamental role in the transfer of technology, knowledge and research in the broadest sense, we should start from Schumpeter's theory of entrepreneurship, which stresses the importance of innovation, the concept of creative destruction and the crucial role of entrepreneurs in catalysing economic change (Schumpeter, 1949). It continues to be a key cornerstone of entrepreneurship theory. The concepts introduced by Schumpeter have become a fundamental reference point in the study of entrepreneurship, highlighting how innovation and entrepreneurship drive economic progress and social transformation. This theory has profoundly influenced our understanding of modern economic dynamics, recognising the entrepreneur not just as an economic agent,

but as an innovator and driver of change, who by taking risks and implementing new ideas, business models or technologies, contributes to the continuous evolution and adaptation of the market. Schumpeter's theory thus maintains its relevance, providing a solid basis for analysing and interpreting the entrepreneurial phenomenon in contemporary society.

Contemporary universities have adopted numerous roles in society (Etzkowitz et al., 2000). A new entrepreneurial paradigm is emerging in which the university plays an enhanced role in technological innovation. The entrepreneurial university has become a global phenomenon with an isomorphic development path, despite different starting points and different modes of expression. There is empirical evidence that the identification, creation and commercialisation of intellectual property have become institutional goals in various academic systems. Coming from different academic and national traditions, the university seems to arrive at a common entrepreneurial format in the late 20th century. The entrepreneurial university encompasses a *third mission* of economic development, in addition to research and teaching, although the precise form this takes may vary. One model by which we can interpret these changes is that of the 'triple helix' (Etzkowitz and Leydesdorff, 1999). A triple helix of university-industry-government relations transcends previous models of institutional relations, in which economics or politics dominated, with the knowledge sector playing a secondary role. The triple helix model attempts to outline a new configuration of emerging institutional forces in innovation.

At the beginning of the 21st century universities have acquired multiple roles (Bishop et al., 2011; Perkmann et al., 2011, 2013) that include teaching, research, involvement in (or service to) society and the entrepreneurial function. Originally designed to encourage technology transfer and the creation of knowledge-based startups, the entrepreneurial university has broadened its spectrum of activities within the entrepreneurial society, now focusing on strengthening entrepreneurial capital and promoting behaviours that contribute to success in an entrepreneurial environment (Audretsch, 2012). Universities are implementing profound changes to become more entrepreneurial (Díez-Vial and Montoro-Sánchez, 2016) and technology transfer processes are being established to promote the commercialisation of research. Commercialisation of research requires building a strong external partnership with ecosystem stakeholders (Bozeman and Gaughan, 2007; Bekkers and Freitas, 2008), such as entrepreneurs, universities, local and national government, private industry.

Exploring the Untapped Financial Benefits of University Knowledge Transfer

The financial benefits of knowledge transfer from universities have not yet been sufficiently explored, leading to increased interest from both entrepreneurship researchers and policy makers in advanced nations. This research gap highlights the need for a deeper understanding of how university knowledge can be transformed into tangible economic benefits, thereby stimulating innovation and economic growth in modern societies in both developed (Chapple et al., 2005; Kalar and Antončić, 2015; Abreu et al., 2016) and developing countries (Bajmócy et al., 2010).

Responding to opportunities to commercialize public research, universities have explored a range of university knowledge transfer models with entrepreneurship centers, university incubators, science parks, and ETTs (O'Kane et al., 2015). However, these models have internal contradictions. The authors note that university ETTs (22 universities in Ireland, New Zealand and the USA are studied) have a dual identity, one scientific in relation to academics and the other business in relation to university management. The authors conclude that when building legitimacy on the two different pillars shaping and mixing two contradictory identities distorts identity and ultimately diminishes legitimacy with both sides. The solution is for the executives of these TTEs to integrate both aspects and formulate a new and stable identity. It is important to note that these TTEs function as genuine bridges between academia and industry, with responsibility for managing intellectual property, licensing

inventions from academia, and initiating and developing collaborations with external partners (Clayton et al., 2018; Hsu and Kuhn, 2022). Through this intermediation, OTTs are instrumental in translating scientific knowledge into practical applications with tangible benefits for society (Polasko et al., 2021).

The effectiveness of these offices in mediating collaboration between academia and industry is vital for optimising the transfer of scientific knowledge to practitioners, thereby improving the transfer of scientific knowledge (Hsu & Kuhn, 2022; Lee & Lee, 2020). They are essential in overcoming obstacles such as cultural differences, bureaucratic challenges and inefficient management practices, which might otherwise hinder the successful transfer of technology from academia to the corporate world (Hsu & Kuhn, 2022). In addition, Technology Transfer Offices play a crucial role in founding academic spin-offs and startup companies, thus stimulating entrepreneurship and innovation. By supporting the formation of academic startups and facilitating the process of technology licensing to external firms, these offices are key players in promoting economic growth and a culture of innovation within higher education institutions (Holgersson & Aaboen, 2019).

Although substantial research on academic entrepreneurship has been conducted in developed economies (Powers and McDougall, 2005; Perkmann et al., 2011; Al-Tabbaa and Ankrah, 2016; Huyghe et al., 2016), the field remains fragmented and incomplete in transition economies (Tchalakov et al., 2010). Especially for former Soviet bloc countries, relevant data on knowledge transfer mechanisms from universities, regulation, incentives, culture and external research investment are lacking (Tchalakov et al., 2010). To measure the impact of university TTEs the indicators that should be measured are numerous, e.g. the amount of local and international publications, position, workload, research sponsorship, collaboration and awareness that these entities benefit from.

An analysis of the functioning of university-based ETTs should also take into account organisational-level characteristics (university ownership, ETT availability, contractual relationship with the ETT) and ecosystem-level characteristics related to funding of scientific research by government, private industry at home and abroad, affiliated university, foreign universities or institutions, non-profit organisations, other public organisations). Only if we measure and assess all these indicators can we get a fair picture of the functioning of university TTEs. There is another important source of funding that needs to be taken into account when analysing university TTEs. Direct industrial funding has demonstrated its strength as a means of university knowledge transfer (Boardman and Ponomariov, 2009; Czarnitzki et al., 2016). Direct industrial funding is defined as direct financial support from industry for technology development by one or more academic scientists. Several studies attempt to establish the role of university FTEs and direct industrial funding in commercialising research by scientists in transition economies (Grimaldi et al., 2011; Bradley, 2013; Theodoraki and Messeghem, 2017).

Recent research examines university TTEs from the perspective of the knowledge spillover theory of entrepreneurship (KSTE). Knowledge spillover theory of entrepreneurship is a concept that refers to the potential loss or unauthorised transfer of knowledge from one entity to another, particularly in the context of entrepreneurial activities. This theory suggests that knowledge, which is a valuable asset for entrepreneurs, can escape, either accidentally or intentionally, from within an organisation, which can lead to challenges such as loss of competitive advantage, theft of intellectual property or diminished innovation capacity.

While knowledge spillover theory in entrepreneurship focuses on the positive aspects of knowledge sharing and transfer in stimulating economic growth and innovation, knowledge spillover theory highlights the risks and negative consequences associated with unauthorised or unintended dissemination of proprietary knowledge. Understanding the phenomenon of knowledge leakage is essential for entrepreneurs to implement effective strategies to protect intellectual property, maintain competitive advantage and mitigate the risks of knowledge loss.

A starting point in the analysis of knowledge leakage theory in entrepreneurship (KSTE), should start from the concepts presented by Ács et al. (2013) and Chang (2021) to which we add the stakeholder perspective on the structure of the entrepreneurial ecosystem (Grimaldi et al.,2011). As we have shown above the analysis of university TTEs needs to take into account the broader context of the functioning of universities. In doing so, approaches to academic entrepreneurship (Aldridge and Audretsch, 2011; Perkmann et al., 2011, 2013) and entrepreneurial ecosystem studies (Ács et al., 2014) need to be taken into account, while investigating the process of commercialization of research in modern economies. The aspects that the analysis should encompass relate to individual, organisational and ecosystem level characteristics, as outlined by Boardman and Ponomariov (2009).

This multidimensional approach allows us to provide a comprehensive perspective on the dynamics and complexity of the research commercialisation process in the specific context of advanced economies as well as economies in transition, highlighting the importance of a thorough understanding of the different levels of influence and interaction between them.

Innovative Models and Theories for Enhancing Technology Transfer

Due to the above arguments, in practice, ETTs use financial models that are strictly specific to technology transfer and try to encompass all these approaches in a single financial model. Technology transfer models focus on the mechanisms and strategies by which knowledge and innovations are transferred from research to industry for commercialisation and deployment. Although many of the models discussed in the context of innovation are not strictly economic, they have profound economic implications and are developed or supported by recognised economic theorists. The best-known models that are strictly specific to technology transfer are the linear model of innovation, the triple helix model and the open innovation model.

Linear model of innovation. The linear model of innovation is one of the oldest and most simplified models describing the process of innovation and technology transfer. Rather, this model is a conceptual model that describes the innovation process as an ordered and unidirectional sequence of phases: starting with basic research, followed by applied research, development, production and, finally, market commercialisation. This approach suggests that innovations progress linearly from the generation of scientific ideas to market applications and products. Although the linear model of innovation does not deal directly with economic analysis or market mechanisms in the way that classical economic models might, it has important economic implications. It emphasises the role of basic research as the source of innovations that can then be commercialised, which involves investment in research and development (R&D) and the management of intellectual property. In this sense, the model can be integrated into economic strategies and innovation policies aimed at stimulating economic growth through technology and innovation.

The linear model is not attributed to a single scientific personality as it represents an early and simplified conceptualisation of the innovation process. However, Vannevar Bush is often cited for his influence on post-World War II science policy, promoting investment in basic research through his report "Science, The Endless Frontier" (Bush, V., 1945). The criticism of the linear model is that it oversimplifies the innovation process, neglecting feedback from the market, the complex interactions between different phases of innovation and the role of collaboration between different actors in the innovation ecosystem (e.g. universities, industry, government). In response to these limitations, alternative models have been proposed, such as the Triple Helix model or the open innovation model, which recognise the iterative nature and collaborative networks involved in the innovation process.

The Triple Helix Model for Innovation was developed by Henry Etzkowitz and Loet Leydesdorff and represents a groundbreaking paradigm in the study of innovation dynamics and technology transfer (Etzkowitz, H. and Leydesdorff, L., 1998). This model goes beyond

the traditional view of the separate and often isolated roles of academia, industry and government, proposing instead a framework in which synergy and collaboration between these three spheres can accelerate technological and economic progress. This model advances the idea that academia, industry and government can play interlinked and complementary roles in promoting innovation. Universities are not only centres of research and education, but also active economic players contributing to start-ups, technology licensing and regional economic development. Industry, on the other hand, is not limited to applying existing technologies, but can stimulate applied research and support academic development through partnerships and funding. Government, in its traditional role as a funder of research, also becomes a facilitator of collaboration between technology transfer entities and industry, providing not only financial resources but also creating a legislative and policy framework conducive to innovation.

The Triple Helix model thus proposes an integrated and interactive approach, where the boundaries between the public and private sectors blur, favouring the creation of new hybrid structures such as science parks, business incubators and collaborative research initiatives. These structures facilitate knowledge and technology transfer, helping to commercialise innovations and stimulate economic growth in a knowledge-based economy. One of the key aspects of the model is the recognition of the active role of universities in the economy, which, through their commitment to entrepreneurship and innovation, become a central hub in the network of government-industry relations. This implies a reconfiguration of the traditional academic mission, emphasising not only research and education but also technology transfer and collaboration with industry as fundamental elements of university activity. The Triple Helix model, by facilitating a collaborative framework in which information, resources and objectives are effectively disseminated and coordinated, aspires to optimise innovation processes and amplify technological and economic effects, thus contributing to strengthening the financial performance of the technology transfer sector. Successful implementation of this model, however, requires adaptive policies, organisational flexibility and a shared strategic vision among all actors involved, challenges which, once overcome, can profoundly transform the way society approaches innovation and technological development.

Open Innovation Model. The Open Innovation Model was conceptualised by Henry Chesbrough and marks a revolutionary paradigm in strategic innovation management (Chesbrough, H., 2003). Diverging from the traditional closed innovation paradigm, which assumed that the processes of developing and commercialising new products and technologies must be strictly confined to internal corporate boundaries, the Open Innovation Model proposes a much more permeable and interactive framework. It advocates the systematic integration of external knowledge and expertise into companies' innovation processes, stressing that two-way flows of information and technology can significantly enrich innovation capacity and shorten time-to-market for innovations.

Under this model, technology transfer entities become vital nodes in the innovation network, facilitating effective interaction and collaboration between various corporate entities and research institutions, such as universities and public or private research laboratories. This interaction is essential for accessing a vast reservoir of knowledge and technologies that would otherwise remain untapped or isolated in academic or corporate silos. The open innovation model recognises and harnesses the diversity of sources of innovation, including start-ups, spin-offs, available patents, scientific publications, and cross-sector collaborations, thereby fostering a more dynamic and adaptive innovation ecosystem. By opening organisational frontiers, companies can benefit from new growth opportunities, access new markets and develop innovative solutions to today's complex challenges. Moreover, the model highlights the need for effective intellectual property protection mechanisms that allow for secure knowledge sharing without compromising competitive advantages. This requires a thorough understanding of the legal and commercial aspects of

innovation collaborations and the development of flexible and transparent intellectual property policies.

Successful implementation of open innovation requires an organisational culture that is receptive to change, collaborative and open to exploring external opportunities. It also requires robust innovation management capabilities to identify, evaluate and integrate external knowledge into development projects. In conclusion, the open innovation model is a key strategic approach for organisations in the dynamic context of the knowledge economy, providing a framework for accelerating innovation and fostering sustainable growth through cooperation and knowledge sharing. Technology transfer entities, through their role as facilitators of this collaboration, are key to realising the innovative potential of this model.

In conclusion

In summary, the financial models of Technology Transfer Entities focus on the financial valuation of assets, innovations, start-ups or spin-offs, with a particular emphasis on the analysis of investments, cost of capital and financial structure of these entities. The aim of these models is to estimate the present value of assets or projects, analyse the return and risk of investments and optimise financial decisions. Financial models are essential in the financial evaluation of innovative technologies or start-ups and spin-offs, facilitating investment, financing and licensing decisions. They allow the financial value of innovations to be calculated, the cost of financing to be determined and the financial risks associated with technology transfer projects to be analysed.

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HALF A CENTURY OF PROGRESS IN CONTROLLING

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Abstract: *The science of controlling has made significant advances in recent decades. Managerial accounting, linked to financial accounting, has evolved to bring together the accounting and planning of costs and results, permeating the entire activity of the company, from finance to production, sales, marketing, human resources processes, satisfying the growing information needs of management. In the development of controlling, a distinction can be made between trends specific to the Anglo-Saxon and German-speaking areas. The basic difference is that the Anglo-Saxon approach sees controlling as an integral part of management, with the main task of helping to allocate resources efficiently. The German approach, on the other hand, sees controlling as an independent information-producing tool, a separate organisational unit, on the basis of which the various planning and control processes of management are implemented. Common to both approaches is that controlling is not limited to operational management areas but is increasingly extended to strategic levels, thus helping to improve corporate performance effectively.*

Keywords: controlling, financial accounting, management accounting, management

JEL Classification: G12, G15, G32

1.Literature review

The increasingly global economic environment inevitably goes hand in hand with the growing information needs of business organisations. This demand for information is reflected both at the operational and strategic levels (Nagy, 2016; Lakatos et al., 2020). The availability of information of sufficient quality, quantity and timeliness is essential at all hierarchical levels, for planning and controlling the efficiency of related activities and processes. The most important task of controlling is to ensure that the right amount and quality of up-to-date information is available at the right place and time to make the right decisions.
Initially, the growing need for information and its satisfaction was mainly related to the field of financial accounting, then the field of management accounting developed, gaining ground in the field of management and organisation science, which inevitably meant the development of controlling methodology and procedures, making management decision support even more effective.

2. Key milestones in the development of controlling

As already mentioned, most of the information needed for controlling comes from the accounting information system, and it is therefore of particular importance to mention the scientific work Summa de Arithmetica, Geometria, Proportioni et Propotionalita, published in 1494 by Luca Bartolomeo de Pacioli, the mathematician who laid the foundations of double-entry bookkeeping and thus of financial accounting. Prior to this, accounting had no established methodology and was in fact simply the activity of recording economic events (Baricz - Róth, 1994).

The next major milestone in the history of accounting dates back to the 18th century, when theories of accounts appeared. By the end of this century, controlling had appeared and the tasks of the controller were defined. Already in the US Constitution of 1776, the controller's function was defined, which was to supervise the expenditures and revenues of the public administration, with an eye to economy (Horváth, 2003).

Then, at the beginning of the 19th century, accounting theories appeared, which contained the detailed rules for drawing up the accounting balance sheet, and at the same time, significant progress was made in the field of controlling, and the corporate controlling of today was developed in the United States of America following the Industrial Revolution. This period saw the emergence of divisional organisations, characterised by management problems, which corporate controlling was designed to solve by breaking down corporate activities into parts, making coordination, management and control easier (Körmendi - Tóth, 1998). However, controlling also facilitated aggregation through the dimension of money. The real spread of corporate controlling in the United States of America was linked to the emerging economic crises of the late 19th and early 20th century. In Western Europe, the development of the controlling discipline gained momentum and its application in the corporate sector began to spread in the mid-20th century, starting in the 1950s, and in our country some three decades later, in the 1980s (Zéman, 2016).

In the history of the development of controlling, Mészáros (1995) identified four defining characteristics:
- diffusion in different corporate areas;
- sector-specific controlling systems;
- the separation of operational and strategic controlling;
- different developmental characteristics in the Anglo-Saxon and German areas.

Starting from the financial area, controlling affects all areas of the company, including purchasing, production, logistics, sales, marketing, R&D, and human resource management, and sector-specific controlling systems have also developed, for example, the controlling system of a bank and that of a trading company have different characteristics (Kalmár et al., 2015). Besides function-oriented and sector-specific characteristics, we have to distinguish between operational and strategic controlling, which developed later. Operational controlling typically provides an adequate supply of information in a more predictable environment, but the dynamic changes in the economic environment have shifted the focus to strategic controlling. Controlling has different developmental characteristics in the Anglo-Saxon and German regions. In the United States of America, for example, strategic controlling came to the fore later, whereas in the German-speaking world it became more prominent in the 1980s, and in this respect, there is of course a continuous convergence between the two language areas, with strategic controlling becoming increasingly important in the Anglo-Saxon language area as well (Hágen - Méhesné, 2014). The other fundamental difference relates to the position of controlling within the organisational framework, the Anglo-Saxon approach sees controlling as an integral part of management, while the German approach sees controlling as an information-producing tool, a separate organisational unit that allows the manager to carry out various planning and control processes (Hanyecz, 2011). What they have in common, however, is that both approaches see controlling as a key to successful management, helping management to ensure that the company allocates available resources efficiently in production and other activities. Documenting plan-fact data, monitoring company processes and identifying the causes of discrepancies between plan and fact data are of paramount importance (Böcskei et al., 2015).

As mentioned earlier, in Hungary, the use of controlling in companies spread in the 1980s, when the first controlling systems were introduced by large companies with divisional organisational development and management problems. In addition to the management problems that arose, the increasing competition due to the continuous opening of markets and the emergence of multinational companies on the Hungarian market made it necessary to introduce corporate controlling systems, and the Hungarian subsidiaries of multinational

companies naturally also applied the controlling system of their parent company. In Hungary, the German approach is the dominant one, still typically isolated within the organisational framework (Bodnár - Vida, 2008). However, it is worth highlighting that the IGC (International Group of Controlling) modified the definition of the mission of controlling at its meeting in January 2013, erasing the differences between the Anglo-Saxon and the German approach, focusing on the goal of improving organisational performance (Blumné - Zéman, 2014).

3. The concept of controlling

The term "controlling" is derived from the English verb "to control", which means to direct, regulate, supervise, control. Many people still identify controlling in this way, focusing on its control function, but it should be stressed that controlling is much more than this (Schmalen, 2002).

The conceptual definition of controlling is very diverse. Several definitions emphasise the role of the controlling navigator, illustrating the role of the controller on board a company's ship as the pilot or, in other words, the controller as the autopilot, who, using various planning and control methods supported by calculations, supports the actions of the company's management with the right quality and quantity of up-to-date information to make quick and appropriate decisions, thus helping to steer the company towards its objectives (Horváth, 1993).

Schmalen's definition of controlling does not emphasise the feedback function, but stresses the anticipatory role of controlling, i.e. in his formulation, one of the main tasks of controlling is to identify and draw the attention of managers to disturbing factors affecting operations and to force appropriate responses (Schmalen, 2002). Common to these definitions is the identification of the controller as a corporate advisor and the emphasis on the very close relationship between management and controlling. The main differences between the definitions of controlling are related to its location within the organisational framework, in the Anglo-Saxon world, the so-called management control concept has become widespread, being an integral part of management. These definitions tend to emphasise controlling's adaptation to the organisation and its environment. In contrast, the German understanding of controlling is that it is the creation of a system of tools to support management in making the right decisions and to support results-oriented management (Horváth, 1993). It can be seen that the difference between the two understandings is more conceptual and less substantive.

4. The system and process of controlling

The complexity of controlling makes it essential to link it at the systemic level. This linkage supports the understanding and analysis of complex business processes, clearly showing, for example, the logical relationship between planning, control and information provision, as highlighted by Chikan (2003).

The controlling system is present as a coordinating system in corporate operations, thus creating coherence in the context of planning, control and information provision. Figure 1 shows the location of the controlling system within the organisation.
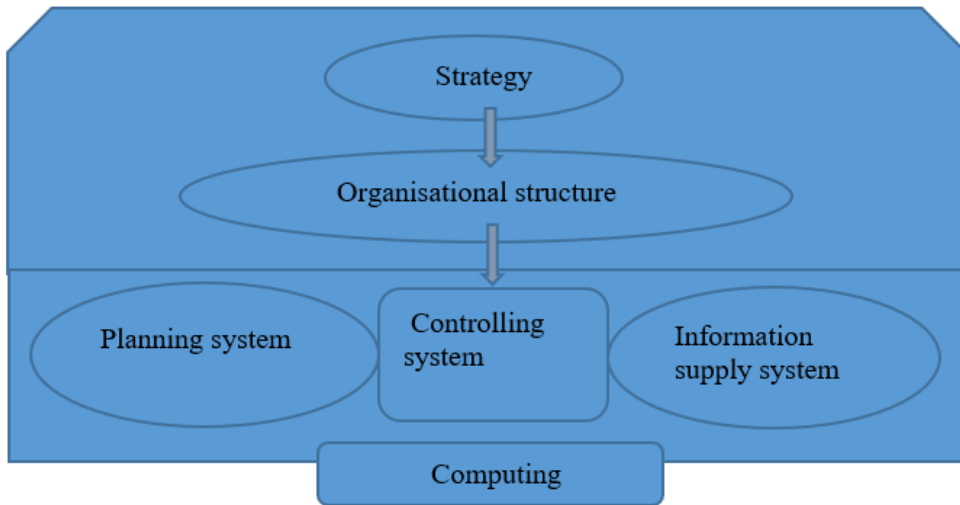
Figure 1: Location of the controlling system within the organisation
Source: Horváth and Partner (1997)

As illustrated in Figure 1, the controlling system links the strategic, tactical and operational planning system within the organisational framework to the information supply system, which includes management accounting and the reporting system supported by financial accounting. Figure 1 also illustrates that the controlling system provides the tools for proper coordination and also means the performance of specific tasks. With regard to the tools of controlling, it should be emphasised that controlling focuses on improving the economic performance of the company and thus develops its tools. Its main information base is the accounting system itself, using financial accounting information to produce management accounting information (Körmendi - Tóth, 1998). Controlling relies heavily on the computer background. The supporting software is typically a computerised information system, ERP (Enterprise Resource Planning). These computerised information systems manage the accounts for all company processes in a uniform, integrated way, thus providing a huge information base for controlling.

A controlling system is a kind of circular flow of activities, as illustrated in Figure 2.
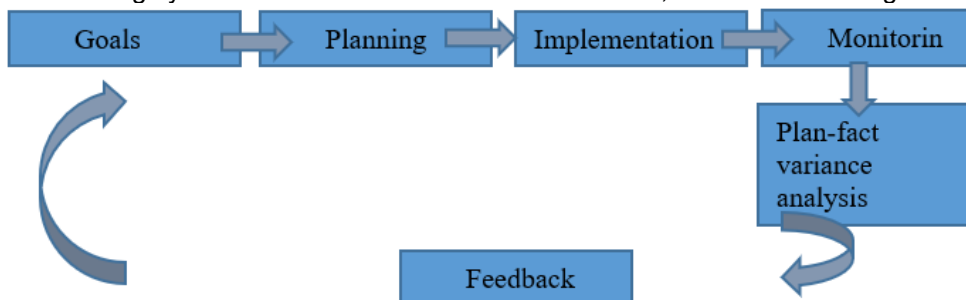
Figure 2: Location of the controlling system within the organisation
Source: (Schmalen, 2002)

Schmalen's diagram is an excellent illustration of the process nature of controlling. The basis of planning is the setting of objectives, and controlling's task is to set appropriate, achievable objectives. Controlling is one of the key elements of the planning function, playing a major role in the methodological underpinning and professional monitoring, coordinating the various sections of the plans drawn up and presenting the plans to senior management at

operational, tactical and strategic level. Of course, the role of controlling is not only important during the planning phase, but also during the implementation of the plans, using appropriate performance indicators to monitor the success of the plans, analyse the deviations between the plans and the facts, and, if necessary, make recommendations for the necessary corrections and provide a kind of feedback (Chikán, 2003).

In addition to these basic functions, controllers have the important task of learning about new methods, evaluating them and examining the possibility of adapting them, and possibly introducing them, thereby improving the controlling organisation (Hahn, 2005). Of course, it is not advisable to set up a separate controlling organisation for all sizes of company, but it may be necessary for medium-sized and large companies because of the complexity of the organisational structure and the complexity of the activities.

5. Conclusions

The field of controlling has developed steadily over the last decades, responding to the challenges of the industrial revolution and globalisation. In today's dynamically changing economic environment, successful operation is inconceivable without the application of basic controlling functions, and in the case of larger companies, the operation of a separate controlling organisation within the company's operations is justified. However, for smaller companies, the fact that the same person is responsible for the managerial and controlling functions within the organisation often causes problems, so that the true coordinating role of controlling cannot be achieved. However, a well-designed accounting and ERP system, and the controlling system based on it, is not a guarantee of success, it is not a competitive advantage in itself, it is essential for the company to produce the right product or service for the market through an efficient production process.

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ASSESSING HOUSING AFFORDABILITY: ANALYSIS OF PROPERTY TAX SYSTEMS IN EUROPEAN COUNTRIES

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Abstract: *This paper examines the relationship between property tax systems and housing affordability in European countries. The research contains not only theoretical section, but also empirical analysis. The statistical data used in research was extracted from Eurostat, OECD, and Tax Foundation. As housing affordability increasingly becomes a pressing issue in many European cities, understanding the role of property taxation in shaping affordability dynamics is crucial for policymakers, researchers, and stakeholders. Addressing housing affordability challenges requires a comprehensive understanding of the factors influencing housing costs, with property tax systems playing a pivotal role in shaping housing market dynamics. Through a comprehensive literature review, the paper explores existing research findings on the correlation between property taxation and housing affordability. Utilizing data from the Eurostat database, I conduct a comparative analysis of property tax collection statistics across Europe. It focuses on property tax revenues as percentage of total private stock. In assessing housing affordability, two key indicators were extracted from the Eurostat database: the housing cost overburden rate and housing costs as a proportion of disposable income. Housing costs encompass various expenses associated with dwelling occupancy, including utilities, maintenance, taxes, and insurance. The housing cost overburden rate measures the percentage of households where housing expenses exceed 40% of disposable income, providing insight into the burden of housing costs relative to income. Additionally, paper analyses the proportion of disposable income allocated to housing-related expenses, offering further insight into affordability trends. The findings contribute to understanding the impact of property tax systems on housing affordability in European countries. By evaluating the relationship between property taxation and housing costs, the strategies can be developed to mitigate housing affordability challenges and promote sustainable housing markets.*

Keywords: *Property tax; Housing affordability; Comparative analysis; European countries.*

JEL Classification: *H20; H29; H71.*

1.Introduction

Housing affordability has emerged as a growing concern in Europe, sourced by rapid urbanization, population growth, and evolving economic dynamics. As housing costs continue to increase faster than income growth, policymakers, economists, and urban planners are increasingly turning their attention to the role of property tax systems in shaping affordability levels.
The importance of this topic cannot be overstated. Affordable housing is not only a matter of economic concern, but also it is a fundamental human right and a cornerstone of social stability. Access to adequate and affordable housing is essential for individual well-being, social cohesion, and economic prosperity. Property tax systems play a significant role in this regard, serving as a key component of the government fiscal system and influencing affordability levels.

The objectives of this research paper are twofold. Firstly, it aims to provide a comprehensive review of existing literature on property tax systems and housing affordability, synthesizing theoretical frameworks, empirical studies, and policy analyses to uncover the key factors shaping the relationship between property taxation and housing affordability in European countries. Secondly, it seeks to conduct a comparative analysis of property tax trends and housing cost indicators across European countries.

Methodologically, this study employs a comparative analysis of property tax revenues as a percentage of GDP and housing costs as a percentage of disposable income to examine the impact of property taxation on housing affordability dynamics. The research aims to provide a comprehensive understanding of the relationship between property taxation and housing affordability outcomes.

In summary, through an analysis of the complex correlation between property taxation, housing markets, and socio-economic factors, the study seeks to determine the nature of the relationship between property taxes and housing affordability. By investigating whether this relationship is positive or negative, the research aims to assess the effectiveness of using property taxes as a tool to enhance housing affordability.

2.Literature Review

In recent years, the issue of housing affordability has emerged as a great concern in Europe and beyond, as rapid urbanization, population growth, and changing economic dynamics continue to shape housing markets. The property taxation has the central role in this discussion, and it also constitutes a significant component of the fiscal framework governing housing markets in European countries.

A property tax is a levy imposed by a government on the value of real estate owned by individuals or entities. It is typically based on the assessed value of land, buildings, and other improvements on the property. Housing affordability refers to the capacity of households to cover the expenses associated with housing without significantly limiting their ability to meet other essential living expenses (Lăzărescu & Diacon, 2020). These housing costs encompass various elements such as mortgage or loan interest payments for homeowners, rental fees for tenants, utilities like water, electricity, gas, and heating, as well as expenditures related to routine maintenance and structural insurance.

The governments consider property tax as feasible option for addressing issues such as housing affordability, revenue generation, and economic regulation. Lo (2023) investigated the property tax policies adopted by New York City and Taipei City in response to the global housing affordability crisis for exploring the motivations behind these policies and assessing their effectiveness in addressing that issue. The results show that property tax caps implemented in New York State may inadvertently contribute to rising housing prices, while Taipei City's Hoarding Tax did not fully achieve its purposes and instead shifted the tax burden to homebuyers.

Lyytikäinen (2009) explores the impact of three-rate property taxation on housing construction in Finnish municipalities. Three-rate property tax system refers to a taxation system where different tax rates are applied to various components of property value. There are different tax rates on undeveloped land before development, land after development, and buildings. This system allows municipalities to tailor their property tax rates to incentivize specific types of development and affect land use decisions within their jurisdiction. The study finds that municipalities with a three-rate property tax system saw a significant increase in single-family housing starts. Matheson (2018) advocates that property tax policies can be less effective than macroprudential policy which refers to the set of regulatory measures and tools implemented by central banks and financial authorities to manage and mitigate systemic risks within the financial system. Unlike property-transfer taxes, which can lead to volatile tax rates and may not effectively address systemic risks, macroprudential

measures such as loan-to-value limits offer a more stable framework for regulating lending practices and reducing excessive risk-taking. In my opinion, both macroprudential policy and property tax policy are important in solving housing affordability, albeit in different ways. While macroprudential measures aim to prevent excessive risk-taking by lenders and borrowers, property tax policies can directly influence housing costs and promote affordability through targeted incentives and relief programs for low-income households.

Taxes impact housing affordability in Africa by directly influencing housing costs and indirectly shaping investment decisions in the housing market, which in turn can affect supply, prices, and overall affordability levels (Mutero, 2018). While taxes can play a positive role in promoting housing affordability through investment incentives and revenue generation, they can also have negative effects by increasing costs and distorting market incentives. According to the analytical report of European Commission (2019) property taxes play an important role in housing affordability by influencing the cost of homeownership, rental prices, housing supply, and the utilization of existing housing stock. Decreasing property taxes for affordable housing developments or suggesting tax credits to landlords who provide affordable rental units can assist to increase affordability. There are high level of migration and depopulation in some European regions such as Bulgaria, Romania, and Hungary which create the housing insufficiency, despite of many vacant housing units. The report suggests the implementation of high taxes on those second or vacant properties to incentivize owners to rent or sell out these properties. The activation of unused housing stock which lead to increase the availability of housing options have the potential to develop housing affordability.

Reschovsky (2023) also advocates that taxes can increase the housing affordability according to his OECD publication about the contribution of property taxes to housing inequities in the United States. Property taxes in the United States have a significant impact on housing affordability by influencing housing prices, monthly costs, equity considerations, and the availability of local government services. Efforts to address property tax burdens and ensure a fair distribution of costs can help improve housing affordability for households across income levels.

In conclusion, the literature review contains the intricate relationship between property tax systems and housing affordability. It mentions the growing concern over housing affordability amid urbanization and economic shifts and highlights the importance of property taxation in improving the affordability not only in Europe, but also in other continents.

3.Comparative View on Property Tax Collection in Europe

The issue of housing affordability has emerged as a significant concern across Europe, driven by factors such as rapid urbanization, population growth, and evolving economic dynamics. Central to this discussion is the role of property taxes, which not only form a crucial component of the fiscal framework governing housing markets but also shows indirect substantial influence on housing affordability. This section explores the comparative view on property tax collection and housing affordability in various European countries.

Almost all European countries levy some form of property tax on real estate. Liechtenstein and Malta do not impose recurrent type of taxes on property (there are other property taxes such as property transfer tax, inheritance property tax). In contrast, Estonia stands out as the only country in this comparison that taxes solely land, rather than the entire real property (Mengden, 2023). It may result in lower overall property taxes compared to countries that tax both land and improvements. This approach could potentially contribute to housing affordability by reducing the tax burden on property owners, particularly those with valuable structures or improvements on their land. Lower property taxes may make homeownership more accessible and affordable for individuals and families in Estonia. Belgium, Greece, France, and Spain are among the highest ranked countries, with property taxes ranging from

3.0% to 4.9% of GDP and property tax revenues ranging from €6,192 million to €108,605 million in 2022. Conversely, Lithuania, Slovakia, Romania, and Estonia are among the lowest ranked countries, with property taxes ranging from 0.3% to 0.9% of GDP and property tax revenues ranging from €92 million to €1,610 million in 2022. These variations underscore the diverse approaches to property taxation and the significant impact on revenue generation across European nations.

Over the period from 2015 to 2022, several European countries experienced notable fluctuations in their property tax trends according to Eurostat (2024). For instance, Iceland saw a remarkable spike in property taxes as a percentage of GDP in 2016, soaring to 17.5%, which was significantly higher than its usual range. This sharp increase was followed by a period of stabilization. On the other hand, Denmark demonstrated a gradual decline in property taxes from 2.7% in 2015 to 2.3% in 2022. Estonia maintained a consistently low rate, while Greece and Latvia saw minor decreases. A slight decrease was observed in property taxes as a percentage of GDP over the period. In 2015, property taxes stood at 2.3% for the EU-27 and 2.5% for the EA-19, slightly dropping to 2.1% and 2.3%, respectively, by 2022. Despite the decline, both entities maintained relatively stable rankings over the period. Additionally, the property tax revenues for 2022 indicate substantial revenue generation, with €332,716 million for the EU-27 and €302,561 million for the EA-19, suggesting a significant financial contribution from property taxes to the fiscal budgets of these regions.
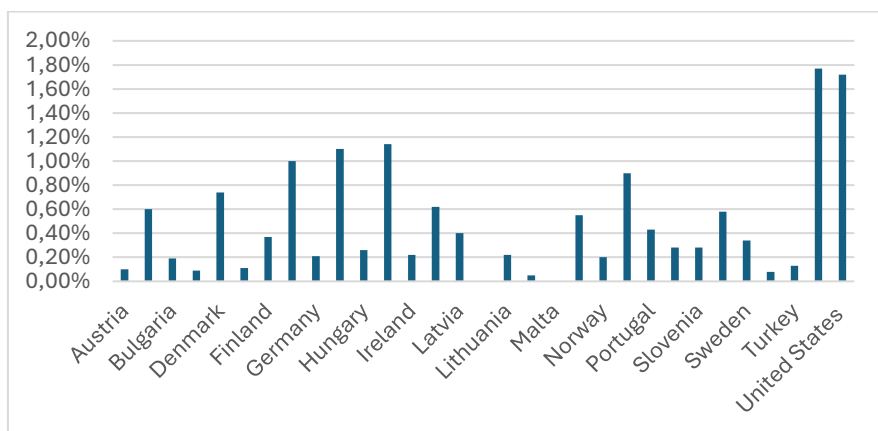
Figure 1: Property tax as percentage of private capital stock, 2021
Source: Authors' representation based on Tax Foundation. Available at: https://taxfoundation.org/data/all/global/real-property-taxes-in-europe-2023/ accessed in 20.04.2024.

The first figure presents property tax revenues as a percentage of total private capital stock for various European countries, including the United States and Turkey, in 2021. Property tax revenues as a share of total private capital stock indicate the proportion of property tax revenues generated relative to the total value of privately owned assets within a country. Higher percentages suggest that property taxes contribute more significantly to the overall wealth or value of privately owned assets in a nation. Noteworthy countries with relatively high property tax revenues compared to private capital stock include the United Kingdom (1.77%), Greece (1.10%), and Iceland (1.14%). Conversely, nations such as Liechtenstein (0.00%) and Malta (0.00%) exhibit zero property tax revenues relative to private capital stock (those countries do not impose recurrent taxes on property). The inclusion of the United States (1.72%) and Turkey (0.13%) offers a comparative perspective on property tax revenue as a share of total private capital stock between European countries and these two nations.

In conclusion, the analysis of property tax systems in European countries reveals significant variations in property tax revenues relative to total private capital stock.

4. Housing affordability and its relationship with property taxation.

In terms of housing, overall, 69% of the population in Europe, live in their own houses, while 31% live in rented houses. There are distinctive regional patterns in housing types. For example, countries in Eastern Europe tend to have higher rates of homeownership, while those in Western Europe have higher rates of renting. This could be influenced by historical, cultural, and economic factors shaping housing policies and preferences in each region. The house prices sharply increased in 24 member countries in region. Overall, 47% increase was observed in the EU between 2010 and 2022 in house prices and 18% increase in rents according to Eurostat.

Generally, housing cost overburden was registered very high in big cities. The housing cost overburden rate is an indicator of housing affordability. It measures the percentage of the population living in households where housing costs represent more than 40% of disposable income. This indicator helps assess the extent to which households are burdened by their housing expenses relative to their income.
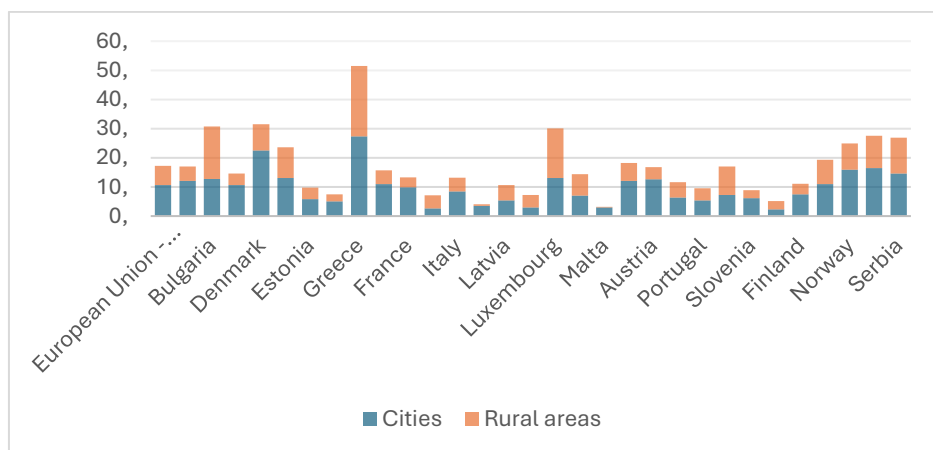
Figure 2: Housing cost overburden rate in cities and rural areas, 2022
Source: Authors' representation based on a database of Eurostat, EU-SILC survey, available at https://ec.europa.eu/eurostat/databrowser/bookmark/411e17fd-9b03-4729-8ad9-ea4844481e08?lang=en accessed on 20.04.2024.

The figure 2 represents the percentage of the population experiencing housing cost burdens in both urban (cities) and rural areas. A higher housing cost overburden rate indicates a greater financial strain on households due to housing expenses and it means the low level of housing affordability. In general, urban areas tend to have higher housing cost overburden rates compared to rural areas. For example, countries like Denmark, Germany, and Sweden exhibit higher housing cost overburden rates in urban areas, reflecting the affordability challenges faced by city dwellers.

In cities, Belgium has a rate of 12.1%, indicating that approximately 12.1% of urban households spend more than 40% of their disposable income on housing costs after deducting housing allowances. Similarly, in rural areas of Belgium, the rate is lower at 4.9%. On the other hand, in Greece, the overburden rate is significantly higher in both cities and rural areas, standing at 27.3% and 24.2%, respectively. This indicates a greater proportion of households facing housing affordability challenges across both urban and rural regions in

Greece compared to Belgium. Other countries with notable differences between urban and rural overburden rates include Luxembourg, where the rate is 13.1% in cities and substantially higher at 17.0% in rural areas, and Cyprus, with rates of 3.5% in cities and 0.5% in rural areas, suggesting relatively lower housing affordability challenges in rural Cyprus compared to urban areas.

In Romania, the housing cost overburden rate shows a notable difference between urban and rural areas. In urban settings, the rate stands at 7.2%, indicating that a portion of city face challenges with housing affordability, spending more than 40% of their disposable income on housing costs after deducting housing allowances. However, in rural areas, the overburden rate is higher at 9.8%, suggesting a greater proportion of rural households experiencing housing cost burdens compared to their urban counterparts.

Another indicator for measuring the housing availability is housing cost in disposable income. Overall, about 20% of available income was contributed to housing in Europe in 2022.
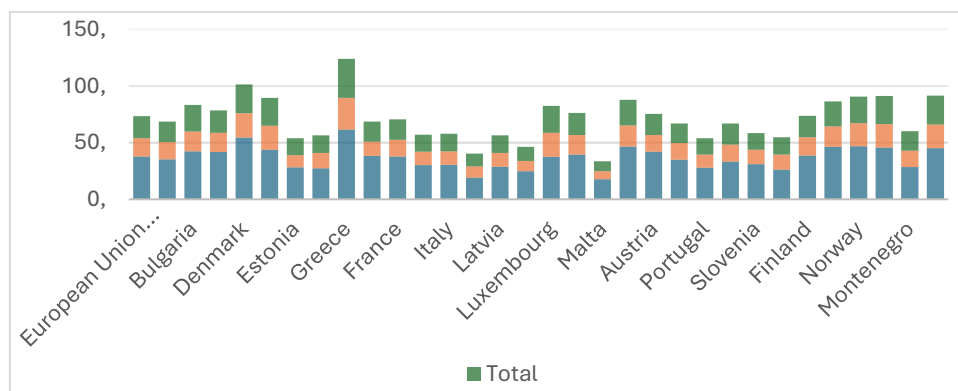
Figure 3: Housing costs as percentage of disposable income – Total, 2022
Source: Authors' representation based on a database of Eurostat, EU-SILC survey, available at https://ec.europa.eu/eurostat/databrowser/bookmark/659e8061-cde5-4ddb-b633-7cff3c16b7bd?lang=en accessed on 20.04.2024.

The figure 3 indicates insights into housing costs as a percentage of disposable income across European countries in 2022, categorized by income levels. The high indicator means the low level of housing affordability. For countries within the European Union (EU-27), households with incomes below 60% of the median equivalised income spent 37.9% of their disposable income on housing costs. The low-income people struggle to pay housing costs. However, people with income above 60% of median income spent only 16% of their disposable income on housing. In countries like Belgium, households below the 60% income threshold spent 35.2% of their disposable income on housing, while those above the threshold spent 15.4%. This indicates a notable disparity in housing cost burden between income groups. Similarly, in Bulgaria, households below the income threshold spent 42.2% of their disposable income on housing, compared to 17.7% for those above the threshold, highlighting significant challenges for low-income individuals in meeting housing expenses. In terms of relationship between the house affordability and property taxes, the property tax revenues as percentage of GDP and housing costs as percentage of disposable income (as an indicator of housing affordability) are used in the following graph. There are not exact tax rates to impose on properties in selected countries. According to OECD data (2021), in Europe, property tax rate ranges vary significantly among countries. For instance, in Denmark, rates fluctuate between 1.6% and 3.4%, with reductions for properties used in agriculture and forestry. Spain implements rates from 0.4% to 1.10% for urban properties and 0.3% to 0.9% for rural ones, with potential increases for specific circumstances. Austria's rates are diverse, with 0.16% for agricultural land and forests, 0.05% to 0.1% for single-

family houses, and 0.1% to 0.15% for rented or mixed-use properties. Therefore, property tax revenues are used in analysis.
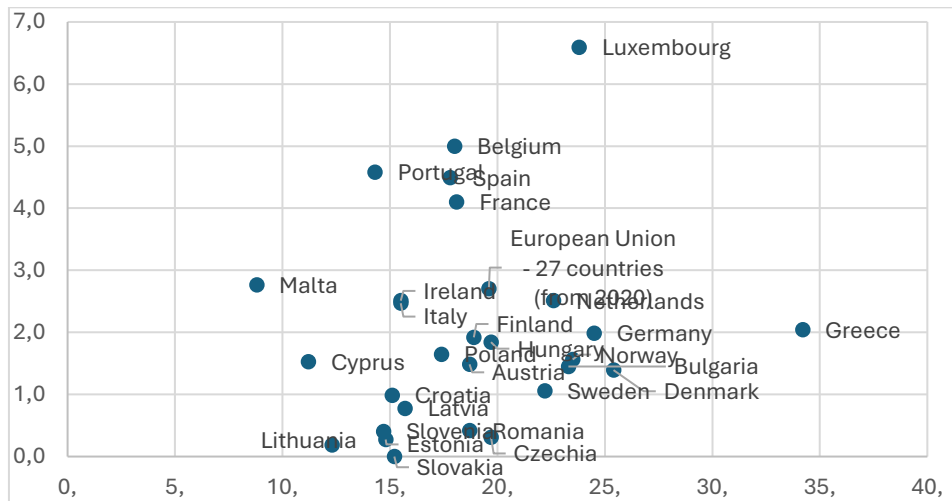
Figure 4: Relationship between property taxes as percentage of GDP and housing costs as percentage of disposable income, 2022.
Source: Authors' representation based on a database of Eurostat.

Figure 4 demonstrates the relationship between property taxes as percentage of GDP and housing costs as percentage of disposable income for the year 2022. Both negative and positive relationship can be observed between them in figure. Some countries indeed exhibit a positive relationship, where higher property tax revenues as a percentage of GDP correspond to higher housing costs as a percentage of disposable income. For example, Belgium, Greece, and Luxembourg have relatively high property tax revenues as a percentage of GDP (5.0%, 2.0%, and 6.6% respectively), and they also have higher housing costs as a percentage of disposable income (18.0%, 34.2%, and 23.8% respectively). This suggests that higher property tax burdens may be associated with higher housing costs, potentially reducing housing affordability. Conversely, there are instances of a negative relationship where higher property tax revenues as a percentage of GDP correspond to lower housing costs as a percentage of disposable income. For instance, countries like Czechia, Lithuania, and Slovenia have lower property tax revenues as a percentage of GDP (0.3%, 0.2%, and 0.4% respectively), and they also have lower housing costs as a percentage of disposable income (19.7%, 12.3%, and 14.7% respectively). This suggests that these countries might have implemented policies to keep housing costs lower relative to disposable income, possibly through subsidies or regulations. Overall, the relationship between property tax revenues and housing affordability is complex and can vary based on factors such as government policies, economic conditions, and housing market dynamics.

Several countries in Europe implement different exemptions, relief measures, or subsidies in case of property taxes which may help to increase housing affordability indirectly. For example, the Netherlands exempts small, affordable homes to streamline tax collection. Belgium suggests exemptions to the size and occupancy of residences. Germany and Slovenia encourage new construction and renovations through temporary or permanent exemptions on building value. Ireland even exempts new mines from taxes for their first seven years. Romania offers property tax breaks for certain groups. Low-income people might not have to pay property taxes on homes that are small or inexpensive. Similarly, elderly people can qualify for tax relief based on their income and yearly assessments. There might also be help for people facing financial difficulties, though the specifics can differ.

These exemptions aim to boost the economy, help specific groups, and promote development.

5.Conclusion

The comprehensive review of literature on property tax systems and housing affordability across Europe provides valuable information into the complex relationship between these two aspects. The analysis highlights the complicated nature of property taxation and its significant impact on housing affordability, not only in Europe but also in other regions. Key findings indicate that property tax policies play a crucial role in addressing housing affordability challenges, revenue generation, and economic regulation. However, the effectiveness of these policies varies depending on factors such as market dynamics, governance structures, and regional contexts. While property taxes are a common tool used by governments to influence housing affordability, their impact can be nuanced and affected by different factors such as tax rates, exemptions, relief measures, and subsidies.

The relationship between property taxes and housing affordability in European countries is multifaceted and dynamic, influenced by various factors including tax policies, economic conditions, and housing market dynamics. Analysis of property tax trends from 2015 to 2022 reveals notable fluctuations across different nations, with some experiencing significant declines in property tax revenues as a percentage of GDP. Despite a slight overall decrease in property taxes as a percentage of GDP over the period, substantial revenue generation from property taxes highlights their significant contribution to fiscal budgets.

Regarding housing affordability, data on housing costs as a percentage of disposable income indicates varying levels of affordability across Europe, with urban areas generally experiencing higher housing cost overburden rates compared to rural areas. Some countries exhibiting a positive correlation between property taxes and housing costs, suggesting that higher property tax burdens may contribute to increased housing costs. Conversely, other nations demonstrate a negative correlation, indicating potential policy interventions to maintain housing costs lower relative to disposable income. Examples of countries showing a positive correlation between property taxes and housing costs include Belgium, Greece, and Luxembourg, while countries like Czechia, Lithuania, and Slovenia show a negative correlation.

Countries implement various exemptions, relief measures, and subsidies to address housing affordability indirectly, including tax breaks for certain groups, exemptions for small or affordable homes, and incentives for new construction or renovations. However, to enhance housing affordability comprehensively, governments should adopt a complex approach that combines property tax reforms with initiatives to increase the supply of affordable housing, enhance financial accessibility, and foster inclusive urban development.

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THE IMPACT OF USING ARTIFICIAL INTELLIGENCE AND ERP SYSTEMS IN THE WORK OF ACCOUNTING PROFESSIONALS AND AUDITORS

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Abstract: *Recent developments in IT have changed the way accounting professionals and auditors do business. The research conducted in this article aims to explore how artificial intelligence and ERP systems offer opportunities to increase efficiency, accuracy and improve decision making in companies operating in the accounting and auditing industry. One of the results obtained from the bibliometric analysis indicates that artificial intelligence enables the automation of repetitive tasks, allowing the analysis of a large set of data to support strategic decision making. In addition, the integration of ERP systems streamlines financial processes, improves data management and ensures compliance with regulatory requirements.*
The digitalization of the accounting profession has transformed traditional practices and revolutionized the way accounting professionals operate in today's digital age. By embracing digital tools and platforms, accounting professionals can enhance efficiency, accuracy, and collaboration, ultimately improving the quality of financial reporting and analysis. The role of these technologies (artificial intelligence and ERP systems) is to streamline workflows, increase productivity and adapt to evolving industry requirements.
The research in this article was based on a bibliometric analysis that aimed to observe research trends in this field, through which to observe or identify uncovered areas and future research directions in this field.
Following a comprehensive analysis of the benefits and challenges associated with the adoption of artificial intelligence and ERP systems in accounting and auditing practices, this study aims to provide valuable insights to these professionals as a result of the upward trend of the digitalization phenomenon. As a result of the digitisation of business, the article provides valuable information needed by accounting professionals and auditors to help them remain competitive in a rapidly changing landscape.

Keywords: *artificial intelligence, ERP systems, accounting profession, sustainability.*

JEL Classification: *B26, M40, M41, M42*

1. Introduction

IT systems are used at every step, so that any activity depends a lot on the use of new technologies to make them more efficient, bringing added value to any activity. If we analyze the way in which accounting activities were carried out in the past, the fact that most activities were done manually, we can observe an evolution of all activities as a result of the digitization of processes, the fact that repetitive activities have been replaced facilitating the improvement of the flow of information between the employees of an organization .

The adoption of applications based on artificial intelligence (AI) as expert systems both in the field of accounting and auditing aimed to reduce errors and increase the efficiency of

accounting and financial processes (Berdiyeva et al., 2021). The main role of artificial intelligence is to find fraudulent operations by identifying unusual operations, providing essential functions for data processing and transparency, to ensure the most accurate and complete reporting.

The role of new AI technologies and ERP systems is to ensure the increase of an organization's performance, minimize errors and increase the productivity of employees and the organization.

Most of the time, ERP systems are used by organizations with the aim of centralizing processed data much more easily, providing support for the decision-making process and for managerial accounting (Khamis et al., 2023).

Even if the automation and digitization of certain tasks and processes bring benefits to organizations, the main disadvantages would be the increase in the unemployment rate in these fields as a result of the fact that most tasks become automated.

However, the main objective of the work is to analyze the impact of the use of artificial intelligence and ERP systems in the accounting and auditing profession, trying to identify the main relevant aspects based on bibliometric analysis.

The article is presented further with a vast specialized literature where the main concepts were defined, then it continues with the presentation of the research method and the analysis of the results obtained, and finally the article ends with the main conclusions regarding the case study addressed in the article.

2. Literature review

The future of the accounting and auditing profession depends a lot on the evolution of new technologies, which help or provide support for analytical and cognitive structures and processes. In Industry 4.0, accounting companies must remain competitive and constructive in order to survive the evolution of the digitalization phenomenon.

According to Berdiyeva et al. (2021, p. 58), *"expert systems are artificial intelligence programs introduced during the 1980s that achieve a degree of competence that can replace human expertise in a given decision-making area"*. AI can be considered an important tool that can provide numerous opportunities for accounting and auditing professionals, improving their effectiveness and productivity.

The benefits of automating the tasks of accounting professionals for the following activities (Ezenwa and Nken, 2021):

- reporting (month or quarter closing, internal performance reporting, external statutory)
- accounts payable (automatic approvals)
- customer and supplier data
- validating and posting payments
- creating / processing / delivering invoices and billing
- period-end closing (sub-ledger closing, validation of journal entries, general ledger, consolidation, low-risk accounts reconciliation
- general ledger accounting
- cash management
- inventory accounting
- intercompany transactions
- expense reports
- reimbursement requests
- audit, payroll, tax accounting, fixed assets accounting

Even if the role of new AI technologies and ERP systems is to ensure the correctness of processed data, professional accountants and auditors consider it better to supervise the data entered and processed with their help (Hasan, 2022; Zhang et al., 2020).

According to Hasan (2022) and Svitlana and Olha (2024), AI ensures the fulfillment of 3 objectives specific to a company presented in figure 1.
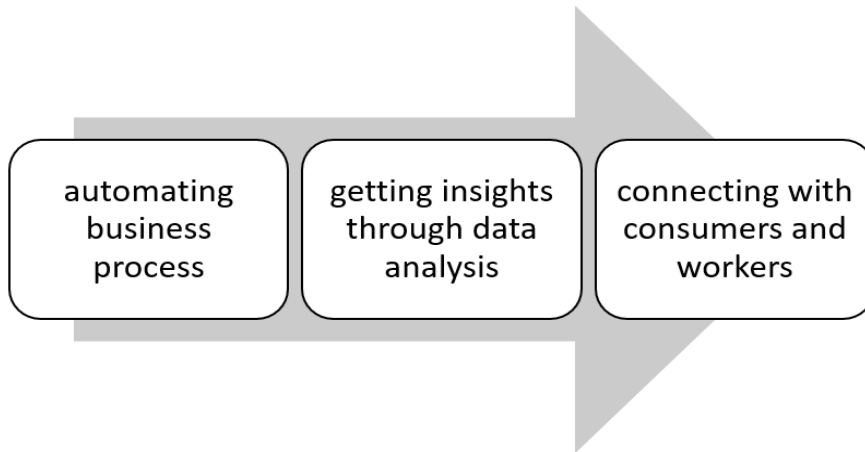
Figure 1: Three objectives specific to a company
Source: Hassan, 2022

ERP systems offer support in the processing of accounting data, more specifically in managerial accounting with the role of informing managers (Khamis et al., 2023). Management accounting *"also includes the preparation of financial reports for non-management groups such as shareholders, creditors, regulatory agencies, and tax authorities"* (Mihaila, 2014 cited by Khamis et al., 2023). The main benefits identified in accounting and auditing as a result of the use of AI and ERP systems are: saving time, higher data accuracy, fast data analysis, in-depth perspective of business processes, standardized services for clients (Munoko et al, 2020; Solaimani et al., 2020). Other benefits identified by Srbinoska and Donovska (2023) were: *"high quality of reporting, up-to-date decision making, better resource use given the increased efficiency and reduced processing time"*. The disadvantages of these systems are *"high costly and specific know-how"*.

3. Research methodology

The research in this article was based on a bibliometric analysis that aimed to observe research trends in this field, through which to observe or identify uncovered areas and future research directions in this field.

The sample of articles used for the case study was selected from the Web of Science in April 2024 based on the following keywords: *artificial intelligence, ERP systems, accounting profession, audit, performance and sustainability*.

To analyse the sample, the authors used the RStudio application, using the Biblioshiny package, which is an R-tool for comprehensive science mapping analysis. Bibliometric analysis is a unique tool, developed in the statistical computing and graphic R language, according to a logical bibliometric workflow (Bibliometrix, 2024).

This analysis is a structured analysis of a large body of information, to show a *"big picture"* on a certain analyzed topic.

The foundation for this quantitative research was a dataset extracted from the Web of Science database. The search was guided by the following query string:

(TS=("Artificial Intelligence" AND "Accounting") OR TS=("Artificial Intelligence" AND "Auditing") OR TS=("ERP" AND "Auditing") OR TS=("ERP" AND "Accounting") OR TS=("Technology Impact" AND "Accounting Professionals") OR TS=("Technology Impact"

AND "Auditing Professionals") AND TS=("PERFORMANCE") AND TS=("sustainability"))
covering the period from January 1, 2010, to March 31, 2024. Initially, a total of 1497 articles
were selected. To refine the analysis for greater relevance to the field, the search was
narrowed down by limiting the Web of Science reference areas to (WC ="Business Finance"
OR "Management" OR "Business" OR "Economics"), resulting in a final count of 472
documents.

The commencement of the study involved a descriptive bibliometric analysis to map the
academic dynamics of the field. This phase included examining annual publication trends,
geographic dispersion of studies, identifying significant sources, as well as pinpointing the
most prolific authors in the area.

In the subsequent phase, a keyword co-occurrence analysis was conducted to gauge the
intensity of co-occurrence connections and to pinpoint the terms with the strongest links.
The outcome was an illustrative network of the major themes and their interrelations,
highlighting keywords as the core representation of the research content and the primary
interests within the domain.

4. Results analysis

A longitudinal examination of academic literature can provide insightful perspectives on the
shifting scientific focus within a particular field of study. The analysis depicted in Figure 2
scrutinizes the annual distribution of publications from 2010 to 2024, focusing on the key
terms that have been previously identified as particularly significant for the domain under
study. This graphical representation unveils the temporal dynamic of scholarly output and
may indicate shifts in research priorities or an upsurge in scholarly activity within the
thematic spectrum.
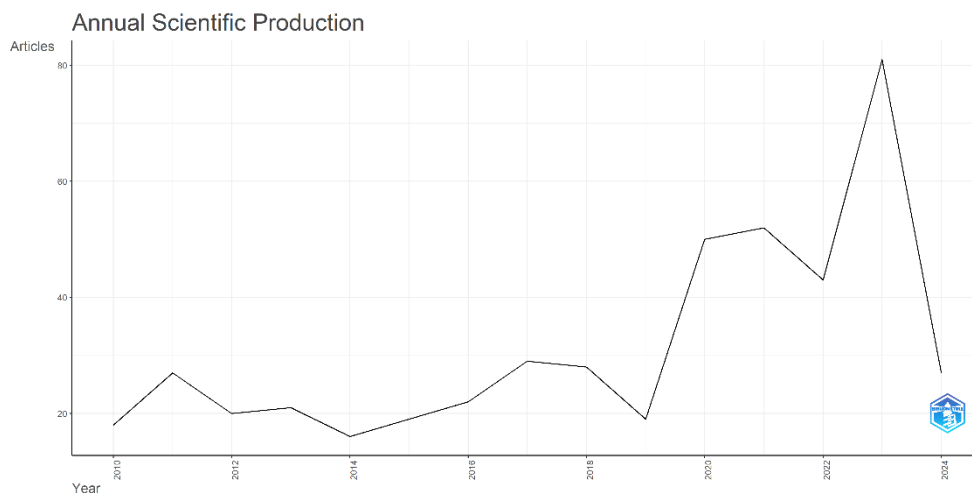
Figure 2: Annual Scientific Production
Source: Authors own creation using Bibliometrix (Biblioshiny), 2024

The chronological study of academic publications between 2010 and 2024 reveals a notable
fluctuation in the volume of published works. Detailed analysis indicates a marked
expansion in the number of publications, reaching a peak of 81 articles in 2023, which
denotes an increased scientific interest in the selected research themes. The early phase
of the examined period shows a moderate publication frequency, which then exhibits a
gradual increase, culminating in 51 papers in 2021. This trend can be interpreted as aligning
with theoretical and practical advancements in the field of artificial intelligence and ERP

systems, with direct implications for accounting and auditing practices, and points to an escalating dynamism of academic research in these interdisciplinary areas.

Figure 3 presents a geographical analysis of the literary contribution in the field of artificial intelligence and ERP systems application in accounting and auditing. The distribution of publication frequency highlights a clear leadership by the United States, with 368 works, followed by a strong academic presence in China, accounting for 113 publications. The United Kingdom also makes a significant contribution to the literature, with 89 works. Interest in this research field is also evident in Romania, with a total of 79 contributions, marking a notable global presence. Australia with 65 works, Italy with 59, Ukraine with 55, Germany with 50, Portugal with 39, and Canada with 38, showcase vibrant and diverse research activities across multiple regions. This geographical representation clearly shows that research in the area of accounting and auditing assisted by artificial intelligence and ERP systems is a topic of global interest, demonstrating widespread commitment and involvement in this interdisciplinary field.

Country Scientific Production
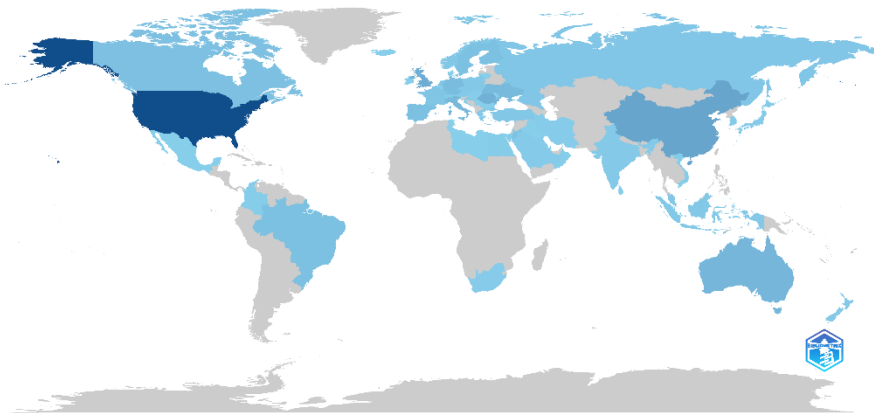
Figure 3: Country Scientific Production
Source: Authors own creation using Bibliometrix (Biblioshiny), 2024

A bibliometric examination of the distribution of scientific works across various academic journals demonstrates a wide array of editorial channels that support and disseminate studies in the realm of artificial intelligence application in auditing and accounting.
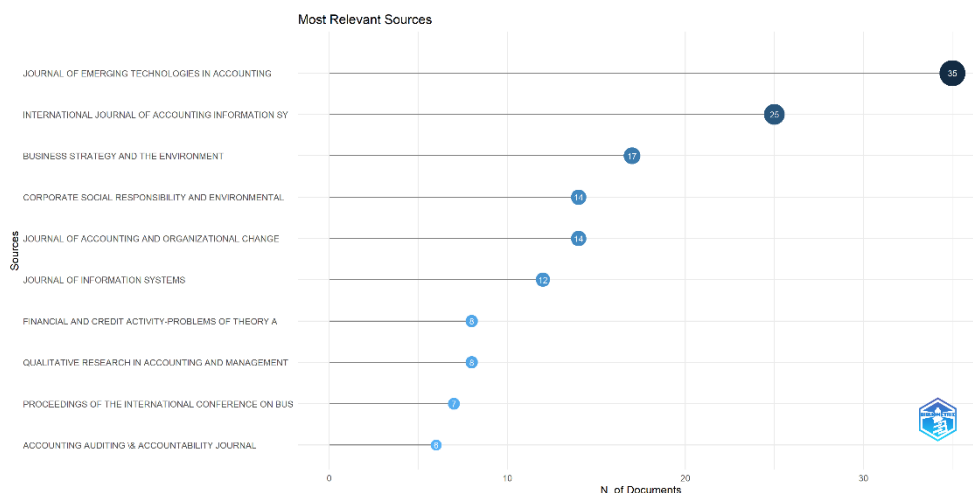
Figure 4: Most Relevant Source
Source: Authors own creation using Bibliometrix (Biblioshiny) , 2024

The chart in Figure **4** represents a scatter plot of the most relevant sources addressing the impact of artificial intelligence (AI) and enterprise resource planning (ERP) systems in accounting and auditing. We observe that the most prolific source is the "Journal of Emerging Technologies in Accounting," with 35 documents, indicating that this publication may be a leading journal in research related to emerging technologies in the accounting field.

The "International Journal of Accounting Information Systems" also appears prominently, with 25 works, suggesting a focus on how accounting information systems integrate new technologies, including AI and ERP.

Journals such as "Business Strategy and the Environment" and "Corporate Social Responsibility and Environmental Management" also have a significant number of works (both with 14 documents), which could indicate an exploration of the impact of AI and ERP technologies not only from the perspective of financial performance but also from that of sustainability and corporate social responsibility.

The "Journal of Accounting and Organizational Change" and the "Journal of Information Systems," with 12 works each, suggest that these research areas are dynamic and evolving, reflecting organizational and technological changes in accounting and auditing.

Other sources, such as "Financial and Credit Activity-Problems of Theory and Practice," "Qualitative Research in Accounting and Management," and the "Proceedings of the International Conference on Business," with 8 and respectively 7 documents, show the diversity of discussion forums and research perspectives.

Finally, the "Accounting Auditing & Accountability Journal," with 6 documents, rounds out the picture of the leading scientific journals contributing to the academic dialogue on the integration of AI and ERP into accounting and auditing practices. This variety of sources illustrates the interdisciplinary and multifaceted field of the study of technological impact in accounting and auditing.
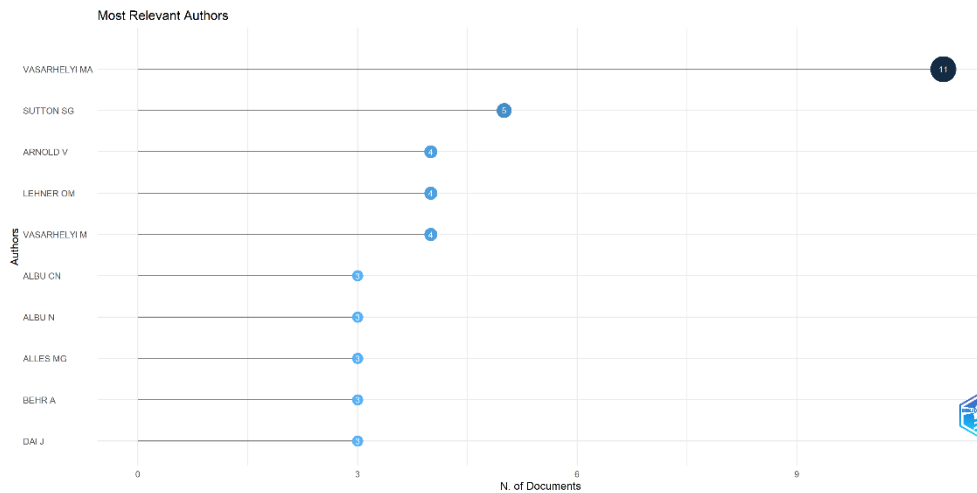
Figure 5: Most Relevant Authors
Source: Authors own creation using Bibliometrix (Biblioshiny), 2024

Figure 5 depicts the most prominent authors within the realm of artificial intelligence and enterprise resource planning systems in the context of accounting and auditing. The table ranks these scholars by the number of their scholarly contributions to the field, offering a clear view of who the most prolific individuals are in terms of publication volume. At the pinnacle, we observe VASARHELYI MA, whose substantial number of documents—11 in total—underscores his leading position. This is followed by SUTTON SG and ARNOLD V, with a considerable number of publications themselves. The sequence continues, delineating the academic footprint of each author, with LEHNER OM and ALBU CN also contributing notably to the domain.

The visual arrangement in this table serves not just to identify individual scholarly output but also to signify the depth of research engagement and influence across the academic community. Such a ranking not only recognizes individual accomplishment but also paints a picture of the collaborative network that drives forward the boundaries of knowledge in this interdisciplinary field.

In Figure 6, we have presented a word cloud, which is a data visualization form that highlights the most frequently used terms within a text or dataset. This word cloud displays the frequency of keyword usage in the analyzed publications, with the size of each term being proportional to its occurrence frequency in these publications.

Figure 6: WordCloud
Source: Authors own creation using Bibliometrix (Biblioshiny), 2024

The terms "artificial intelligence," "big data," "erp" (Enterprise Resource Planning), and "blockchain" denote a strong focus on emerging technologies and their impact on the fields of management and accounting. Terms like "performance", "implementation", "technology", "management" and "information systems" are among the largest, and thus are the central themes or primary areas of interest in the literature associated with the analyzed dataset. "Artificial intelligence" features with a frequency of 56 occurrences in articles, followed by "impact" mentioned 53 times, and "management" with a frequency of 52.

Words such as "audit", "accountability", "governance" and "control" suggest that a significant part of the research addresses the application of technologies in audit processes and corporate governance, highlighting concerns related to accountability and internal control.
The emergence of terms from various fields signals an interdisciplinary character of the research, reflecting the integration of information technology with management, accounting, and auditing.
Terms like "adoption", "determinants", "challenges" and "future" indicate an interest in studying the factors that influence the adoption of technologies, current challenges, and future research directions.
The presence of words like "decision-making" and "strategy" underscores the relevance of data analysis in supporting the decision-making process and in formulating strategies within organizations.
The word "education" suggests a focus on training and developing competencies necessary to navigate the continually changing landscape of technology in the financial-accounting field, for inclusion in a scientific article.
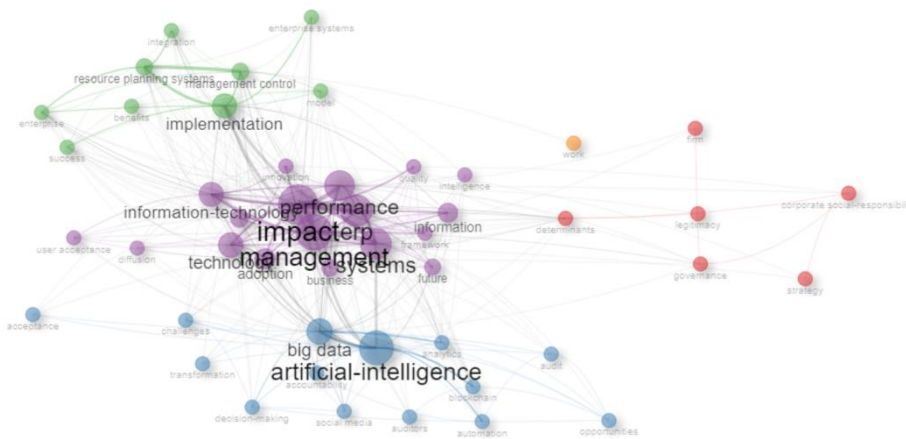
Figure 7: Co-occurrence Network
Source: Authors own creation using Bibliometrix (Biblioshiny) , 2024

To emphasize the dynamic and complex nature of research in the field, as well as to demonstrate the vast network of interconnected subjects that influence accounting and auditing practices in the digital age, we employed a keyword network analysis, represented in Figure 7. It is observed that terms such as "performance", "impact" and "management systems" appear as large, centrally connected nodes, indicating that these are key concepts in the discussion on the effects of artificial intelligence and ERP in the accounting domain.
Words like "big data" and "analytics" are closely linked with "artificial intelligence" illustrating how these themes are interdependent and relevant in the current context of accounting and auditing.
Through nodes like "transformation" and "innovation" the diagram shows an openness to topics that reflect changes and technological progress in the sector.
Terms such as "challenges" and "opportunities" situated near "artificial intelligence," suggest that the literature is exploring not only the advantages of AI and ERP but also the difficulties encountered in their implementation and adoption.
The presence of terms like "corporate social-responsibility" and "governance" indicates attention to corporate responsibility and governance in the era of digitalization.
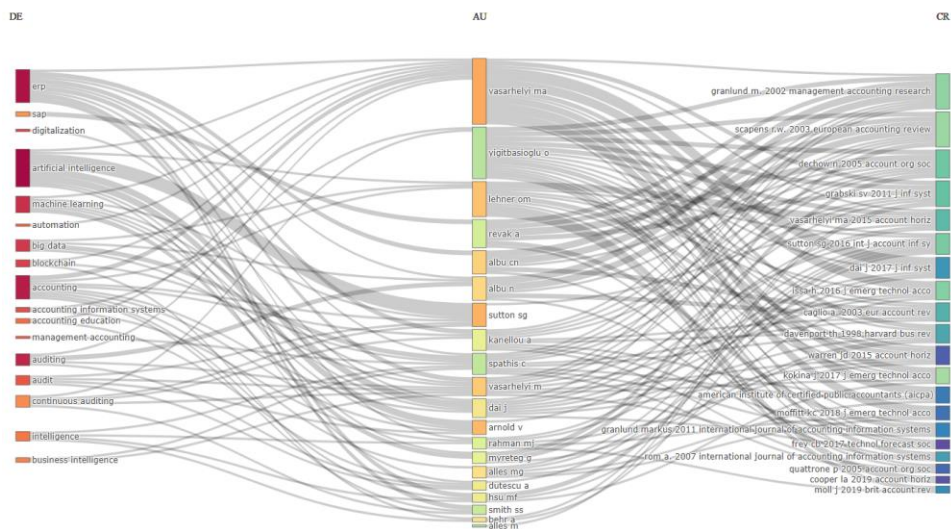
Figure 8: Three-Field Plot
Source: Authors own creation using Bibliometrix (Biblioshiny) , 2024

Figure 8 represents a tripartite graph, which visualizes the relationships between keywords (DE), authors (AU), and cited works (CR) in the field of accounting and auditing, with an emphasis on the impact of technologies such as ERP and artificial intelligence.

We observe significant interconnectedness within the academic community, with many authors contributing to a variety of subjects, suggesting an interdisciplinary and collaborative approach in research. There is a dense network of connections between certain authors and specific keywords, indicating that these individuals are major contributors in their respective fields. Certain authors, such as Vasarhelyi, Sutton, and Albu, have a significant influence, as evidenced by their multiple connections to key terms and reference works. They can be considered thought leaders in research on artificial intelligence and ERP systems in accounting and auditing.

There are pivotal works that seem to be key references in the field, indicating impactful papers in accounting and auditing. Frequently cited journals and works, such as "Management Accounting Research" and "International Journal of Accounting Information Systems", are key sources in the field, providing foundational research or significant reviews of the literature.

Terms that appear central, such as "erp", "artificial intelligence", "machine learning", and "big data", reflect the current research interest core, underlining the significance and impact of information technology on managerial accounting and auditing practices.

The map suggests that certain thematic areas, such as the application of AI in accounting and auditing, are growing and becoming increasingly relevant to researchers.

We proceed with a Thematic Map, the result of a bibliometric analysis designed to organize and visualize themes from a corpus of scientific literature.

Utilizing the Biblioshiny software, we crafted a thematic map (Figure 9), which seeks to organize and visualize themes from a body of scientific literature, categorizing research topics into four quadrants based on two dimensions: 'Degree of Development' (or Density) and 'Degree of Relevance' (or Centrality).
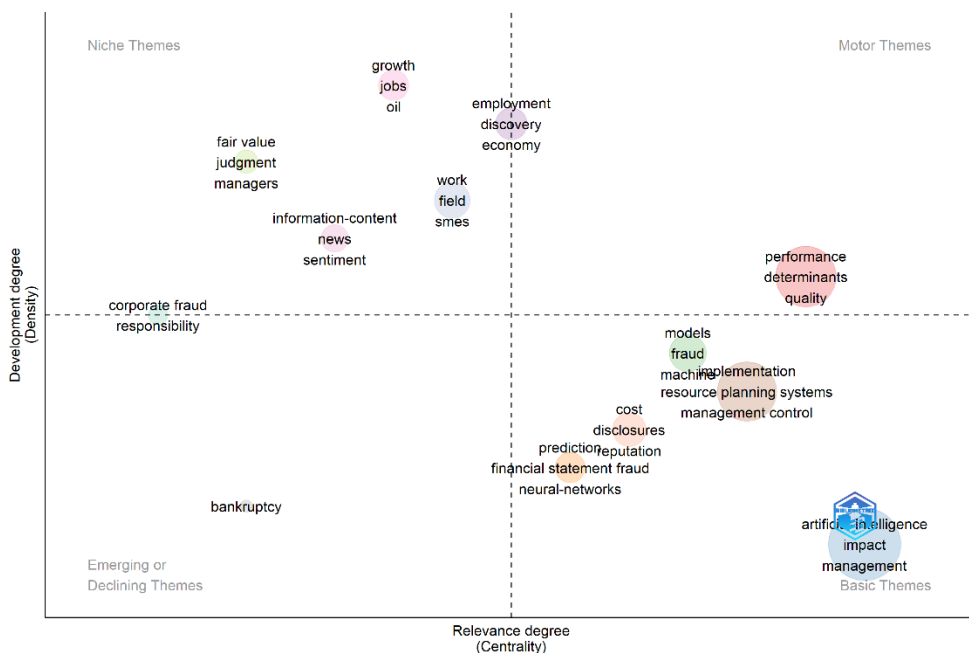
Figure 9: Thematic Map
Source: Authors own creation using Bibliometrix (Biblioshiny) , 2024

Within the niche themes category, keywords such as "fair value", "judgment" and "managers" are featured. These terms have been focal points in literature, centering on the fair valuation in financial reporting, the role of professional judgment in auditing, and the influence of artificial intelligence on managerial decisions. Although these topics have been thoroughly explored, they are considered niche because they do not constitute the core focus across the majority of work in the field.

In the Motor Themes category, terms like "models", "fraud" and "disclosures" represent dominant research themes that propel the discourse within this sphere. "Models" pertain to the development of accounting or audit models that are augmented by AI and ERP technologies, whereas "fraud" and "disclosures" are crucial for grasping how these technologies can facilitate fraud detection and enhance financial reporting transparency.

The keywords "resource planning systems" and "management control" within the basic themes segment establish the foundational dialogue regarding the impact of ERP and AI. Resource planning systems are indispensable for efficient business management, and management control is a fundamental tenet being reshaped by the advent of AI.

In the Emerging or Declining Themes section, terms like "corporate fraud" and "responsibility" are present. "Corporate fraud" may signal an increasing interest in leveraging artificial intelligence to prevent and detect fraud within the corporate realm, while "responsibility" could point to a burgeoning emphasis on the ethical and social responsibility of businesses in the era of advanced technology adoption. Placement closer to "Emerging" suggests a theme is gaining prominence; a shift towards "Declining" might indicate the current literature is distancing from these concerns.

5. Conclusion

The steady increase in publications reflects an accelerated adoption and integration of AI and ERP systems within the accounting and auditing sectors. This trend indicates that the field is rapidly evolving to incorporate these technologies, which are becoming crucial for modern financial practices. The peak in scholarly articles by 2023 suggests that significant

technological advancements in AI and ERP systems have been recognized as having profound impacts on efficiency, accuracy, and the overall effectiveness of accounting and auditing practices. These technologies facilitate automated processes, enhance data accuracy, and allow for real-time financial analysis, which are invaluable in today's fast-paced business environments.

The widespread geographic contribution highlights a global recognition of the importance of AI and ERP systems in reshaping accounting and auditing practices. Countries leading in research output are likely at the forefront of implementing advanced technological solutions in their financial sectors, influencing global standards and practices.

The interdisciplinary nature of the research signifies collaboration between technologists, accountants, auditors and academic researchers. This collaboration is essential for developing solutions that are not only technologically advanced but also aligned with the practical needs of the financial industry.

The proliferation of publications across a variety of journals, particularly in those like the "Journal of Emerging Technologies in Accounting" and the "International Journal of Accounting Information Systems" indicates a significant and growing academic interest in the intersection of AI and ERP systems with accounting and auditing practices. This suggests that these technologies are not only gaining traction but are also transforming traditional practices within these fields.

The identification of key contributors such as VASARHELYI MA, SUTTON SG, and ARNOLD V, who have extensively published on relevant themes, points to a concentrated effort by scholars to advance understanding and application of AI and ERP systems. Their work not only enriches the academic literature but also guides practical implementations and policy formulations in these fields.

The analysis of keyword frequency and co-occurrence highlights the transformative impact of emerging technologies like AI and ERP on accounting and auditing, revealing a focus on operational efficiencies, strategic management, interdisciplinary integration, and ethical governance, while also emphasizing the challenges and future research directions in implementing these technologies.

Tripartite graph illustrates a significant interconnectedness and collaboration within the academic community on ERP and AI in accounting and auditing, highlighting the influence of key authors like Vasarhelyi, Sutton, and Albu, and identifying central themes such as "erp", "artificial intelligence", "machine learning" and "big data", which underscore the deep impact and growing relevance of these technologies in shaping contemporary research and practices in the field.

The Thematic Map created using Biblioshiny software effectively organizes and categorizes key research topics within the field of accounting and auditing, illuminating how emerging technologies like AI and ERP are reshaping critical aspects of the discipline. This map reveals a structured analysis of thematic dimensions, showing that while niche themes like "fair value" and "judgment" continue to be explored, more dominant themes such as "models," "fraud," and "disclosures" are driving the academic discourse by demonstrating the practical applications of these technologies in enhancing transparency and efficiency. Furthermore, foundational themes involving "resource planning systems" and "management control" underscore the integral role of these technologies in modern business management, while emerging concerns like "corporate fraud" and "responsibility" highlight a growing focus on the ethical implications of technology in business practices. This analysis not only reflects the current landscape but also predicts future shifts in focus, indicating a dynamic field that is increasingly influenced by technological advancements.

The ongoing research interest points to the need for continued exploration into how AI and ERP systems can be further optimized for accounting and auditing. Future research could focus on the development of more sophisticated tools that can handle increasingly complex financial data, address emerging challenges such as cyber security in financial systems, and explore the ethical implications of automated financial decision-making.

With the rapid integration of AI and ERP systems into accounting and auditing, there is a growing demand for professionals who are not only skilled in traditional financial practices but also proficient in these new technologies. This shift necessitates changes in educational curricula and professional training programs to prepare the next generation of accountants and auditors. (Damerji and Salimi, 2021).

In summary, the integration of AI and ERP systems in accounting and auditing is not only a topic of academic interest but also a practical evolution that is reshaping the landscape of financial management and corporate governance. The contributions from diverse journals and leading scholars highlight the multifaceted impacts of these technologies, suggesting ongoing shifts in the practices, strategies, and ethical considerations within the professions.

6. Acknowledgements

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THE EVOLUTION OF THE PERFORMANCE CONCEPT – A BIBLIOMETRIC ANALYSIS

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Abstract:
The main objective of the study is to research the evolution of the concept of performance, through the lens of definitions given since 1957 until today. Also, the research proposes a performance analysis from a general approach to a financial approach. Currently, a great significance is represented by the existing performance at the level of the companies, practically any company has as its goal the obtaining of profit, and within a profitable company we are talking about the performance of the companies. At the end of this article, I performed a bibliometric analysis that aimed to identify scientific works that address the theme of "the evolution of the concept of performance", using the VOS Viewer program. So, as we identified in the Web of Science Core Collection platform, by selecting the areas of interest Business Finance, Business, Economics and Management, a number of 697 articles written between 1999 and 2023 resulted. The importance of the theme began to grow starting with year 2007, and since 2010 it has been written constantly until now, but in 2020 the most articles were written on the analyzed topic. Depending on the country of origin of the published articles, most articles were published by researchers from the USA, followed by England, Spain, Italy and Romania. Finally, we analyzed the fields of journals in which the most articles on the chosen topic were published, and last but not least, we analyzed the network visualization for the co-occurrence of keywords.

Keywords: Performance concept evolution, bibliometric analysis, Web of Science Core Collection,VOSviewer.

JEL Classification: M41, M40, M21

1.Introduction

From the analysis of the specialized literature, it can be seen that there is no unified vision on the concept of performance, not even from the point of view of a general understanding, even more so from the financial point of view.

This study can be a starting point for researchers interested in the evolution of the concept of performance over time and implicitly in an analysis of the specialized literature. The objectives of the work are:

1. Presentation of the evolution of the concept of performance over time until now;
2. Carrying out a bibliometric analysis that aims to identify works from specialized literature.

It will be noted that in the last decades the interest of researchers and practitioners in studying the performance of companies and implicitly the indicators that measure performance has increased.

The bibliometric analysis proposes an identification of the scientific works that address the theme of "the evolution of the concept of performance". The methodology used in performing the bibliometric analysis and its interpretation was presented.

2. Evolution of the concept of performance. Review of specialized literature.

Jianu I. (2007) presented the origins of the word performance as being of Latin origin, but the meaning of cuvat comes from English. Similar words are "performare" in Latin, and "to perform" and "performance" in English. By the Latin word "performance" it can be understood to fully give form to a thing. The verb "to perform" in English means to do something regularly, to execute. For example, in concluding a contract, the moment of concluding the contract is important, but especially the execution of the contract. Another example could be the production of a company, since within the production there must be a certain continuity, both at the product level to get from the raw material to the final product, and at the company level where the performance exists if the production it is continuous and does not interrupt the activity. By the noun "performance" we can understand the achievement of something, an act or the way in which an organization achieves its objectives that have been proposed to it. For example, I believe that the goal of any company is to achieve performance, but to achieve this goal, it is important not only the final goal, but also the correct and efficient use of resources, correct management of expenses, labor productivity, quality management, marketing, etc.

As a general understanding, the term performance began to be used from the beginning of the 20th century in certain fields, reaching that nowadays the term is used in absolutely all fields. Gradually, the concept of performance began to be used in as many fields as possible, being used mainly in the economic field. Some authors such as (Debiens, 1988; Burguignon, 1995, Lebas, 1995) approached a general understanding of the concept of performance. They defined performance as: "the level of achievement of objectives".

Other authors have defined performance in a more complex sense, thus moving to a financial sense. Jianu (2007) presents a series of definitions and performance assessment criteria given in the period 1957-1979:

- Bennis (1962) establishes the following criteria for assessing performance: adaptability, capacity, sensitivity.
- Caplow (1964) appreciates performance taking into account the following criteria: stability, achievement, integration.
- Katz and Kahn (1966), in turn, define performance at the level of an organization as maximizing the income that the enterprise can obtain using effective and efficient means, that is, economic and technical, but also with the help of political means. These authors evaluate performance according to the following criteria: survival, growth, environmental control.
- Yachtman and Seashore (1967) define performance as the company's ability to exploit the environment to acquire resources necessary for its operation. These authors believe that the criteria used to assess performance are: production costs, turnover, productivity.
- Friedlander and Pickle (1968) established the following criteria for assessing performance: employee satisfaction, profitability, company value.
- Mahoney and Weitzel (1969) defined performance taking into account efficient and productive action, and the criteria for assessing performance are: planning, trust, productivity, development, staff quality.
- Schein (1970) establishes the following criteria for assessing performance: creativity, communication, psychological commitment.
- Labrousse (1971) is known as one of the authors who gave a definition of enterprise performance. He argued that there is performance in the enterprise that knew how to place and exploit and that knew and knows a remarkable expansion; who knew how to face foreign competition; who knew how to measure his productive effort at the lowest costs, who knew how to maintain his own its expansion and which, through its industrial and managerial know-how, brings a real service to the community.
- Negandhi and Reiman (1973) consider the following criteria in assessing

performance: staff satisfaction, hiring new employees, staff stability, labor force utilization, net profit, sales growth.

- Harrisson (1974) defines performance as the end result of the application of effort.
- Child (1974) establishes the following criteria for assessing performance: profitability, growth.
- Shashua and Goldschmidt (1974) were the first to have brought to the fore a model of financial performance of the enterprise taking into account criteria such as: profitability shares, return on capital, profit margin, operating capital ratio, activity ratio. These indicators are indicators that measure the size of the company's performance. The first two indicators are indicators of profitability, which indicate the performance of the enterprise. The last three indicators are financial indicators that show that the company's position is the result of current and past performance.
- Klein (1976) appreciates the company's performance through: the increase in added value, the increase in immobilized assets, the return on capital employed, the coverage of operating needs from the working capital, the term debt relative to the self-financing capacity.
- Lorino (1995) defined performance as "everything that contributes to the improvement of the value-cost couple.
- Lungu (2006) kept the definition already given in 1995, when he defined performance as "everything that contributes to the improvement of the value-cost couple.
- Jianu (2006), Albu & Albu (2007), Mathews (2007) Danzinger (2007), defined performance as "creating wealth, value in the organization".

Lebas, (1995) gives the following definition "performance represents the set of elementary logical stages of action, from intention to result"

A. Bourguignon (2000) defines performance both at the level of an enterprise and at the individual level: "those who achieve their goals are successful"

J. M. Stern, J.S. Shiely and I. Ross (2001) define performance as "an unstable level of an enterprise's potential, obtained as a result of the optimization of the value-cost relationship and which makes the enterprise competitive in certain strategic sectors."According to Nicolae Felegă (2002), performance is defined by the users of accounting information according to the specific purpose of each one, and should not be sought only in the profit and loss account. Citing the opinion of Professor Feleaga, Professor Ion Stancu states "the name of financial performance identified by the profit and loss account is overbid"

According to E. Reynaud (2003), it defines the notion of the global performance of the enterprise which is given by the totality of the economic, social and environmental performances. This author states that performance appears as a result of the financial results obtained by the enterprise.

G. Lavalette and M. Niculescu (2003), defines performance as "achieving organizational objectives regardless of their nature and variety"

P. Lorino (2003) defines performance as "all that, and only that, contributes to the achievement of the strategic objectives" of the enterprise, as well as "all that, and only that, contributes to improving the value-cost couple, and not only what contributes to the reduction of the cost or the increase of the value"

According to Niculescu M. (2003) performance is based on the notion of comparison. In the economic field, there are a variety of definitions given to the concept of performance due to the fact that this concept is defined differently depending on the user performance information. Current and potential investors perceive their performance in terms of return on investment, of course managers are oriented to the overall performance of the organization they lead, employees perceive through performance the profitability and stability of the workplace and creditors show interest in the organization's stability. According to Niculescu M. (2003), performance measurement is "the process that

allows linking an abstract concept to empirical indicators". However, the perception of performance is different depending on the specific interests of each one. Performance measurement is a necessary condition to ensure the progress of an entity, but not a sufficient one. Progress that is not measured does not exist. But performance measurement makes success recurring as it generates action and sustainable development.

Nicolescu, O., Verboncu, I. (2007), define performance through the prism of the company's objectives, starting from the analysis of the company as a "group of people who carry out common activities aimed at achieving one or some objectives"

R. Tannenbaum and H. Shimdt (2009) define performance as "the degree to which an organization, as a social system, with certain resources and means, achieves its objectives"

Considering the development of the world economy, Alazard and Separi believe that performance must be seen as a global vision. Global performance includes economic, social and environmental aspects and, in this context, effectiveness and efficiency receive new dimensions, both quantitative and qualitative. For Reynaud (2003) and Baret (2006) global performance represents the aggregation of economic, social and environmental performance, and for Germain and Trebucq global performance is formed by the meeting of financial performance, social performance and societal performance.

So that currently global performance brings together the three pillars of the term sustainable development, namely: economic development, social development and environmental protection.

Jianu I. (2007) defines performance in terms of a state of competitiveness of the enterprise that ensures its sustainable presence on the market. Performance is an indicator that appears as a result of meeting strategic objectives. This author offers not only a definition for the concept of financial performance, but also the performing enterprise, which he defines as the enterprise that satisfies customers, creates value for shareholders, that takes into account the opinion of its employees and that respects the natural environment.

Siminică M. (2008:107) defines performance taking into account the degree to which an enterprise manages to satisfy the requirements of the internal environment and the external environment, through an optimal combination of effectiveness and efficiency.

According to Petrescu S. (2008), value creation at the company level is achieved when it obtains a return on the capital invested in assets higher than the cost of the resources mobilized to finance them.

Bătrâncea I. (2010:141) appreciates that the performance indicators must help to appreciate the economic value, the creation of value and the potential for future earnings.

Bugle Al. (2011) appreciate that once the performance is analyzed, assessments can be made on the formation of the results of the activity and on the correlation with its financial structure, liquidity and solvency.

In the view of Vasilescu L. (2015), indicators such as the rate of economic return on assets or net profit per share are used to measure performance in a large number of companies, although these indicators are not theoretically correlated with value creation. Thus, appropriate financial ratios should be used to reflect value creation as well as modern indicators within value creation management.

From the analysis of the definitions mentioned above, it can be noted that indeed the opinions regarding the definition of the concept of performance are very vast, however, the diversity of opinions is given by their evolution over time in society, against the background of technical-scientific revolutions and world economic globalization moving towards new cycles of economic development with no requirements in terms of reaching the performance levels of the economic entity.

The modern management of organizations is dominated by two concepts: performance and value.

Therefore, the modern management of organizations is dominated by two concepts: performance and value.

According to Petrescu S. (2013), in defining the concept of performance and the use of the

terms effectiveness, efficiency and economy, one will start from the presentation of the enterprise that consumes resources and creates goods and services in a systemic view based on the input-output relationship, corresponding to the phases supply-production-sale economic circuit.

According to Balteş N., Vasiu D. (2015), financial performance is frequently associated with the notions of maximization, efficiency, productivity or effect. In this concept, the assessment criteria of financial performance refer to productivity, flexibility, adaptability, capacity, sensitivity, achievement, growth, turnover, production costs, productivity, profitability, etc.

The definition of the concept of performance through the prism of some criteria can be found in table no.1

Table no. 1 – Defining the concept of performance through criteria

Author	Criteria by which performance is defined over different periods of time				
Niculescu M. (2003:49)	1960-1970	1970-1980	1980-1990	1990-2001	after 2001
	turnover, total assets	net profit, earnings per share, PER	liquidity, cash flow	profitability through cash flow of investments, economic added value, market added value	value creation
Nistor I. Pintea M.O., (2011)	1950 – 1980		1980 - 1990	1995 – 2000	after 2000
	productivity, capacity, environmental production costs adaptability, turnover, control,		the level of achievement of the objectives	the efficiency and effectiveness of the economic entity	value creation

Source: own contribution

3. Bibliometric analysis on the Evolution of the concept of performance.

Bibliometric analysis can be performed using a database. To access the database, we used the Web of Science Core Collection platform

We carried out a bibliometric analysis of the specialized literature on the topic "evolution of the concept of performance" using the "all fields" search type.

In this sense, we performed the search for the keywords in the phrase "evolution of the concept of performance", the search being repeated in all the fields of the entire database, not being filtered by variants such as: topic, title, author, publication title, etc. We applied a filter to the Web of Science Categories section, where we selected the following fields: Business Finance, Business, Economics and Management. The search for articles in the bibliometric data source was carried out on 21.03.2024. After applying this filter, a number of 706 articles resulted.

Another filter I selected was the year of publication, thus I chose to take into account all the articles in my analysis except those published this year, namely 2024, since it is the current year and it is not fair to interpret data from other years with data from the current year. Following the search in the bibliometric data source applying the specified filtering, a number of 697 articles with the following keywords: "the evolution of the concept of performance" resulted. The 697 articles belong to one of the fields of Business Finance, Business, Economics and Management and are published starting from the first year in which articles were written on that topic and until 2023 inclusive.

3.1. Number of articles published per year on the topic "evolution of the concept of performance" using the search type "all fields"

In figure no. 1 it can be seen that most articles were written in 2020, which is the year in which the greatest research interest was registered on the topic "evolution of the concept of performance" using the "all fields" search type. At the opposite pole is the year 2000, the year in which the fewest articles on the analyzed topic were published. In conclusion, I could say that in the period 1999-2006 the number of published articles was quite small, and starting from 2007 the interest in publishing articles gradually increased, following that in the period 2010-2023 the number of published articles was more or less constant , and the peak being recorded in 2020.

Figure no. 1- Number of articles published per year on the topic "evolution of the concept of performance" using the "all fields" search type.
Source: Web of Science Core Collection
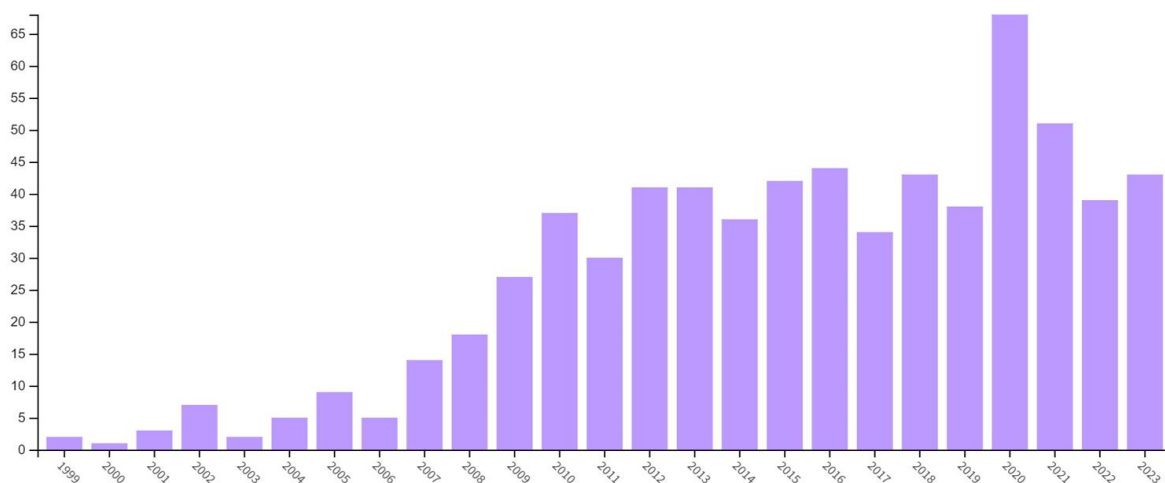
3.2. Number of articles published on the topic "evolution of the concept of performance" using the search type "all fields", according to the country where the authors of the published articles come from

Most articles published on this topic were published by researchers from the USA (128 articles, i.e. 18,364%), followed by England (91 articles, i.e. 13,056%), then Spain (55 articles, i.e. 7,891%). then Italy (50 articles, i.e. 7,174%), then Romania (45 articles, i.e. 6,456%), then followed by other countries as can be seen from the graph attached below (graph containing the first 20 records out of a total of 78 records).

Figure no. 2 - Number of articles published on the topic "evolution of the concept of performance" using the "all fields" search type, depending on the country where the authors of the published articles come from
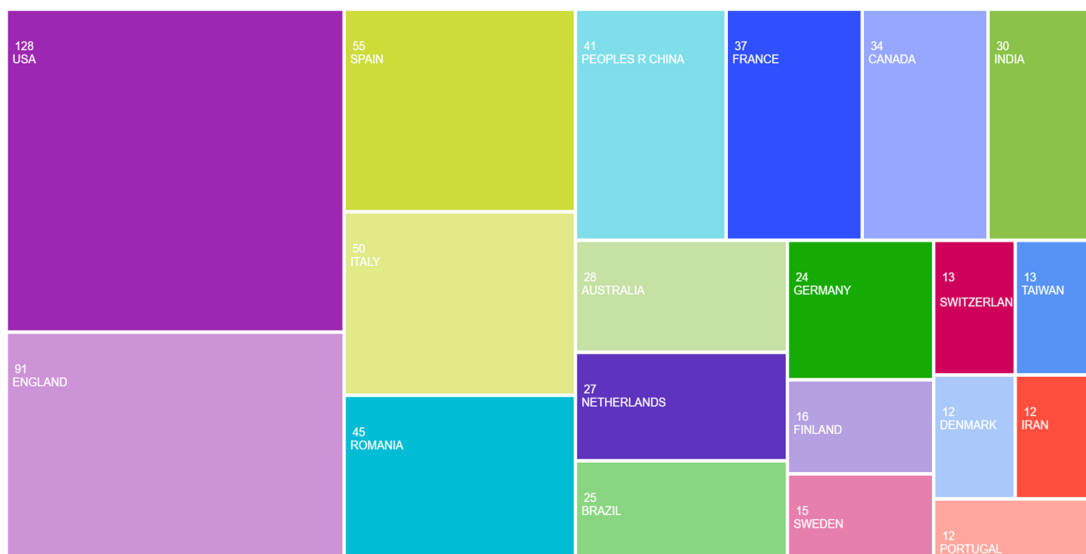
Source: Web of Science Core Collection

3.3. Classification according to the domain of the journal in which the articles were published.

Most articles were published in journals belonging to the field of Management (449 articles, i.e. 64.419%), then belonging to the field of Business (308 articles, i.e. 44.189%), then Economics (121 articles, i.e. 17.360, then the number of articles decreases significantly for articles in the other fields (Business Finance 38 articles, i.e. 5.452%). In conclusion, on the topic "performance concept evolution" using the "all fields" search type, most articles were published in journals belonging to the fields: Management, Business, Economics, Business Finance, with a much smaller number of articles being published in journals belonging to other fields.

Figure 3 shows the visualization of the network for the co-occurrence of keywords using the program VOSviewer version 1.6.20. VOSviewer is a software used for the creation and visualization of bibliometric networks. In the analysis performed on the analyzed sample, we used the co-occurrence network for a minimum number of 20 occurrences of the keywords. From the first analysis of the network for co-occurrences, after the filters set above, it can be seen that 33 items were recorded, which were grouped into 4 clusters, which generated 455 connections, also generating a total strength of links of 2686. The keywords were grouped into 4 clusters, each cluster being represented by different colors.

The keywords grouped in cluster 1 are: bibliometric analysis, business, corporate social responsibility, framework, governance, impact, management, model, performance, sustainability, systems. In total cluster 1 of red color has 11 items (articles).

The keywords grouped in cluster 2 are: dynamics, entrepreneurship, evolution, firms, growth, innovation, knowledge, networks, organizations. In total cluster 2 of green color has 9 items (articles).

The keywords grouped in cluster 3 are: absorptive capacity, competitive advantage, dynamic capabilities, firm, firm performance, industry, knowledge management, perspective, resource-based view. In total cluster 3 of blue color has 9 items (articles).

The keywords grouped in cluster 4 are: capabilities, exploration, strategy, technology. In total cluster 4 of mustard yellow color has 4 items (items).

The keywords grouped in clusters can be viewed in figure no. 3.

Figure no. 3 – Correlation of keywords with the theme "performance concept evolution" – Network visualization for co-occurrence of keywords

Source: Web of Science Core Collection, own processing in VOSviewer version 1.6.20

The following results from figure no. 3:

Within cluster 1, links are formed from the keyword "performance" to terms such as: bibliometric analysis, business, corporate social responsibility, framework, governance, impact, management, model, performance, sustainability, systems. In order to reach the performance of a company, a correct risk management is needed, based on which there must be a sustainable development in conditions of social-corporate responsibility that leads to obtaining profit and automatically to the existence of a financial performance.

Within cluster 2, from the word "evolution" there are links to keywords such as: dynamics, entrepreneurship, evolution, companies, growth, innovation, knowledge, networks, organizations. From these links it can be seen that for a company to evolve it needs strong entrepreneurship, innovation, good organization and constant growth.

In cluster 3, links are created between keywords such as: absorptive capacity, competitive advantage, dynamic capabilities, firm, firm performance, industry, knowledge management, perspective, resource-based view. The links are also created here at the level of the word company, in which we must direct a good management, the necessary resources, knowledge, capabilities and a competitive environment.

At the level of cluster 4, links are created around the word strategy. About the same intensity is the creation of links around the words technology, exploration and capabilities. From these links between keywords it can be deduced that equally important is the strategy of a company, the technology that must advance, the continuous exploration as well as the ability to maintain the performance at the level of the company.

4. Conclusions

The specialized literature shows that there is no unified vision on the concept of performance, not even from the point of view of a general understanding, even more so from the financial point of view.

Taking into account the definition of the concept of performance over time, until the 80s

practitioners used performance assessment criteria, such as: productivity, adaptability, capacity, turnover, environmental control, production costs, etc. Between the 80s and the 90s, performance was defined according to the level of achievement of objectives. Between 1995 and 2000, performance was defined according to the efficiency and effectiveness of the economic entity. And, from the 2000s until now, performance is defined taking into account value creation.

Considering the development of the world economy, the conclusion was reached that performance must be seen as a global vision. So that currently global performance brings together the three pillars of the term sustainable development, namely: economic development, social development and environmental protection.

As future approaches absolutely necessary for the continuity of the analysis would be "performance measurement and analysis of the indicators that best reflect the economic performance", and not least the non-financial performance approach.

Regarding the bibliometric analysis, it was carried out on the specialized literature on the topic of "the evolution of the concept of performance" As we identified in the Web of Science Core Collection platform, selecting the areas of interest Business Finance, Business, Economics and Management, resulted a number of 697 articles written between 1999 and 2023. The importance of the topic began to grow starting from 2007, and starting from 2010 it was written constantly until now, but in 2020 the most articles were written on the analyzed topic. Depending on the country of origin of the published articles, most articles were published by researchers from the USA, followed by England, Spain, Italy and Romania.

By the domain of the journal in which the articles were published. Most articles were published in journals belonging to the field of Management (449 articles, i.e. 64.419%), then belonging to the field of Business (308 articles, i.e. 44.189%), then Economics (121 articles, i.e. 17.360, then the number of articles decreases significantly for articles in the other fields (Business Finance 38 articles, i.e. 5.452%). In conclusion, on the topic "performance concept evolution" using the "all fields" search type, most articles were published in journals belonging to the fields: Management, Business, Economics, Business Finance, with a much smaller number of articles being published in journals belonging to other fields.

The paper concludes with keyword co-occurrence network visualization, where the intensity of links between keywords was analyzed. From the analysis of the correlation of the key words with the theme "evolution of the concept of performance", the words that were most intensively found in the scientific documents result: performance, evolution, management, strategy. Around these keywords links are formed with other words, but not limited to: company, corporate social responsibility, productivity, adaptability, growth, innovation, knowledge, perspective, knowledge management, resources.

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THE FISCAL CHALLENGES OF THE DIGITAL ECONOMY IN THE EUROPEAN UNION: A BIBLIOMETRIC ANALYSIS

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Abstract: *The digital age offers new opportunities for innovation and growth. From a fiscal point of view, it creates opportunities for tax administrations to reduce tax evasion. On the other hand, as business models change, there is international pressure on the tax system. The current rules were developed at the beginning of the 20th century for traditional companies that relied on the principle of corporate taxation where value was created. In the case of digital activities, physical presence is no longer a condition for the provision of services. There are two major questions: Where do we tax? In the case of a company with a low or even non-existent physical presence and what do we tax? in the context of a digital business plan based on knowledge, data and intangible assets. The digital economy is a challenge for all tax regimes, as its rapid development has led to the conclusion that international tax rules are not properly adapted. One objective currently pursued at EU level is to adapt Member States' tax systems to optimize them to meet the challenges of the digital era. The aim of this paper is to identify the model and the most effective instruments for charging the digital economy at the level of the European community, as well as the way in which the directives issued by the European Union manage to harmonize the fiscal policies of each member state for charging and regulating the digital economy. In order to achieve that, we performed a bibliometric analysis on the database Web of Science Core Collection, regarding our study research. This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) statement.*

Keywords: taxation; digital economy; digitalization; digital presence; fiscal policy; bibliometric

JEL classification: A13

Introduction

Although the journey of each tax administration is unique, the research of this topic show that successful digitalisation journeys typically go through three main stages. The first one is regarding the context analysis. This is critical as it helps ensure that the right opportunities and challenges for digitalisation are uncovered depending on a jurisdictions unique circumstances. This analysis will normally encompass factors external to the tax administration like compliance issues or digital adoption in society, as well as factors concerning the internal capability of the tax administration to address the opportunities and challenges. The second stage is the strategy development. Using the context analysis, the administration can develop a digitalisation strategy that will guide the rest of the journey. With a digitalisation strategy describing the overall vision and objectives for digitalisation, deliverables that will contribute to fulfilling the objectives, the timeline along which the deliverables should be realised, and the plan for financing the work, the administration can inspire and motivate stakeholders while also managing expectations about the scope and timing of benefits. The third stage is a successful project delivery. To fulfil the objectives of

the strategy, the administration will need to execute a set of strategy-aligned and coordinated digitalization projects. While successful project results partly hinge on adherence to the digitalization strategy, they also require a foundation of careful project preparation, including scoping, governance and mandate questions; flexible and professional project execution supported by top management; and thorough post-project follow-up of deliverables and benefits.

Literature review

The exponential development of information technologies and artificial intelligence applications generates significant changes in all areas of activity, but especially in the economy. Understanding new working tools and using them responsibly is becoming more difficult if serious efforts are not made from government structures to find solutions to the challenges of these phenomena. The phenomenon of digitalization and digital transformation is a natural consequence of them, producing changes both economically and legally. Digitalization requires new thinking in governance, management and legislation, which must be understood to avoid the pitfalls that any new phenomenon brings with it.

Agrawal, D. R., & Fox, W. F. (2021) establish the fact that the technological changes that induce new consumption patterns promise new challenges for fiscal authorities. Critical challenges for the next decades include limiting administrative and compliance costs of enforcing taxes in a digital world, determining filing thresholds, dealing with online marketplaces and facilitators, and taxing the consumption of digital services from two-sided platforms. With respect to digital services, we discuss whether consumption taxes should be imposed on both monetized platforms and nonmonetized platforms, such as social media, and the mechanisms for doing so.

The research results of Strauss, H., Fawcett, T., Schutte, D. (2020), reflect major discrepancies in the level of response and sophistication of tax administration systems that have been implemented among tax authorities globally. Furthermore, none of the participating tax authorities' tax administration systems currently reflect an optimised tax administration system, as defined, within the digitalised economy.

In the analysis of digitalization as a complex phenomenon and its evolutions, it was established that it produces effects at the economic level, digitalization being present in the analyses of global governance, being in fact the main vehicle through which globalization makes its effects felt at the economic and social level.Digitization has practically encompassed all sectors of economic activity. Differentiation is more related to the degree of penetration and the complexity of the digitization elements present, many of which are now intrinsic to the productive processes at the level of economies. Hence the effects and the sectoral impact is different.

Geringer, S. (2020) shows in her research the fact that so far, there has been no consensus regarding the fair taxation of the digital economy at the international and EU level. As European policymakers have begun to experience noticeable amounts of pressure to act, several EU countries have pushed forward and introduced unilateral measures to ensure they receive a fair share of the tax revenues pie. However, it is unclear whether national digital taxes can overcome the tax challenges stemming from the increasing digitalization of the economy.

Schon, W., (2019) said that over the years, a number of approaches have been discussed, including far-reaching proposals to fully or partially re-allocate taxing rights to market countries. In recent months, three options have emerged at the level of the Inclusive Framework/OECD: international taxation on the basis of significant market presence, taxation according to the value of user contributions and profit allocation to marketing intangibles.

The most apparent effect of digitalization is an overall increase in economic efficiency, although it is very important to take into account its different territorial impact at EU level, depending on the degree of development of the economies of the member countries, their productive specialization, and the technological capacity. In general, smaller economies are increasingly marginalised value-added chains being affected by significant losses in skilled labour. The leap that these economies are making from a structure oriented towards the primary sectors directly to the economy centered on tertiary sectors, is making them vulnerable, vulnerable, this leads to an increase in the volatility of the economic cycle and a lower resistance to shocks that are freely propagated on the EU market, including, and especially as a result of the trading facilities of the factors of production, based on digital technologies.

Following the analysis performed on a case, Pohrebniak S., (2022), said that the levels of digitalization and its legal regulation in different countries are significantly different. According to the degree and success of digitalization, four groups can be distinguished: leaders who are slowing down, promising, and lagging. The peculiarity of those slowing down is that these are states with mature digital systems, but a low rate of further development, which are ready to sacrifice growth rates in the name of responsible, inclusive, and high-quality development.

Digitalization has a clear effect on the forms and patterns of organisation of economies and companies operating within the EU, with greater possibilities to decentralize their activities and at the same time organize more efficiently and create a digital strategy .

Taxation of the digital economy

The main source of the deficiencies of the digital economy taxation is that tax rules are created for companies with a physical presence, which is often the basis of the right to tax a company's profits exercised by a state. In the case of digital companies, they create surplus value from the online environment without having a physical presence in the source state. The effect is not taxing their profits or possibly not taxing them in the right state. This has led to the EU's intention to introduce a fair charging system for all companies, regardless of their size or whether they are active in the digital economy or not. Moreover, another feature is that the revenues generated by these digital enterprises are mainly from intangible assets that are difficult to assess, which also leads to their non-taxation. The current socio-economic context calls for particular attention to be paid to digitalization and the growth of its related economic performance.

In the context of insufficient digital legislation, the EU discussed the creation of necessary measures to build a successful digital economy:

- Taxation of EU-wide profits from the digital economy;
- Developing plans for digital innovation to enable Europe to cope with development and become a digital leader;
- The need to change tax rules at EU level and adapt their tax systems to ensure that digitally generated profits in the European Union are taxed where value is created;
- The need to create an efficient and fair tax system for the digital age, leading to the fair payment of taxes by companies and ensuring conditions for action at EU level in line with those adopted by the OECD and other international partners;
- Agree on a tax policy response to the challenges of direct taxation of the digital economy at EU level, as well as the need to adopt a unanimously accepted definition of the permanent establishment and the associated transfer pricing and profit allocation rules;
- Highlighting the principle of fiscal neutrality, according to which fiscal policy choices and tax rules should provide for a similar treatment for comparable situations, at member state level the importance of different data, including user data, for value creation by the digital economy in generating profits, and the need to consider and

assess the role of data in the context of transfer pricing and profit attribution rules, is reiterated.

The EU discussed how digitalisation affects the areas of the tax system, providing tax authorities with new tools materialized by improving services to taxpayers, increasing the efficiency of tax collection and detecting tax evasion, concluding an interim report, among the measures pursued being:

- A coherent and concurrent review of the rules of nexus (where we charge) and profit allocation, fundamental concepts of the allocation of tax rights between jurisdictions and the determination of the relevant share of the profits of the multinational enterprise that will be subject to taxation in a given jurisdiction;
- The adoption of a provisional measure in the form of an excise duty applied by the state in which certain electronic services are provided on the gross consideration paid for the provision of these services (proposal which is opposed by some states);
- Follow up on the progress made in implementing european directives with observed effects in the case of multinational companies that have reorganized themselves from a tax point of view to better align with their economic operations.

The European Council proposed a directive laying down rules for the taxation of companies in the event of a substantial digital presence, introducing the notion of substantial digital presence for the purpose of establishing the existence of a permanent establishment and criteria for determining the fingerprint, such as revenues from the provision of digital services, by the number of users of such services or by the number of contracts for a digital service. Thus, profits attributable to a substantial digital presence in a Member State are determined on the basis of a functional analysis and will be imposed in it under the national corporate tax framework. To this end, the economically significant activities carried out by the substantial digital presence relevant to the development, improvement, maintenance, protection and exploitation of the company's intangible assets must be identified, such as: collection, storage, processing, analysis, use and sale of user-level data; collection, storage, processing and display of user-generated content; the sale of online advertising space; making third-party content available on a digital market; the provision of any other digital service not listed above. These provisions apply to entities resident in the EU or in a third country, in the latter case a double taxation convention with provisions similar to those in the Directive relating to significant presence and attributable profits is mandatory. Another proposal of the European Council was regarding a Digital Services tax (DST) Directive as a simple interim solution for taxing digital activities in the EU. FDI constitutes a tax on revenue from the provision of certain digital services. The specific objective is to adopt a measure that is easy to implement, to be applied on a temporary basis, pending the establishment of a comprehensive solution.it is aligned with the general objectives, which envisage, protecting the integrity of the Single market ensures its good functioning, ensuring social fairness and a level playing field for all companies operating in the EU and tackling aggressive tax planning by closing gaps that currently exist in EU Member State rules that allow digital companies to circumvent taxation in countries in they are doing business and creating value.

With regard to the concept of digital permanent establishment, a second variant developed, but this time, by the European Commission, which takes into account precisely the problems related to the implementation of a long-term European approach, i.e. the short-term one, has been established as an alternative; this implies a tax on income/turnover where the value is created, it is intended that this tax is due only by groups with global turnover above a certain ceiling (750 million euros, currently proposed) and they have their digital footprint translated into revenues in the EU worth 10-20 million euros. The digital fingerprint will be used to calculate the tax rights for each Member State. Basically, depending on certain information that will be requested from companies, this information will consist, in the case of activities in which data about users is used or through the virtual advertising space (e.g. facebook, google, twitter, instagram, etc.), statistical - geographical information relating to those who

use the information, or, for services provided for a fee on different digital platforms/markets (brokerage services such as airbnb, uber), tax will be paid in the countries where those who pay for the services are resident. Turnover taxation has clear disadvantages for certain categories of companies, usually those with low margins, lost or in development through investments. The changes are very broad and tend to extend European attributions in the area of indirect taxes in the area of direct taxes. After all, if the direction will be taxation through the short-term option, member States should position themselves according to their own interests and express a point of view on the Commission's technical proposal to analyse the implications beyond fiscal policy intentions already taken at EU level.

Bibliometric benchmarks in shaping the fiscal challenges of the digital economy

The paper also points out the main techniques correlated to bibliometric analysis, namely: citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, co-authoring analysis, total publications, total publications, number of authors contributing to the research, publications with sole author, publications made in partnership, number of active years per publication, total number of citations, media citation. The theoretical aspects related to taxation are harmoniously complemented by the bibliometric analysis of its challenges in the digital economy. The fundamental objective of this bibliometric analysis on the concept of taxation in the digital economy was to map the phenomenon in order to outline an overview of it in order to highlight the research flows and its historical development.

In relation to the annual scientific production, the rate of growth of research interest shows a positive trend with the passage of time. One of the most relevant sources of publication of documents related to the aspect of tax research in the digital economy is the Web of Science Core Collection. This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) statement.
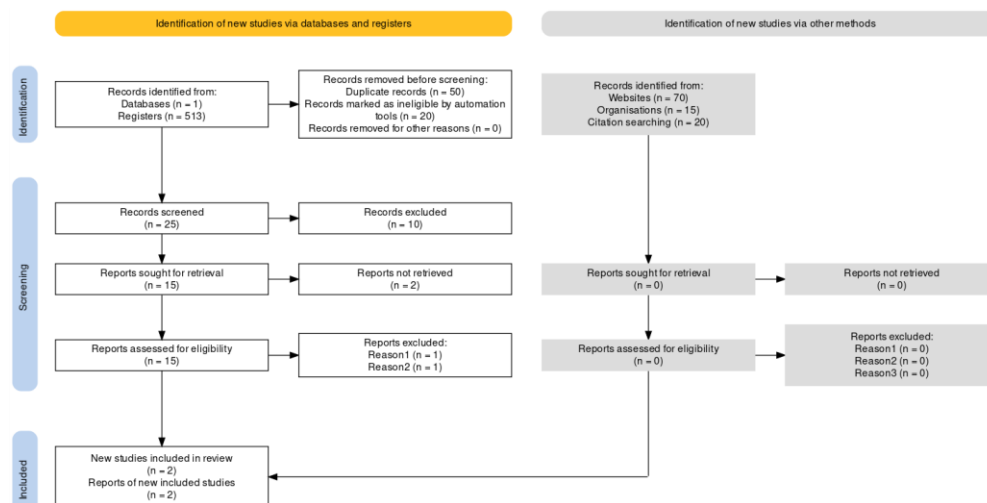
Figure 1: PRISMA Bibliometric Analysis on database Web of Science Core Collection
Source: Data processed with https://estech.shinyapps.io/prisma_flowdiagram/

Study search

To identify the 20 top-cited systematic review/meta-analysis studies in the field of the fiscal challenges of the digital economy, we performed a search of the Web of Science Core Collection on April 12th, 2024. The search strategy was as follows: the fiscal challenges of the digital economy, or digital economy, or fiscal challenges, or systematic review, or meta-

analysis. The search results were ranked by the number of citations, and the 20 top-cited studies were identified according to the number of citations.

Inclusion and exclusion criteria

We included all studies that were systematic reviews or meta-analyses pertaining to the fiscal challenges of the digital economy. We excluded studies that were corrections of previous studies and studies that only mentioned terms related to the fiscal challenges of the digital economy but did not concentrate our theme.

Data extraction and analysis

The following information was collected: number of total citations, number of citations in 2024, average citations per year, corresponding author's institution and country, journal, publication year, and number of references. If a corresponding author had more than one institution, the first institution was selected for analysis.

Results

The main characteristics of the 20 top-cited studies are shown in the study. The number of citations of the 20 top-cited studies varied from 7 to 487, with a total citation count 3250. The 20 top-cited systematic reviews/meta-analyses were published between 2001 and 2024. The year with the most studies was 2022, with 49 studies. Most of the studies had between two and six authors, studies with two authors were the most common. The 20 top-cited studies came from 10 countries (Russia, China, Spain, England, Germany, Romania, Brazil, France, USA, India), Russia had the most top-cited studies.
Bibliometric analyses enable readers to gain insight into the history and development of a specific specialty. Identifying the classic citations could help us catch the emerging themes and future trends for a particular discipline. From 2001 to the present, the field of digital economy has been developing for nearly twenty five years, but we did not find any bibliometric analyses in the field of the fiscal challenges of the digital economy. As systematic reviews/analyses always aim to synthesise data of the latest, high-quality original studies that are similar to provide more reliable results and are always regularly updated, we performed this study to identify the 20 top-cited systematic reviews/meta-analyses and to analyse the main characteristics of them.

Limitations

This study has several limitations. First, we only included studies from the Web of Science Core Collection, so there may be some that we were missed. Thus, the results of this study should be carefully interpreted. Second, many factors may affect the number of citations for a given study, such as number of years since publication, journal of publication, original language, institution and the reputation of the author. Furthermore, we did not analyse self-citations and citations in lectures and textbooks.

Conclusion

In conclusion, this study is the first bibliometric study to identify the 20 top-cited systematic reviews/meta-analyses in the field of the fiscal challenges of the digital economy. This study analyses the main characteristics of the most cited studies. Since systematic reviews/meta-analyses always synthesise and analyse a series of similar and latest original studies, we

analysed the most-cited systematic reviews/meta-analyses that might have a stronger impact on future practice and research work.

The European tax system needs tax reform to address the digitalisation of the European economy. Unilateral measures raise problems in terms of their compatibility with national laws, but also with European rules on the avoidance of double taxation. Their existence can have adverse consequences in the sense that they can generate a variety of rules in the context of a European Single market.

A reinterpretation of the classic concept of permanent establishment is needed to make a real link between where digital profits are earned and where they are taxed.

In defining, the main focus of the study was to identify how modern paradigms affect the field of digital economy, thus generating changes with a remarkable impact on taxation. Thus, the aspects dealt with in the work are summarized in the importance and role of reflecting the indispensability of digital technologies in the economic and business environment as well as in the fiscal one.

Following the study carried out in relation to the data collected and used in the analysis of the approached subject, it was found that, taking into account the EU strategy for the digital single market, that it paved the way for closer digital harmonisation between the EU member states. Launched in 2015, it aims to contribute to the economic growth of competition, innovation and investment.

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AN ACCOUNTING INSIGHT ON ROMANIAN SOCIAL ECONOMY ENTITIES SUSTAINABILITY

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Abstract: *Social economy has a core importance in creating jobs and delivering goods and services for the disadvantages groups members. Even if no searching for profit, the Social Economy Entities (SEEs) have to maintain a financial stability allowing the continuously fulfilling their social mission. Sustainability is crucial in delivering to the disadvantaged. Romania financed during the years 2020 and 2021 around 2800 SEEs, but not very much is widely presented about their activity. Financial information is still publicly available, so the SEEs economic behaviour may be monitor and even predicted as a trend, using forensic accounting techniques: reviewing the existing public information on public and private sites, analysing the summary of financial statements, as it may be found on the Ministry of Finance online database, and interpreting the evidence so gathered. Within this paper, the sustainability of a sample consisting on 172 SEEs incorporated in Maramureș County, Romania is analysed using publicly available data, including by the use of the indicator of financial distress (Z- Altman score). It reveals that in actual conditions, about 80% of the sample population are in high risk of bankruptcy, only 6% of them being financial sustainable. This research may be useful for national deciders and local social economy facilitators in focusing the aid and support actions, and also for the SEEs initiators, in preparing the best ways of managing the assumed risks.*

Keywords: *forensic accounting*, *social economy, efficiency, sustainability.*

JEL Classification: *A13, B55, L31, M14.*

1. Background of SEEs in Romania

Raised at the intersection of economic and social policies, the social economy aims to bust the social cohesion, by including disadvantaged people labour into public services, affordably delivered to the ones they needed the most. The prevalence of social values and mission over profit making activities separates the social economy entities form the profit-oriented organisations. SEE should use internal and external financing resources in delivering social activities, in the benefit of marginalized groups or persons, into the market failure area. Performance of these entities is seldom reported to financial indicators, but to social activities, results and impact. Even so, for an activity to be deployed, financing is needed, so financial aspects are not to be neglected by interested parties in considering different performance approaches of SEE's.

Worldwide known as "The third sector" (Levitt, 1973), the contemporary social economy system is regulated in Romania since 2015, imposing four conditions for the SEE recognition: to act in general interest, to reinvest in social activities at least 90% of the annual gross profit, to transfer its assets to other social enterprises in case of business liquidation, and to employ people at a considered fairly wages discrepancy, which is no more than eight times between the smallest and the bigger salary. As a right corresponding to these obligations, the SEE's might receive state subsidies for capital and work, specially

form EU funding through European Social Fund (ESF). SEE's may also receive some national subsidies if employing disadvantaged people.

The National Employment Agency (NEA) is monitoring the recurrent activities of SEE's, since the Managing Authority (MA) for Programs financed by the ESF is monitoring for a relatively short period the way the ESF subsidies are spent, and social mission is fulfilled by using the EU financing.

EU subsidies are distributed within competitive calls for proposals addressed to interested parties in developing SEEs. These parties, having in fact the role of facilitators, should use the EU financial support received through the MA in identifying interested persons to develop new SEEs, in training and counselling these persons with the aim of creation and operationalisation of SEEs. These facilitators, acting as entrepreneurship scheme administrators of the minimis aid under the control of the MA, sign subsidy minimis aid contracts with an approved number of SEE's they have created. Within these contracts, the facilitators are granting the minimis aid, are monitoring the activities and disbursing sums.

In December 2023, according to the public NEA's National Register of the SEEs: https://www.anofm.ro/index.html?agentie=&categ=9&subcateg=1&idpostare=28756, in all Romania a number of 2915 legal entities were registered having also the quality of SEE. Analytical evidence on VAT number, date and county of incorporation is available here for each SEE, but the other sections are not always filled in. Unfortunately, less technical information about SEE's activities is publicly available at national level, except some specific SEE's internet presentation. It may be expected that SEEs activities are more likely promoted and acknowledged at local level, nearby their target groups, or they do not function any longer even if they are still registered as SEE. The quality of SEE may be loosened by the way of a simple request made by the interested legal entity to the NEA, announcing that the entity is renouncing so at its social mission, continuing or not to act as a legal entity according to the common law. There is no limitation for the SEE's activities, except of course the generally ones that cannot be financed by European subsidies, according EU regulations in force.

The importance of the sector, as well as of the necessary due attention in public spending is arisen by the announcement made by the MA in 2020, during COVID19 pandemic period, about its decision in over contracting the sector, meaning granting more than 4 times and a half of the initial estimate to the social economy facilitators, in order to allow the creation of more SEE than initial predicted as necessary. According to this, were expected to be contracted 116 financing contracts with a total value of 325.82 million euro, more than the initial amount assumed of 70 million euro. The announcement is still active on the MA webpage at: https://mfe.gov.ro/am-pocu-publica-lista-finala-a-proiectelor-selectate-aferenta-apelului-pocu-449-4-16-consolidarea-capacitatii-intreprinderilor-de-economie-sociala-de-a-functiona-intr-o-maniera-auto-sustenabila/. The list of the facilitators and expected grant values may be also download from this page. The guidelines for applicants, also available online at: https://www.fonduri-structurale.ro/fisa-proiect/2/programul-operational-capital-uman/406/pocu-4-16-sprijin-pentru-infiintarea-de-intreprinderi-sociale is establishing as a core condition for the SEE to create jobs within the new established entities, about one new job for each 20,000 euro minims aid granted, but not more than 100,000 euro per SEE. The same guidelines are stating that the facilitators of SEE creation may use at least 70% of their grant contract to be reimbursed in favour of the new created SEEs. Having this information, in approximate numbers, as a direct result of this call for proposals, in Romania should have been incorporated and financed somewhere between 2300 and 2850 SEE, subsequently creating new jobs in the social economy sector in-between 10,000 to 11,500. The facilitators received for all measures in preparing and incorporating SEE a total amount of about 105 million euro, meaning a little less than 10,000 euro per new job created in social economy, or about 35,000 euro for each SEE they created. The number of the new created SEEs is consistent with the total number included in NEA's public register, so it may be assumed that the largest part of Romanian SEE was

created under the pattern of the shortly described above call for proposals the MA launched in 2018 and later over contracted in 2020.

2. Sustainability in social economy sector

In the social economy sustainability should be linked by the lasting impact an intervention is delivering to the target groups in particular and society in general, as a continuous activity. Efficient long lasting social activities should so define the sustainability in social economy sector. The link between financial support (input) and the impact (the registered change since the intervention is presented below.
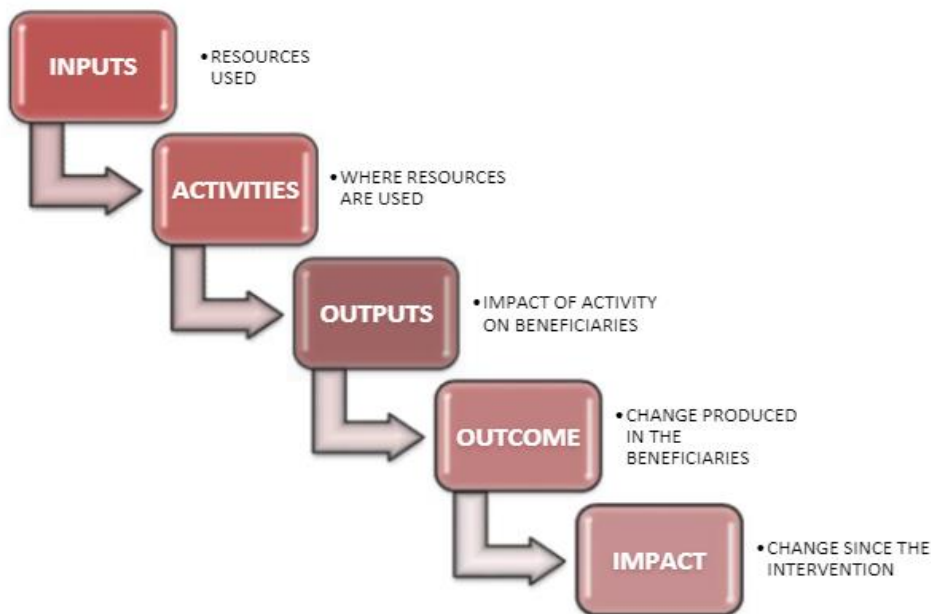
Figure 1: Terminology of social enterprises in their operational process.
Source: (Ballester-Miquel, et al, 2017)

The use of adequate resources, financing relevant activities, creating impact to beneficiaries, leading to a change in their situation, eventually to a lasting changing is simply describing the sustainability of social economy sector. Justifying the need of inputs in social economy sector is more than simply financial, as in business sector is, but socially explained with reliable indicators of the return on investment, not in accounting terms, but rather in the sense of social balance where outputs and outcomes are valued (Ballester-Miquel, et al, 2017).
The described model of efficiency, and also sustainability, offers the advantage of considering social impact, as well as other factors limiting or enhancing it. Others approaches are considering for interpretation the return of public investment in a simpler way, by measuring the rate of return of SEEs over a limited period of time (Oliński, 2020). They calculate the amount of payments to the national budgets and are comparing with the initial public investment in SEE, assessing so strictly financially the efficiency of public intervention.
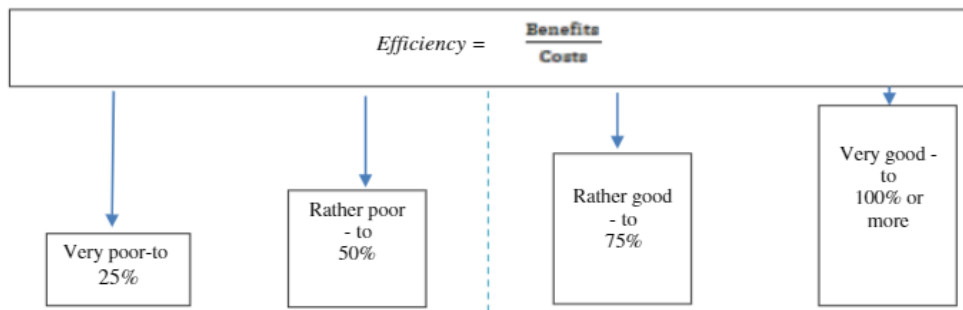
Figure 2: Thresholds for assessing efficiency of the public financial support.
Source: (Oliński, 2020)

However different efficiency-oriented models and approaches, the capacity of delivering long lasting services is crucial, and, for this financial resource is critical for restarting over and over again the cycle of delivering goods or services to the target groups, the disadvantaged people.

In Romania, the social economy sector is at its very beginning, since the corresponding regulation was issued in 2015. Some public investments were put in the market, but unfortunately, signs are showing that SEEs are not functioning quite well, and their capacity on restarting new cycles of delivering goods or services to the disadvantaged people is jeopardise.

3. Research methodology

Social economy may play an important role in future European economy, if relevant data is available, collected and analysed for a sound management decision process regarding to SEEs creation, subsidize and monitor as well. Romania, as a significant part of EU should monitor its social economy sector, further acting according the analysis findings. Natural responses related to the large amount of EU expenditure in SEE are to be expected from the involved parties, the main actors of the social economy sector: the NEA, the MA and the last but not the least, the facilitators of SEE creation in Romania. There are the research questions trying to extract relevant answers to the subject:
- Are SEE's businesses sustainable?
- Are the SEEs financially self-sufficient?
- Is the expenditure structure supporting sustainability?

As long as detailed data regarding SEE is unavailable, answers at the above listed questions are searched through the use of forensic accounting techniques: reviewing the existing public information on public and private sites, analysing the summary of financial statements of the SEE, as it may be found on the Ministry of Finance online database, and interpretation of the evidence so gathered. Conclusions may lead to improvement opportunities in social economy sector development, by outlining the sustainability issue in the purpose of future corrective actions. Sources of information to fundament answers are public, available relevant data was used from the MA internet site, the NEA public SEEs registry, the Ministry of Finance public database and a private NGO internet site specialized in promoting financial opportunities arisen by the European funding in Romania. Because of the large extent of data needed to analyse the national level, a selection of data was used, regarding SEEs incorporated in Maramureș County, in Romanian Northwestern Development Region, bordering Ukraine. This selection is motivated in the largest number of SEE this county has incorporated in the region, and the second largest in the country as for 172 entities, representing 5,9% of the total SEEs in Romania. Romania has 41 Counties,

Maramureș County has a contribution to Romanian GDP of 1,7% and a GDP/capita reported to the national of only 72,9%, so it may be assumed that in this County the need for services SEEs may deliver under the market failure are expected. Analysing the public list of successfully facilitators it can be observed that For Maramureș County a number of 5 financing contracts were granted, for a total value of 13,87 million euro, representing 4,26% of the total. This research is only a case study, regarding SEE in Maramureș County. Findings are representative for Maramureș County as data from all SEE population has been collected and analysed. In some extent this study conclusions may be relevant at country level, but to confirm this, furthermore data has to be analysed from all over the country.

Data about location (Maramureș County), VAT number and year of establishment of SEEs was collected from the NEA public register, then additional financial data was collected form the public database of the Ministry of Finance, for each VAT number. Because of the deadline for submitting financial statements for the fiscal year 2023, which is later than the deadline for this paper, not all population presented to the Ministry of Finance the 2023 financial statement, so latest information it was used for both layers, meaning information extracted from the publicly financial statements of the year 2022. Microsoft Excel has been used to generate relevant reports.

Data was divided depending of the SEE year of incorporation and by the type of the legal person incorporated. 9 of 172 SEEs (about 5% of the total) are established as NGO, not for profit organisations, forms of organisations really suitable for a SEE profile of social services providers. The rest of about 95% are organised as profit making organisations: limited liability company (SRL).

Were eliminated from the analysis the entities created earlier than 2020 (15 SEEs) and later than 2021 (7 SEEs), because of the lack of public information regarding their scope and pattern for incorporation. The remaining population was divided into two layers, the 2020 incorporated (51 SEEs) and the 2021 incorporated (85 SEEs). In the purpose of conclusions representativeness, and considering the annual turnover as the main indicator of SEE's volume of activities, from each layer were removed the outliers, so were eliminated the smallest values of annual turnover (less 2,000 euro) and the greatest, considered as non-consistent with the average sample turnover. The remaining 2020 layer consists of 37 sets of data and the 2021 in 71 sets of data, corresponding to SEEs having an activity that describes the normal for these entities. These data were kept for further analyse, conclusions for layer 2020 may, in some cases, be considered as forecasting the reality the layer 2021 will face next year. In the purpose of estimating the financial health of the SEE, the Altman Z-score method was applied. (Gelashvili, 2020).

4. Results and discussions

4.1. About SEE sustainability
The NEA public register of SEE includes data of all incorporated entities in Romania having also the quality of SEE, some of them may be incorporated earlier then 2015, the year when the SEE law entered into force, but these are only exceptions, most of the SEE were established and incorporated with the occasion of their owners' participations into relevant projects financed by the MA in 2020, 2021 and 2022 An examination of the December 2023 latest version of the national register of SEEs allows collecting relevant data. The number of declared active SEE in Maramureș County is 172 and the first SEE certificate has the number 1 and the last 177. It may be concluded that 5 SEE renounced at their quality. A further analyse of financial data reveals that other 13 legal entities from the total of 172 are even radiated, or they suspended their activity, or they simply didn't submit annual financial reports to the Ministry of Finance, meaning these entities are no longer active, so they are no longer fulfilling their social mission, so a total of 10,46% are formally not continuing the

social activity. As for the rest, by examining the collected data from their financial statement (mfinante.ro), it was found out that in 2022 after the first year of activity (layer 2021) 6 SEEs had an activity of less than 2000 euro per year, and in the second year of activity (layer 2020) 8 SEEs had an activity of less than 2000 euro per year, meaning in fact that those SEEs are not working, are not delivering activities for their social mission, even they stay registered as so. It may be concluded that 8,14% from the total of 172 SEEs in Maramureș County practically are not delivering according their social mission, even if they stay incorporated as SEEs. As a conclusion, according to the latest financial available data (2022) about 20% of the total SEEs in Maramureș County are no longer providing for their social mission, so 20% of the SEEs are not sustainable. Sustainability issues may be further analysed and discussed only for remaining 80%.

4.2. About financial SEEs self-sufficient ness
The most significant indicator for self-sufficient ness is the equity value. If negative means that the SEE cannot fulfil its financial obligation even in the event of asset liquidation, situation which implies an even less value of the assets, the liquidation value. The financial statements are presented in the hypothesis of continuing activity, so assets value is different presented, bigger than the liquidation value.

As for equity, in the 2020 layer 26 SEEs have negative value for equity, meaning about 51% of the total layer population. The 2021 layer presents 39 SEEs with negative equity, meaning about 46% of the total layer population. A conclusion may be extracted here that even in the first year of activity the number of SEEs with negative equity was representing a strong minority (46%), in the second year the number of SEEs with negative equity may become a majority (51%), Considering that these SEEs were acting in similar conditions, in the same geographical area, having the same pattern of incorporation (which is a minimis subsidy originated form European funding) it may be concluded that in the next year SEEs situation will worsen, meaning the number of SEEs presenting a negative equity will increase, so it will be harder to SEEs to continue their activities without financial support.

Another indicator, less representative than the equity is the profit. As long as a firm has a profit, its activities may continue, even in the condition of negative equity.

As for profit, in the 2020 layer we find 28 SEEs registering profit (54,9%) and 23 with losses. In the 2021 layer we find 57 SEEs registering profit (67,06%) and 28 with losses. It may be concluded that profit was registered in the first year of activity by relatively more SEEs than in the second year (decreasing from 67,06% to 54,9%).

As for debts, the 2020 layer cumulates for the 37 SEEs corrected population the medium debt/ SEE is 25,132 euro. The 2021 layer cumulates for its 71 SEEs corrected the medium debt per SEE is 17,698 euro. It may be concluded that there is a substantial effort of SEEs promoters (owners) in sustaining the activity. Both layers are presenting, as a whole, negative value of equity, so debts of SEEs are generally larger than the balance sheets assets, taking into consideration also the minimis aid.

All these corroborated conclusions, may lead to an image of general financial distress for SEEs, difficulties that may lead eventually to SEEs closure.

In order to confirm this finding, the Altman Z-score method was applied for all 2020 and 2021 population (Gelashvili, 2020), as well as for the corrected samples of 37 and 71 SEEs using the formula:

$$Z' = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

Where: Z' is the index of bankruptcy;
$\quad X_1 =$ (Current Assets-Current Liabilities)/Total Assets;
$\quad X_2 =$ Retained Earnings/Total Assets;
$\quad X_3 =$ Earnings before Interest and Taxes/Total Assets;
$\quad X_4 =$ Book Value of Equity/Total Liabilities;

X₅= Sales/Total Assets.

Results of Z's score show that, in practice, companies can be classified into three different areas:

Z' > 2.9 - "Safe" zone; it means that the company has no risk of bankruptcy.

1.23 < Z' < 2.9 - "Grey" zone; it means that company could have problems to survive in the next period.

Z' < 1.23 - "Distress" zone; it means that there is a high probability that the company will go bankrupt.

According to the Z-score formula, the sample of this research has been classified by these three groups (Safe; Grey; Distress), and the results for each of the sample population (2020 and 2021) are presented in the table below.

Table 1: Index of bankruptcy classification for 2020, 2021 layers and total SEEs

	Safe zone	Grey zone	Distress zone	Total
2020 Number of SEEs	9	6	36	51
2020 (% of SEEs)	17.65%	11.76%	70.59%	100%
2020 Number corrected of SEEs	6	5	26	37
2020 (%) corrected	16.22%	13.51%	70.27%	100%
2021 Number of SEEs	0	13	72	85
2021 (%)	0.00%	15.29%	84.71%	100%
2021 Number corrected of SEEs	0	9	62	71
2021 (%) corrected	0.00%	12.68%	87.32%	100%
Total of SEEs 2020 + 2021	9	19	108	136
Total of SEEs 2020 + 2021 (%)	6.62%	13.97%	79.41%	100%
Total of SEEs 2020 + 2021 corrected	6	14	88	108
Total of 2020 + 2021 corrected (%)	5.56%	12.96%	81.48%	100%

Source: own processing of financial data through Altman Z-score method

As a conclusion, financial SEEs self-sufficient ness is not confirmed according to existing 2022 financial data for about 80% of the existing SEEs, here being present a high risk of bankruptcy. The risk of bankruptcy is also present for about 13% of the SEEs; they will have problems in surviving in the future, but this doesn't mean they will necessarily go bankrupt. Only 6% of the SEEs are found in the safe zone, so they are far away from the bankruptcy zone. It may conclude that this share of SEEs is originated from 2020 population, so there is a possibility that becoming mature, the SEEs will be more viable, hypothesis confirmed by the migration seized from the distress zone to grey and even safe from the year 2021 compared with the older sample of 2020. This conclusion that may be further confirmed (or not) by the 2023 financial statements data, not yet all available now.

4.3. About expenditure structure supporting sustainability

Examining the financial data publicly presented by the Ministry of finance for the selected VAT numbers, corresponding to SEEs, it may be concluded that together with the appropriation of the legal status of limited liability company, the SEEs promoters have also a preference for acquiring fixed assets from the minimis aid originating from the EU subsidies. For the 2020 layer the average is about 47,158 euro/SEE, approximately similar with the 2021 layer, here the average of fixed assets is about 47,516 euro/SEE. This similarity is normal, because all these SEE; were established under the same circumstances, following the same pattern. It appears that more than 50% of the minimis aid is spent on fixed assets, to be used for generating income and eventually profits to be reinvested in the firms (also social) activities. Comparing the income in advance with the fixed assets values for the 2020 layer, as the second year, after the minimis aid is consumed,

it may reveal the average amortization period of the fixed assets acquired: 12 years, so there is a preference for fixed assets with long period of amortization.

Further examining data presented from the annual financial statements (2022), for a corrected series of 2020 layer consisting of 37 sets of data and the 2021 layer consisting of in 71 sets of data, corresponding to SEEs having an activity that describes the normal for these entities, a relatively large number of employees is seized (3.89 employees per SEE in 2020 layer and 3.54 employees per SEE in 2021 layer). Necessary funding for salaries/ SEEs in the first year (layer 2021), calculated at the minimum legal level in Romania is 23016 euro/SEE, and for the second year (layer 2020) is 25338 euro/SEE, in the hypothesis of full time for the new jobs created within the SEEs.

This number of employees per SEE indicates the value of a minimis average aid per SEE, as 85,000 euro. The estimate of budget breakdown for 2021 series is: Fixed assets 47,158 euro, Salaries: 23,016 euro, and the rest of 14,468 euro is dedicated to other expenses, including current assets, services, etc.
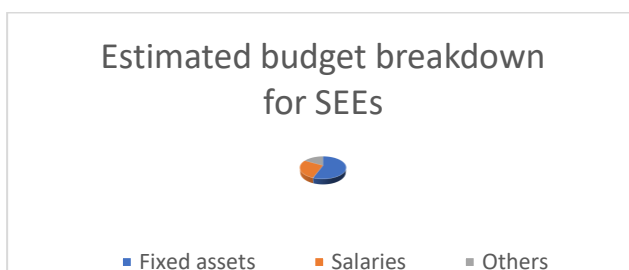
Figure 3: Estimated budget breakdown of a minimis aid supported SEE
Source: own processing of publicly presented data as described by the author

As for this budget breakdown, taking into consideration the obligations in accomplishing social mission and the interdiction of distribution the profit to the shareholders, values of expenditures for salaries are fully justified, and they should be kept at least at the same level. For maintaining this value in the years to come, the SEEs should gain annually at least the amount due for salaries and miscellaneous others, so a minimum of 32,661 euro per year. Examining the publicly available financial data for the 2020 series, the one in the second year of activity, it reveals that only 13 of 51 SEEs (25.5%) do realize this level of revenues, so for the rest is expected that keeping the jobs is possible only by increasing debts. In conclusion, with the determined structure of expenses, only 25% of the SEEs may become sustainable.

5. In conclusion

It has been observed a prevalence of 95% in incorporating limited liability companies as SEEs, but NGOs, potentially more suited for developing activities oriented to disadvantaged groups. It has also been observed that about 20% of all ever registered SEEs in Maramureș County are even closed or suspended their activity at December 2023. As for the rest, about 80% of functioning SEEs are in high risk of bankruptcy (debts, negative equity, small turnovers, losses), and only about 5% are viable, financially sustainable. The rest are in the grey zone. As for their activity, less information is available. Some questions may arise regarding the causes of this reality, about prevalence of limited liability company over the NGO (more suitable for delivering social activities), about relevance to social economy of some activities chosen to be financed (ex: leasing vehicles and goods, engineering activities, preparing sites for buildings, software production, photography etc.), about the support on identifying risks received by the social entrepreneurs from the facilitators, about

of the on-going support received, etc. These should be taken into consideration for further analysis.

Social economy sector is vital in creating opportunities for disadvantaged people, so it must be monitored, analysed, encouraged and supported. The state, through the UE financing programs financed in the years 2020 and 2021 the creation of a large number of social economy entities (SEEs), making expenses of no less than 325 million euro, but, as described above, the application of forensic accounting techniques revealed a depressing reality.

Without any external intervention, seeing the actual trends, the obligation of maintaining jobs is not sustainable, the debts for the second year of activity are 40% bigger than in the first year, SEEs actual initiators are in debts cumulating about 30% of the received grant after the first two years of activity. With this level of debts, as well as with the identified level of bankruptcy risk, measures of SEEs in managing the closure risk might be expected in the future, such as: reducing from full time to part time or even the number of jobs, renouncing at the SEE quality, and so, to all assumed obligations after the contract mandatory period. Without another further financial help these are the logical measures to be taken by the entrepreneurs who already lent important sums to the new created firms.

Closure of existing entities, excessive debts and lack of ongoing support for these entities should be considered by deciders in adjusting policies and refocusing on the most relevant activities and disadvantaged target groups.

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DISCLOSURE ANALYSIS OF *7R⟳* SUSTAINABILITY MATERIAL INDICATORS IN THE CIRCULAR FASHION INDUSTRY

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Abstract: *The fashion industry is one of the most polluting industries in the world, which makes it a candidate for attention towards what concerns the circular economy, along with other sustainability-related practices. This industry has great potential of disposing itself from the unsustainable linear business models that it adopted for a long period to more circular business models, which promotes closing the loop. In order to find out the circularity performance of the selected companies towards the disclosure of circular economy-related information in their corporate sustainability reports, this study transformed the quantitative material circularity performance indicators proposed by Rossi et. al (2020) into qualitative indicators, which makes it more inclusive for the analyzed companies, because not all of them report and disclose information respecting the same guidelines. Upon transforming the quantitative indicators into qualitative ones, the circularity performance was measured through a score-based method, which offers an insight perspective on data that makes possible a comparative analysis and also an interpretation of the extent of circular information disclosure. Seven circular material indicators were selected and analyzed for fifteen companies representing the European fashion industry. Results revealed that the higher average disclosure score is on the recyclability of materials and resources while the poor disclosed information in the sustainability reports is regarding remanufacture and refurbishment.*

Keywords: *circular economy, fashion industry, circularity performance, sustainability reporting*

***JEL Classification:** M41; G32; Q56*

1. Introduction

The topic of sustainability is gaining more and more attention in the business world and worldwide. To harmonize the transition to sustainability, policymakers, manufacturers and suppliers develop earth-friendly policies, innovating business practices and changing consumption behavior (Liu, Ramakrishna, 2021). One of the most polluting industries is the fashion industry, which causes great environmental concerns because of the material consumption in fast fashion (Thinakaran et al, 2023). Between the steps taken to alleviate the challenges that the world is facing lies the transition to a circular economy. As Harris et al. (2021) observed the circular economy (CE) concept has gained momentum in the last decade because it gives insights towards reducing the environmental impact of production and resource usage. Kirchherr et. al. (2017) collected 114 definitions regarding the circular economy, which rely on two core principles the 4R framework and the systems perspective.

The reason for assessing the 4R framework (*reduce, reuse, recycle, recover*) in their study can be found in the core of the European Union's Waste Framework Directive (2008), even though other scholars approached other R frameworks like 3R, 6R, or 9R. The systems perspective consists of the levels at which circular economy is applied, more precisely macro, meso, and micro levels. Upon analyzing all 114 definitions, the authors concluded that the most relevant and complete definition of circular economy is the one offered by Saidani et al. (2018), *"CE is defined as "an economic system that replaces the 'end-of-life' concept with reducing, alternatively reusing, recycling, and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks), and macro level (city, region, nation, and beyond), to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity, and social equity, to the benefit of current and future generations".*

As an industry, fashion evolved at the same pace as the world economy, which led to the emergence of an unsustainable linear business model (D'Itria and Aus, 2023), which is materialized in the consumption of large quantities of natural resources to manufacture low-quality inexpensive clothing, made by low-paid workers, only for them to be worn by the consumers for a short period and then be disposed of (Brydges, 2021). Among all consumption industries in the European Union, consumption of clothing, footwear, and household textiles is the fourth highest pressure category, from a consumption perspective, for the use of primary raw materials and water, the fifth highest for greenhouse-gas emissions and the second highest for land use after food production as Coscieme et al. (2022) highlighted. The large quantities of resources used in the fashion industry also generate enormous amounts of waste, the impact on the environment through pollution is overwhelming and is identified throughout the value chain in the industry, therefore only through the implementation of circularity can be reduced the harmful effect on the natural environment (Cai and Choi, 2020; Brydges, 2021; Barbu et al., 2018). At the European Union level, the most important steps towards creating a strategic framework for a circular economy were made by issuing the 1ˢᵗ Circular Economy Action Plan (CEAP 1) in 2015, containing fifty-four specific actions. As a response to the European Green Deal (COM 640, 2019), the EU issued the 2nd Circular Economy Action Plan (CEAP 2), comprising thirty-five more actions in support of a more circular economy, which doubled the target for the EU's circular material use rate by 2030 (European Court of Auditors – Special report on Circular economy, 2023). Furthermore, CEAP 2 specifically identified key material and product streams with high utilization of resources and elevated potential for circularity. The identified areas include electronics and information and communication technologies, batteries and vehicles, packaging, plastics, textiles, construction, and buildings, as well as food, water, and nutrients. Special emphasis is placed on these sectors in terms of developing new measures to enhance circularity practices (COM 98, 2020).

In this context, the present paper aims to analyze the disclosure practices of seven circular sustainability material indicators of the fifteen largest European companies in the fashion industry. To achieve this objective, our work first presents a summary of the most important scientific contributions from the literature, followed by a description of the research methodology and data, and a discussion of results and conclusions.

2. Literature review

Corporate disclosure generally refers to how a company communicates with its internal and external stakeholders about its performance and financial position. Although there are different ways of corporate disclosure, the annual report prepared by a company has become the cornerstone of corporate reporting. However, corporate reporting through

annual reports has undergone a dramatic transformation over time with a substantial increase in non-financial information disclosure, such as governance, risk management, and sustainability issues in addition to financial information (Gunarathne et al, 2021). The relevance of CE disclosure has been emphasized in multiple contexts, such as the Agenda 2030 for Sustainable Development and the European Green Deal. The non-financial Directive has recently prescribed industrial stakeholders to disclose CE practices within their sustainability reporting documents, clearly mentioning how they use resources (Massari and Giannoccaro, 2023). Corporate Sustainability Reporting (SR) is currently the standard for corporate disclosure of companies' sustainable initiatives and goals. For the development of SR, companies must strictly follow the methodologies of the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and Integrated Reporting (IR), which offer comparability, universality, and relevance of the reported data (Sanches et al., 2022). In addition to these methodologies, the European Commission issued the first set of the European Sustainability Reporting Standards (ESRS), upon which companies with more than 500 employees and public interest companies will begin to disclose their sustainability (ESG) information beginning with the fiscal year of 2024, reporting in 2025 (KPMG, 2023). Stakeholders recognize the significance and importance of the circular economy, but companies still struggle to communicate data and information concerning this model of production and consumption effectively and systematically (Vitolla et al., 2023). The disclosure of sustainability information has profoundly evolved over the past years, becoming a mainstream strategic activity, used by companies and organizations to communicate their non-financial performance to external stakeholders (Massari and Giannoccaro, 2023).

Even though the reporting practices related to the circular economy are beginning to emerge within companies, challenges persist due to the lack of tailored measurement tools, specific reporting standards, and a universally accepted language. Consequently, there is a proliferation of diverse approaches for measuring and presenting CE information, resulting in a mix of quantitative and qualitative documents utilizing various reporting techniques and tools. Given these circumstances, there is a pressing need for in-depth analysis and studies to identify optimal reporting solutions for companies seeking to disseminate information regarding the CE (Vitolla et al., 2023). Aiming to measure the extent of CE information disclosure, several researchers approached a qualitative methodology, by searching for keywords that refer to the circular economy in certain companies' sustainability reports (Gunarathne et al, 2021; Vitolla et. al, 2023; Heras-Saizarbitoria et al, 2023; Stewart and Niero, 2018). For example, Stewart and Niero (2018) analyzed forty-six SRs from companies belonging to the fast-moving consumer goods industry, to explore how companies incorporated CE-related information into their agenda. The aforementioned authors found that the most disclosed activities were directed toward the main product and packaging, with a focus on end-of-life management and sourcing strategies, and as Heras-Saizarbitoria et al. (2023) pointed out in a limited degree on circular product design and business model strategies. Gunarathne et al. (2021) analyzed twenty companies from the finance sector, by four types of generated keywords and they stated that the most popular keywords in the SR are 'carbon footprint', 'recycle', and 'environmental impacts', mentioning that there is also a high level of concern towards environmental impacts, paired with an awareness of sustainable development goals. However, this qualitative approach does not necessarily offer a perspective on the circular performance of a company, Opferkuch et al. (2022) highlight that there is a disconnection between CE and sustainability disclosure based on the absence of precise guidelines and the subjective manner in which the circular information is disclosed in the sustainability reports.

Other studies conducted by Ibanez-Fores et al. (2022), Rincon-Moreno et al. (2021), and Rossi et al. (2020) dive further into trying to propose circular economy performance

indicators (CE KPIs) by transforming the existing macro-level indicators proposed by the European Commission into indicators that can be applied at micro-level (Rincon-Moreno et. al, 2021, Rossi et al., 2020) and by analyzing all existing CE indicators from eight frameworks and finding which can be applied at micro-level and disclosed through the SR (Ibanez-Fores et al, 2022). Research done by Rossi et al. (2020) addresses the emphasis that needs to be put upon the key three pillars of sustainability, economic, environmental, and social. The environmental goal of CE consists of a reduction of raw materials and energy inputs, to minimize waste and emissions; the economic goal is to reduce the costs, taxation, and risks of environmental factors, as well as to come up with innovative product designs and market opportunities for all companies; and the social goals lie within increased employment, better work environment, democratic decision-making, and so on. Therefore, they developed indicators based on these three complex dimensions. These studies mentioned that the frameworks need to broaden the range of aspects considered when proposing a set of indicators, to improve measuring circularity and also to promote a more sustainable global behavior, not only at a regional level. In the same respect, in 2021, OECD published *The OECD Inventory of Circular Economy indicators,* in which 474 indicators were collected and divided into subcategories and sectors. In this inventory, eight indicators can be found concerning the textiles sector. Saidani et al. (2019), discovered twenty micro-level circular economy indicators but mentioned that many of them are still in the prototype phase and are currently being developed. This is clear proof that there is a lack of standard and commonly accepted CE performance indicators, the development of which could help enterprises and governments assess their circular performance.

According to Guanarathne et al. (2021), disclosure of circular economy-related business activities through corporate reporting is almost unexplored in the literature and till now only a limited number of studies have focused on circular economy implementation at the micro-economic level. Therefore, the present study aims to contribute to enriching the literature on the disclosure of sustainability indicators on CE, by assessing the circular performance of fifteen European companies in the fashion industry by analyzing the disclosure of CE practices in their sustainability reports, annual reports, or integrated reports. It is a well-known fact that the fashion industry is one of the most polluting in the world. The textiles used in the fashion industry are a key product value chain with strong potential for the transition to circular business models. The 2022 EU Strategy for Sustainable and Circular Textiles (COM 141, 2022) creates a framework for the transition of the textile sector. Hence, products are long-lived and recyclable, made of recycled fibers, and free of hazardous substances. The initiative aims to prolong the service life of clothing through phasing-out of fast fashion business models and increasing consumer penetration for repair services, while also ensuring items are recycled at end-of-life (EC, 2022).

3. Data and methodology

Many studies were analyzed to find the most relevant indicators that could help meet the objective of this study. Thus, six companies from the fashion industry were analyzed from the perspective of social sustainability throughout the supply chain, disclosed in the sustainability reports in the study conducted by Bubicz et al. (2021). Although it mentions the aspects of circularity performance, the paper does not focus on the topic of the circular economy. Dragomir and Dumitru (2022) analyzed the sustainability reports of a few large companies in this industry using a circular value chain model and grouped the data into five implementation stages from strategy to objectives. Their results showed that these companies have implemented a complex circularity system with the reduction of the negative impact on the environment, developing rules to be respected in the supply chain, and promoting the education of their customers regarding recycling behavior. In this work by following the methodology developed by Rossi et al. (2020) seven sustainability material

indicators were selected (Table no. 1) and examined by the disclosure extent of information in the sustainability reports of selected companies. The indicators presented in table no. 1 are quantitative indicators that can hardly be found in every sustainability report, which is why, in the column 'Description (qualitative)', we turned them into keywords and clues that help find out the mentions related to the proposed indicators.

Table no. 1 The proposed 7R♲ sustainability material circularity indicators

No.	Indicator	Description (quantitative)	Measurement	Description (qualitative)
1.	**Re**duction of raw materials and waste	Quantity of raw materials reduced in the manufacturing process.	This indicator measures the reduced quantities of raw materials in the process of manufacturing (e.g. water, carbon dioxide, etc) and the reduced quantities used in the final product	Reduction of raw materials through technologies that help extract fibers from waste/recycled materials, through research, the water saved by changing the dye, the GHG reduction by using renewable energy, changing car fleet, and so on.
2.	**Re**newability of materials and energy	The percentage of renewable energy sources out of the total energy used in the manufacturing process and the percentage of materials obtained from renewable sources from all the materials used in the final product.	This indicator measures the quantity of renewable energy used in the manufacturing process and the quantity of renewable raw materials used in the final product.	What steps have been taken to get to renewable energy, setting solar panels, wind turbines, % in total energy, and obtain plant-based fibers?
3.	**Re**cyclability of resources/materials	The percentage of recycled materials in the composition of the product and the percentage of the product that could be recycled after use.	This indicator measures the use of recycled materials in the product and the potential of recyclability of the product after use.	What steps have been taken to promote the recyclability of used garments, % of recycled material in packaging, or the final product?
4.	**Re**duction of toxic substances	Quantity of reduction of toxic substances.	This indicator aims to quantify the reduction of the use of toxic substances considering RoHS (Restriction of Certain Hazardous Substances).	Mentions of collaboration with Zero Discharge of Hazardous Chemicals, alignment with AFIRM, the use of the Higg FEM Chemical Management Module.
5.	**Re**use, repair, and redistribution of materials and products	Quantity of material reused in the supply chain and of reused material in the final product.	This indicator aims to quantify the reused materials in the supply chain and the reused materials in the final product	Mentions of procedures to reuse the materials, fibers, recycled garments, opening of repair shops, rental

				possibilities, and donations.
6.	*Re*manufacturing products	Quantity of remanufactured products.	This indicator aims to quantify the remanufacturing of products.	Clothes taken from vintage clothing shops that were reworked and sold in unique capsule collections, the upcycling of used products
7.	*Re*furbishment	Quantity of the total recovery or parts (components) of the product, without necessarily going through all stages of the remanufacturing.	This indicator is expressed by the specification and quantity of the products and refurbished parts.	Repairing products that are still under warranty and selling them back, repairing the products that have defects, and selling them.

Source: Authors' projection following the work of Rossi et al. (2020)

The selection criteria of the companies subject to this study consisted of finding several representative companies from the fashion industry that had sustainability reports posted on their websites. Also, the companies that were selected for this study are the most important and well-known players in the fashion industry in Europe. The selected companies are listed in the table below (Table no. 2), along with the countries from which they belong and the documents that were thoroughly analyzed:

Table no. 2 The selected companies, the belonging countries, and the source research documents

Company	Country	Source documents
LVMH	France	2022 Social and Environmental Responsibility Report
Hugo Boss	Germany	Sustainability Report 2022
Puma	Germany	Annual Report 2022 - Sustainability
Tom Tailor	Germany	Sustainability Report 2022
Valentino	Italy	Sustainability Report 2022
Moncler	Italy	2022 Consolidated Non-Financial Statement
Prada	Italy	Sustainability report 2022
Capri Holdings	Italy	2022 Annual Update – Corporate Social Responsibility
OVS	Italy	Making Progress. Sustainability Report 2022
PVH (Tommy H.)	Netherlands	Corporate Sustainability Report 2022
C&A	Netherlands	Sustainability Report 2022
Desigual	Spain	Desigual Sustainability Report 2022
Inditex	Spain	Statement of Non-Financial Information 2022
Mango	Spain	Sustainability Report 2022
H&M	Sweden	Annual and Sustainability Report 2022

Source: Authors' projection

To measure the circularity performance of the selected companies, the chosen method is the coding/scoring technique, consisting on a scale of 1 to 5 (1 – undisclosed, 2 – weak disclosure, 3 – medium disclosure, 4 – good disclosure, 5 – very good disclosure). The analysis consisted of the analysis of the sustainability reports that selected companies posted on their websites, by searching keywords derived from the qualitative description of

the indicators presented in Table no. 1, such as *'renewable'*, '*waste*', '*GHG*', '*greenhouse*', '*chemical*', '*repair*', '*reuse*', '*remanufacture*', '*refurbish*', *'fiber'*, etc. Further on, we seek to assess the extent of disclosure of the circular information regarding the 7R material sustainability indicators and how the issues are presented.

4. Analysis and discussion of results

Upon collecting the circular information disclosed by the companies, the results of the analysis of circular disclosure scores allowed a ranking by the disclosure quality of selected indicators. The average disclosure scores can be seen in Figure no. 1.

Figure no. 1. The circularity material disclosure scores compared with the general average score
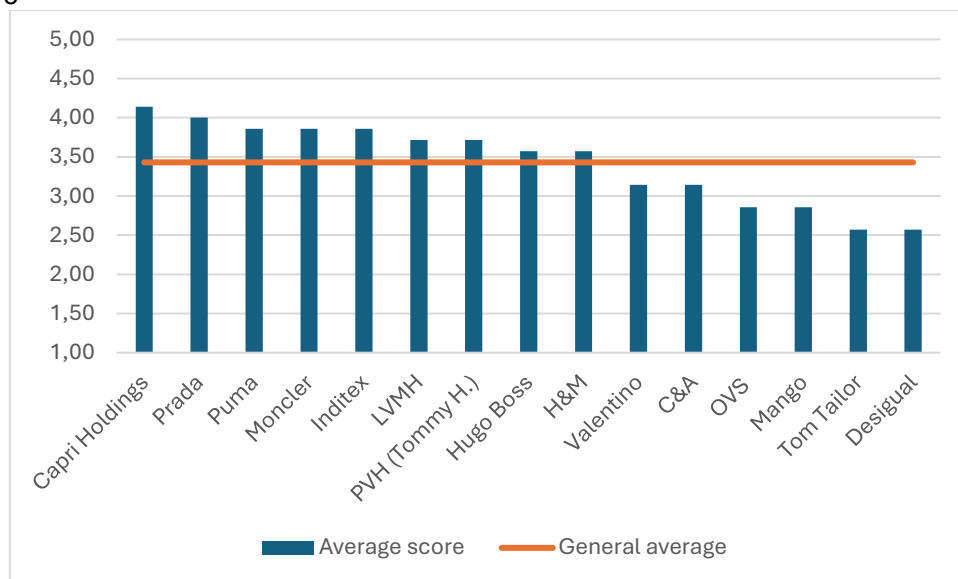
Source: Authors' work

The general average disclosure score of circular economy information in the fifteen companies' sustainability reports was 3.43 showing a medium to good disclosure score. Based on this general average disclosure score, nine companies were positioned above the general average disclosure, while six of them obtained average scores below the general average. This suggests that the latter must implement better circular economy disclosure information in their sustainability reports, offering stakeholders a better view of their circular performance.

Figure no. 2 presents how companies are positioned from the perspective of the 7 R material circular indicators compared to the general average disclosure score on circularity. The companies that performed best are Capri Holdings and Prada, which gained their higher score through disclosure of refurbishment practices. *Results showed that the poorly disclosed information in the sustainability reports is regarding remanufacture and refurbishment*, the latter being one of the reasons that these two companies performed best. Next at the top, Puma, Moncler, and Inditex registered an identical disclosure score of 3.86 because they did not disclose information concerning remanufacture and refurbishment, and had a perfect maximum score on each of the other five indicators. On the other hand, the poor-performing companies are Desigual and Tom Tailor, both recording a general circularity disclosure score of 2.57.

Figure no. 2 Ranking based on the average circularity disclosure scores
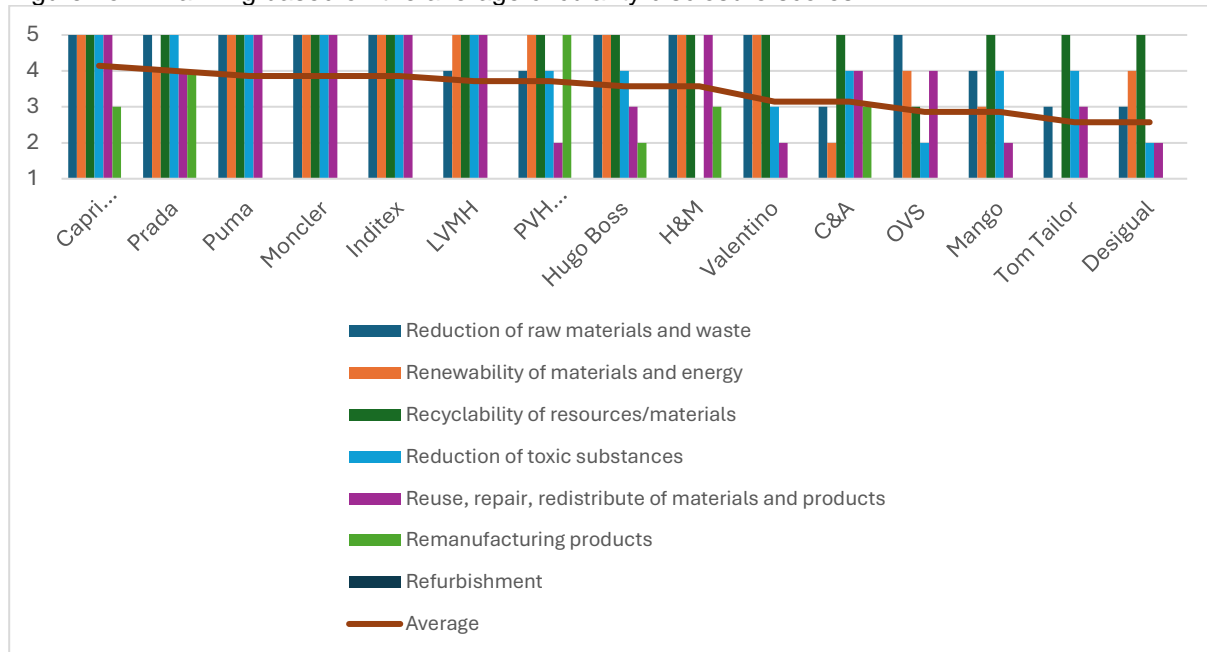
Source: Authors' work

As in what concerns the disclosure of the analyzed indicators, it can be seen in figure no. 3 that nine companies ranked higher than the average regarding the disclosure of reduction of raw materials and waste and the renewability of energy and materials. *The most well-disclosed information is on the recyclability of materials and resources.* All companies, except for OVS, ranked the highest score. All of them disclosed their practices towards the recyclability of their packaging to be 100% recyclable and made out of recycled materials, as well as the recyclability of their fabrics/textiles, the main purpose was to remake new fibers out of them. On the other hand, the weakest level of disclosure was on refurbishment practices, none of the fifteen companies did not register actions undertaken in this direction of sustainability. This might come as a result of the state in which textiles are given away, them being usually completely worn off, which makes it a difficult task to refurbish or disassemble and remanufacture them into new sellable pieces of apparel.

Figure no. 3 Comparison between the companies' circularity disclosure scores to the average
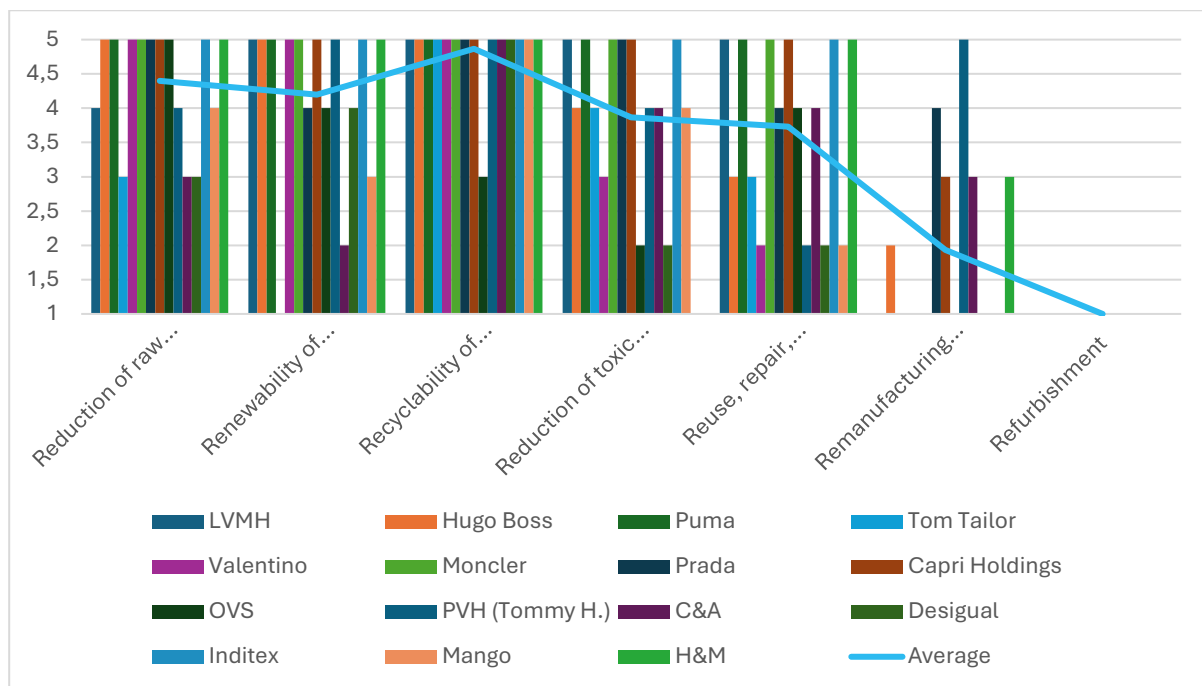
Source: Authors' work

5. Conclusions

A holistic and integrated approach to circular economy on a micro-economic level considers the sustainability dimensions of environmental, economic, and social issues. Seeking to find the most used channel of corporate circularity disclosure this study observed that sustainability reports are currently the mainstream of communication for sustainable initiatives and goals. The present research work focused on the analysis of several circularity sustainability material performance indicators disclosed in the sustainability reporting. These indicators refer to the reduction of raw materials and resources, the renewability of materials and resources, the recyclability of materials and resources, the reduction of toxic substances, reuse, repair, redistribution of materials and resources, remanufacturing products, and refurbishment. The study was conducted on the fashion industry because is one of the most polluting industries in the world, one that has a lot of potential of becoming more circular.

The results of the present study pointed out that most of the selected companies are already disclosing much information related to circular economy material indicators. On one hand, the most frequently and well-disclosed sustainability material circular information is on the recyclability and renewability of materials and resources. While on the other hand, we can find poor information disclosed on the practices related to refurbishment and remanufacturing products. The reason for this is that textiles that are given away are usually completely worn off and refurbishment or disassembling and remanufacturing them is a difficult task. The limit of the study is the subjectivity that may appear when using the scoring/coding technique and the small size of the sample. Many analyzed studies mentioned that there is a disconnection between circular economy and sustainability disclosure based on the absence of precise guidelines and the subjective manner in which the circular information is disclosed in the sustainability reports. This subjectivity should be addressed by policymakers and they should create frameworks that can harmonize the sustainability reporting, in this way, companies can offer comparability for the stakeholders.

At the European Union level, this might become a possibility with the issuing of the ESRS and with the industry-based standards that are set to be issued in the future, the fashion industry being one of the targeted industries.

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EMPIRICAL ANALYSIS OF FIRMS' VALUE CREATION IN THE CONTEXT OF CRISES

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Abstract: *In today's highly competitive world, one of the most important business objectives for owners is to generate shareholder value and wealth. In order for an investor to know how to effectively deliver wealth growth, it is important to know the value creators of the business. A number of studies have been published in the management literature to identify the value creators of ownership. This article draws an essence from the literature reviewed, which are identified as key drivers of value creation, which are presented in the first half of the study. In the second logical part of the paper, the characteristics, causes and major crisis episodes of the 2007-2008 global financial crisis and the COVID-19 crisis are presented. In the methodological part, the panel regression model is used to analyse the 702 firms in the database. The main objective of the study is to answer the following questions: which are the most important value drivers and how the influence of these value drivers changes in the aftermath of the COVID-19 crisis.*

Keywords: company valuation, 2007-2008 global financial crisis, COVID-19 crisis, panel regression model

JEL Classification: G12, G15, G32

1.Literature review

1.1.Identifying the value drivers
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.
Before the 1990s, the shareholder value model was mainly used to value investments and price acquisitions, and the discounted cash flow method was used for the calculations. Today, however, it is incorporated into both planning and performance evaluation. According to the shareholder value model, rational actors in a market economy estimate the value of an asset by the risk-adjusted magnitude of expected future cash flows.
According to Black et al (1999), who also emphasise the importance of the shareholder perspective, the value achieved by the firm should exceed the expected return on capital employed. In this case, we can speak of shareholder value creation, which is reflected in the stock price gains and dividends paid to owners. According to Rappaport (1998), the primary task of corporate managers is to increase shareholder value, which they can achieve by setting strategy and operational performance criteria, which also form the basis of corporate control systems (Lakatos et al, 2020).
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 create (Hamad- Szekeres, 2019). The value drivers identified in the process are called value drivers, and their fit into the company's goal system is illustrated in Figure 1 by the shareholder value network.
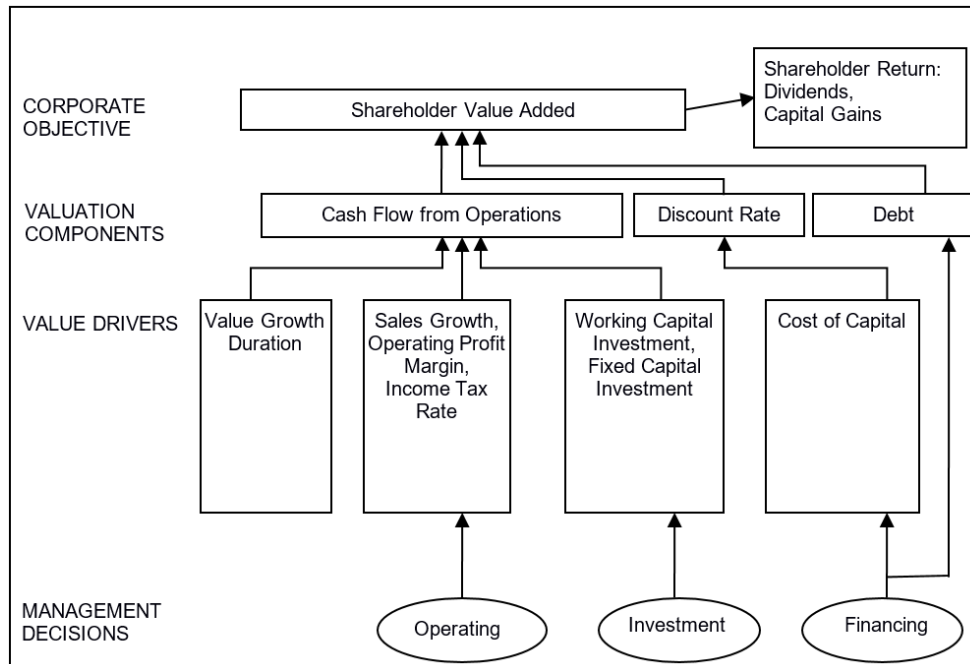
Figure 1: The shareholder value network
Source: Rappaport (1998:56)

Operating decisions are mainly reflected in the growth rate of sales, the operating profit margin and corporate tax. Investment decisions are reflected in investment in working capital and fixed capital, and the value creation factor related to financing decisions is the cost of capital. The duration of value creation, as a value creation factor, is based on management estimates, which predict the period until an investment will generate a return above the cost of capital. Value drivers are required to be measurable where possible and to have a well-planned range of values. Value is determined by long-term performance, including risk, reflected in cash flows, and not merely by short-term results.

Summarising the theoretical and practical lessons from the literature reviewed, 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 hence the source of corporate value creation is operations -, Rappaport's (1998) network of shareholder value and shareholder value maximisation - through which value creators can be identified, Copeland et al's (1999) key value creators - 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 non cash working capital

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):
$$ROIC = \frac{EBIT(1-t)}{Invested\ Capital}$$

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 we use as a proxy for WACC,
$$Market\ ROA = \frac{Net\ Income}{Market\ Values\ of\ Equity + Market\ Value\ of\ Debt}$$

VI. **Sales growth rate**

2.The 2007-2008 global financial crisis

Stiglitz (2009) describes the 2007-2008 crisis as the biggest economic crisis since the Great Depression and the first global recession in the era of the new globalisation. Bokros (2009) also describes the crisis as global and identifies a number of features in which the world's countries and national economies are interconnected. Lámfalussy (2008) describes the 2007-2008 crisis as a profound crisis in the international financial market, financial globalisation and the vulnerability of the financial system, and analyses and compares previous financial crises.

In the introduction to his article, Bélyácz (2014) writes that many authors note, but rarely emphasise, the similarities or even common origins between the Great Depression and the global financial crisis of 2007-2008. The main cause of both crises was the deregulated financial free market. The problem is not one of predictability, but of failing to account for uncertainty, or of increasing uncertainty through the actions of financial market participants. The starting point for the crisis was the US mortgage market. The characteristic securitisation technique of the US mortgage market mixed expected non-performing loans with senior loans, thereby spreading contaminated securities across the market and contaminating it (Király-Nagy, 2008).

In the summer of 2007, the real estate bubble burst, which can be seen as the direct cause of the crisis and triggered the second mortgage crisis, which induced a series of domino-like events (Gyarmati-Medvegyev, 2011).

The financial crisis primarily affected those markets that were directly linked to structured products and the US mortgage market. In September 2008, the global financial system was on the verge of collapse (Király-Nagy, 2008).

3.The COVID-19 crisis

What is special about the COVID-19 crisis is that, unlike all previous crises, it was not triggered by an internal disturbance in the economies, the international financial system or the trading system, but by an external non-economic factor affecting all elements of international production (supply) and demand. Restrictions on free movement reduce the production of goods and services, and the resulting high unemployment and income losses limit household consumption. In turn, the uncertain outlook minimises the willingness of firms and households to invest (Palócz-Matheika, 2020).

The epidemic has affected all actors in the economies - due to overburdened health systems, closures, economic downturns or changing labour market trends, among other factors (Török et al., 2023).

The tragic effects of the coronavirus devastated all areas of the economy, society and commerce in a short period of time (Hajdú-Rácz, 2020).

Due to global uncertainty and physical constraints, world trade contracted in the first half of 2020 to an extent unprecedented during the 2007-2008 financial and economic crisis (Palócz-Matheika, 2020).

The crisis caused by the crown virus showed that there is not only a demand crisis, but also a supply crisis. In both areas, production stoppages due to the health situation are causing a crisis (Botos, 2020).

The crisis has reduced profitability and efficiency in most industries, while some sectors and companies have benefited from the situation, and several areas have suffered huge losses (Szekeres-Dékán Tamásné Orbán, 2019; Szekeres-Hamad, 2020). The pandemic's most negative impact on businesses has been the fall in demand. Looking at the business consequences of the COVID-19 crisis, we can see that risks affect the value of a company in several ways. In addition to reduced cash flow and limits to future growth opportunities, uncertainty increases operational risk and, through it, the cost of capital. The unpredictability of the future worsens the liquidity position of many firms (Juhász-Szabó, 2021) and, due to the cost of R&D, this can be a particularly high operational risk for the pharmaceutical sector due to its impact on profitability (Tömöri, 2014; Tömöri et al., 2022). The fierce competition in the pharmaceutical market is also affected by the impact of the COVID-19 pandemic, which is expected to further increase the trend of acquisitions (Tömöri et al., 2021).

The consequences of the crisis were quickly felt in equity markets: the previous optimism disappeared and corporate risk premiums rose dramatically. In just three months, the global economic outlook for 2020 has gone from an expected growth rate of more than 3 percent to a decline of 3 percent. This is worse than the loss experienced during the 2007-2008 global financial crisis (Juhász-Szabó, 2021).

In most countries, there have been two economic policy responses to the downturn: central banks have started pumping huge amounts of money into the financial markets, while governments have simultaneously announced economic rescue packages. Many firms lost their growth potential as a result of the crisis. One reason is that lower profitability limits investment plans. On the other hand, falling demand and uncertainties in supply chains have made some manufacturing capacity redundant (Juhász-Szabó, 2021).

4. Material and method

The main purpose of writing this paper was to answer our research questions. What are the factors that influence the value creation of firms and how is the influence of these factors evolving in the aftermath of the COVID-2019 crisis. To answer the research question, we formulated the following hypotheses, which were developed in light of the literature reviewed.

There is a significant correlation between enterprise value and earnings before interest and taxes (EBIT), reinvestment, invested capital, return on invested capital, net margin, sales growth rate, tax rate and return on assets (MROA) at market value. Furthermore, 2020 is considered to be a year of crisis in all sectors, which had a negative impact on the value of companies.

To validate the hypotheses of the research, a database of 725 companies from 9 European countries was examined for the period 2017-2021, which is considered a highly balanced panel with few missing observations. The database was downloaded from the EMIS website and required several transformations. The transformations included deleting all columns where there was little data for a given variable and deleting all firms that did not have a report for all years of the period under study. Among the countries examined, company data for Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Poland were analysed. These countries were chosen because they are former socialist countries and are now EU member states (EMIS, 2023).

We continued our 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 present model may be firm-specific factors that we cannot measure and firm-specific variables that do not vary over time (Körösi et al., 1990, pp. 278-289; Ramanathan, 2003, pp. 498-501).

As a next step in the empirical research, the following multivariate regression model was defined:

$$LnFV_{i,t} = \alpha + \beta_{lnEBIT} lnEBIT_{i,t} + \beta_{tax} tax_{i,t} + \beta_{lnReinv} lnReinv_{i,t} + \beta_{lnInvC} lnInvC_{i,t} + \beta_{ROIC} ROIC_{i,t} + \beta_{NetM} NetM_{i,t} + \beta_{MROA} MROA_{i,t} + \beta_{dlnRev} dlnRev_{i,t} + u_{i,t} + \varepsilon_i$$

For firm value, we used the firm value category, which is the sum of market capitalisation - the best estimate of the market value of equity - and debt at market value.

The model we have used is defined using the reduced set of value creators because there are many indicators to choose from to identify each value creator. In our model, we sought to ensure that all explanatory variables have a significant relationship with business value, the outcome variable.

We used the natural logarithm of the variables for business value, EBIT, reinvestment and capital employed, and the natural logarithm of the change in sales for the growth rate, as the distribution of the variables was thus close to normal.

5. Results and their evaluation

In our empirical research, we investigated how the COVID-19 crisis affected the relationship between business value and value drivers. To do this, we first had to extend the original panel regression model with initial random effects by including the effect of years as a "time dummy" variable in addition to the explanatory variables, and by adding the dependent variable lagged by one year to the independent variables to examine the adjustment. This extended model was used to run the panel regression.

Based on the estimated values of the model parameters, it can be said that the business value is positively correlated with EBIT, reinvestment, invested capital, return on invested capital, profit margin and sales growth. There is a negative correlation between the tax rate and goodwill, and a strongly negative correlation between MROA as a proxy and the profit

variable. The effect of 2017 is included in the constant term with a positive coefficient in the model. The years 2018 and 2019 are positively correlated with business value.

The impact of the crisis is visible in 2020, as this year has negatively affected the business value.

The year 2021 has been omitted due to collinearity.

6.Conclusions

In this paper, the literature reviewed approaches the topic from the perspective of business valuation, applied finance and strategy, and the following structure is used to explain the topic. In the first logical part, we dealt with corporate value creation, the shareholder value model, which provided a kind of strategic framework for the article. The second and third parts deal with crises, presenting its main aspects. The fourth main part contains the research and empirical analysis, with the main directions of the research being: the factors affecting the value of the company and the power of these factors to influence it; how the value of the company is affected by the COVID-19 crisis and how the factors affecting value affect the value of the company as a whole in the companies studied. Overall, the empirical results support our hypotheses that there is a significant relationship between firm value and earnings before interest and taxes (EBIT), reinvestment, invested capital, return on invested capital, net margin, sales growth rate, tax rate and market return on assets (MROA). Furthermore, 2020 can be considered as the year of the crisis in all sectors, which had a negative impact on the value of companies, so the analysis of the changes in the relationship between value creation factors as a result of the COVID-19 crisis suggests that 2020 can be considered as a clear year of the crisis.

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DIVERSITY OF FINANCING SOURCES OF NON-PROFIT ORGANIZATIONS IN ROMANIA AND THE EU – AN OVERVIEW

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Abstract: *Financing is an asset or obstacle to the entity's activity, be it economic or not-for-profit. The impact that funding has on non-profit organizations is closely linked to the specificities arising from service and non-commercial status in society. The main objective of this paper is to present and appreciate diversity in funding non-profit organizations in Romania and the European Union during 2018-2022. In this regard, we are looking at the possibility of funding for NGOs from the European Union. The databases studied are Web of Science – for specialized articles – and Eurostat – for economic data and statistics. For database processing, VOSviewer – for bibliometric analysis – and Excel – for graphs and statistics were used. Making an inventory of the main categories of financial resources available today for Romanian NGOs leads us to conclude that NGOs have access to many funding opportunities. However, specific funding sources are available only to this type of organization.*

Keywords: *financing; non-profit organization; sources; public grants; accounting; corporate social responsibility;*

JEL Classification: *L31; M41; D64*

1. Introduction

International studies show that one of the conditions for the successful operation of each organization is the source of funding. Non-profit organizations have the role of contributing where there is a need in society but where the state and other institutions do not have enough resources to deal with it. Currently, non-profit organizations face more challenging forms of competition than ever, which inevitably implies the successful management of the difficult task of mastering and applying modern methods of obtaining new financial sources, so that they can ensure the public service offer in a diverse range, corresponding to the needs of society. The most important objective of this research is to identify funding possibilities that are essential in the activities or even existence of these organizations. But questions such as "What is the place of these organizations in the economy?", "What factors – positive or negative – influence the obtaining of funds, grants, sponsorships, donations or other sources of income?" are aspects that incite research.
The basic income of such an organization is known, even if, for Romania, it is still a field at the beginning of the road. We are talking about membership and sympathizer fees, individual donations, targeting from personal income tax or corporate profit tax, and others. But can there be other sources of income or funding for NGOs? Thus, the second objective,

discovering the diversity of funding sources, is an interesting objective, opening possibilities to new horizons to modern tools already practiced by NGOs in the West. An increasingly common concept is that of social enterprises regarded as a component of an organization's financial strategy. Social enterprises act for social purposes or in the general interest of the community, allocate most of the profits made to the social purpose and statutory reserve, apply the principle of social fairness towards employees, and undertake to transfer to one or more individual enterprises the assets remaining after liquidation (Nicolaescu & Bija, 2022). The third objective, comparing the funding level, will be achieved by analyzing the data provided by the research sources, from which the answers that reflect reality will emerge.

Therefore, analyzing the specialized literature and existing studies on this topic, we have established research directions to identify funding possibilities so that in this approach, we aim to identify answers to the following research questions:
RQ1: What are the funding possibilities for NGOs in Romania and the EU?
RQ2. How do we diversify funding sources for NGOs?
RQ3. How involved are local NGOs compared to EU NGOs in obtaining funding?
Therefore, the research design is descriptive, and the approach is qualitative, mainly concerned with the topic on which the research theme is focused. This approach provides a logical way to lay out goals so that others can better understand the rationale for this research.

2. Literature review

In studying the current state of knowledge on the research subject, we resorted to the option of conducting a bibliometric analysis, elaborated according to the sources used, and a content analysis of the most relevant articles and statistical-economic data. The scientific papers studied were accessed through the platform https://www.e-nformation.ro/ and Web of Science (https://1710qj5pw-y-https-www-webofscience-com.z.e-nformation.ro/wos/woscc/basic-search), selected based on keyword combination *"financing" and "non-profit organization" or "sources" or "public grants" and "accounting."* *We obtained* 4841 articles published between 2022 and 2023 in Web of Science Categories, *Economics* and *Business Finance.* Based on the most relevant 500 scientific papers, in terms of keywords mentioned, a bibliometric analysis was performed using the scientific mapping methodology with the help of VOSviewer (van Eck & Waltman, 2010), a software adapted for the construction and visualization of bibliometric networks.

First, we studied the distribution of the most intensively used keywords to observe and analyze the links between them, taking into account only those proposed by authors in published works, and we set a minimum threshold of 20 simultaneous appearances. We have selected the first four keywords whose connecting force with other keywords is the highest; in other words, their appearance together is the most relevant. For example, a high frequency of simultaneous occurrence in the same work of the keywords "quality of accounting information" and "corporate governance" translates into an increased intensity of the correlation between them from a conceptual point of view. In addition to the main keywords selected, the software also generates others relevant to the researched topic – for example: "donations," "funding," "governance," "IFRS," "innovation," "intellectual capital," "transparency," "venture capital," "volunteering social enterprise," "social finance," "stakeholders," "globalization," "public finance," "performance," "personal finance," so that the map shown in **Figure** 1 is a complex one.

Figure 1: Bibliometric map of keywords
Source: Authors' projection using VOSviewer version 1.6.17 in processing data extracted from the WoS database

The size of the tag and knots correspond to the weight of the article in the research on the specified topic. The thickness of the curves and the distance between the nodes signify the collaboration link between keywords or authors. The colors identify the groups of interest, and the thickness of the lines is in direct proportion to the volume of the works/articles where the linked words appear. The graphical representation reveals 11 differently colored groups, which have in common the links between the authors of studies on the quality of information in the sense of scientific collaboration between them (the groups are formed according to the intensity of the collaboration link). The main groups are connected around the main keywords, such as: "non-profit organization" (red color), "finance" (green color), and "accounting" (brown color). From the bibliometric map, we can observe connection networks built based on citation, bibliographic coupling, co-citation, or co-author relationships to build and visualize co-occurrence networks of important terms extracted from the chosen body of scientific literature.

We examined the collaborative network between authors through the prism of their countries of origin to identify the interest of the scientific world in the quality of information, corresponding to geographical areas. We also noticed links of scientific collaboration between authors in different corners of the world.

The bibliometric analysis conducted in the present study revealed some interesting information: the authors come from almost all continents of the world, and the most prolific country in research on the chosen topic is represented by the USA, closely followed by the People's Republic of China, Australia and the United Kingdom of Great Britain and Northern Ireland, Germany, India, from where relations extend to Singapore, Turkey, Luxembourg, Japan, etc., creating a worldwide-network. We also find relevant studies in our country, collaborating with authors from Germany, Italy, England, or Spain. Many articles have caught our attention among the scientific papers studied, from which we present some essential approaches for our research topic. Petrescu et al. (2020) discuss the non-profit governance model in Romania according to the legislation and practice in the field. The authors researched the budgets of the studied organizations, concluding that it is essential

to mention that the budget of these organizations may not be representative of all Romanian non-profit organizations because out of all the approximately 100,000 NGOs existing at the time of the research, most of them have small budgets, approx. 80% of Romanian non-profit organizations have annual budgets of less than 2,000 euros. The funding sources are achieved through strategic planning, and 90% of the 29 organizations that provided information declared that they had a strategic plan for the next 3-5 years. Torok (2017) draws a parallel between the percentage tax designation system in five Central and Eastern European countries: Hungary, Lithuania, Poland, Romania, and Slovakia. It focused on four areas: the system of designating percentage tax as a policy instrument, its role in financing the non-profit sector, the effects and side effects of this policy, and the evaluation of this instrument. The percentage mechanism was greeted with enthusiasm in the transition phase of post-communist countries. It presented a unique way to provide financial support for the public benefit, largely to non-profit entities. In reality, it functions as a decentralized decision-making mechanism in which state resources, namely certain income tax percentages, are channeled mainly to non-profit organizations based on taxpayers' decisions. However, this source accounts for a small fraction of the total revenues of the non-profit sectors, and as a result, has led to diminished individual private donations due to the missent message, often referred to as "percentage philanthropy," although the resources used are not private. The system continues to work in all countries and is found to be being used in new ways in the region (for political parties and church finances).

Biblu et al. (2013) concluded that the available resources are insufficient for non-profit organizations to cover the assumed organizational burden. Firstly, they can address financing problems through specific methods, but the methods used are not always suitable to pursue their funding objectives; secondly, they often act in a rather emotional, intuitive manner, to the detriment of a systematic planning process, and thirdly, they need some expertise in managing activities effectively and efficiently. However, they identified that NGOs often do not have sufficient internal resources or do not pay enough attention to developing the necessary expertise by training their staff. A scientific article of particular relevance in our research is that of Kuvikova and Vacekova, in which the authors focused on the diversification of financial sources in non-profit organizations, performing a qualitative evaluation of results through primary research of financing non-profit organizations through the sociological method in the form of structured questionnaire. The statistical analysis of the data obtained through the primary research did not remain at the level of examining isolated variables; the authors also focused on comparing the division as well as the relationships between variables through which they used appropriate mathematical and statistical methods of analyzing quantitative data and their elaboration.

From another perspective, Ceptureanu et al. (2017) studied NGO funding, claiming that the economic and financial crisis in Romania hit the non-profit sector hard, as it led to a significant decrease in government spending and cuts in funding programs from companies and two prominent donors to NGOs. This led to an acute need to address sustainability at an organizational level, so the authors developed a model based on literature surveys and interviews of Romanian experts, which allowed them to identify relevant factors for Romanian non-profit sustainability. Three determinants were considered: cognitive competence, social awareness, and financial vulnerability, as well as two types of outcomes: economic and social. The model was tested through empirical research on 103 Romanian NGOs and two sub-samples (non-governmental organizations and community-based organizations), and it was found, using univariate and bivariate analysis, that the three considered determinants are correlated and statistically influence the sustainability of NGOs in Romania. Thus, we were able to study and synthesize various approaches to funding non-profit organizations from the multitude of articles, finding out how extensive the

documentation provided is, thus proving how complex and diversified these funding sources are or can be.

3. Research methodology and tools

In this social-accounting research, we have chosen a combination of methods for a systematic framework, classified according to various criteria, by using the best and most feasible methods to conduct the research while aligning with the purpose and objectives of the research. Thus, depending on the temporal criterion, we chose the longitudinal stud method*,* which involves measuring the evolution of phenomena over time for five years to develop comparative evaluations. Following the reactivity criterion, which concerns the degree of intervention of the researcher on the subject, we used the observational research method, in which the researcher does not intervene at all but observes and studies official, specialized documents.

Depending on the intrinsic characteristics of the method, the research was based on qualitative methods and research, where we rely mainly on the analysis of the meaning of words instead of the meaning of numbers; the qualitative method offers the possibility of a deeper understanding of the research subject and, in this way, the chance of a more complex explanation of it. Depending on the place and role occupied in the research process, the exploited method is the method of information processing and the method of interpreting information. Depending on the purpose of the research, we chose to apply descriptive and explanatory methods and research.

Data collection and analysis went through several phases:
- definition of the information being sought (e.g., studying the legislation in force in Romania)
- determination of search sources (e.g., studying international specialized sites)
- use of the most appropriate search method (e.g., review of research literature to identify, evaluate, and synthesize the existing body of completed and rewarded work produced by researchers, theorists, and practitioners)
- viewing the search results and managing information (e.g., elaboration of bibliometric map, based on published scientific articles, to highlight the relationships between researches)
- communication of the result sought. (e.g., systematization and synthesis of collected information)

Research data and information collected, documented, compiled, or generated helped confirm the credibility of research results. The research data was mostly digital; less was non-digital. Research data were collected from already-published publications, official government, or scientific sources and were not limited in quantity but selected by relevance. We chose several data types, such as legislative documents, reports, statistics, graphs, data from experiments, and digitized archives.

4. Data analysis

Data collected from the Eurostat Database (https://ec.europa.eu/eurostat/data/database?etrans=ro) are largely statistical data. In this database, we found information dedicated to non-profit organizations, called "EU funding to developing countries by funding source," which provides essential data on research. The indicator presented shows total official and private EU funding to developing countries. These consist of net Official Development Assistance (ODA) payments, other official flows (OOF), private flows (mainly foreign direct investment, FDI), grants from private agencies and NGOs, and officially supported export credits. The primary objective of this financing is

to promote economic development and welfare in recipient countries and remains the main source of financing development aid. Private flows include direct investment, bonds, export credits, and multilateral private flows. Grants awarded by private agencies and national NGOs consist of funds for development assistance and aid, together with any additional in-kind contributions, including, for example, income from sales of charity Christmas cards or special calls (e.g., for disaster relief). Developing countries are considered to be those on the OECD DAC (Development Assistance Committee) list of aid recipients.

In order to be able to compare the level of funding from the European Union for Romania, the data collected from the Eurostat Database were processed by calculating the average value of total funding granted to EU members by country, respectively the average of these values per year, thus identifying Romania's position. We went through the data for 2018-2022 and found that Romania is, in terms of the amount of funding obtained, in the 18th place out of the 27 member countries, a stable position every year. According to the ranking of countries, Romania ranks in the second third of members, even if at the end of it, but ahead of the Baltic countries, Slovakia, Bulgaria, Croatia, Slovenia, Malta, and Cyprus; the comparative evolution of these funds is shown in **Figure 2.** The graphic processing belongs to https://ec.europa.eu/eurostat/databrowser/view/sdg_17_20, the data source being the Organization for Economic Co-operation and Development (OECD).
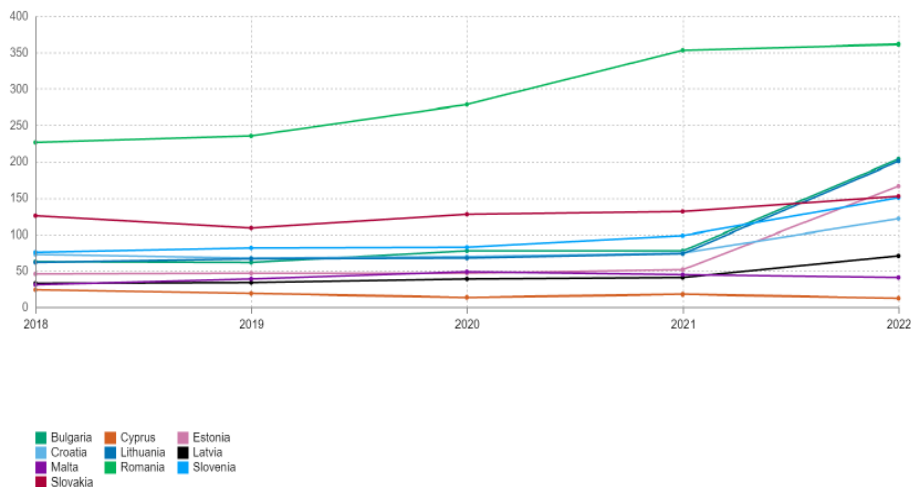
Figure 2. The evolution of Romania's financing compared to that of EU countries in the last third of the classification
Source: https://ec.europa.eu/eurostat/databrowser/view/sdg_17_20

The data presented in **Table 1** indicate the value level of funding obtained and provide factual information, being a flexible tool in the necessary calculations. It includes the amount of funding awarded to each member of the European Union during the researched period so geographical regions, neighboring countries, or old and newer members can be compared. We can see that founding members, such as Belgium, France, the Netherlands, Germany, and Italy, acquire much larger amounts than the countries that joined after 2004, Slovakia, Slovenia, Croatia, Bulgaria, and Romania, which benefit from the more modest amount.

Table 1: Annual EU funding to developing countries by funding source (million euro)

	EU Member State	2022	2021	2020	2019	2018	Country average
1	Belgia	2393	2240	2146	2060	2115	2,190.80
2	Bulgaria	203	77	77	61	62	96.00
3	Cehia	881	310	280	298	290	411.80
4	Danemarca	2427	2464	2387	2403	2331	2,402.40
5	Germania	32785	27442	26513	22606	23303	26,529.80
6	Estonia	166	51	46	46	45	70.80
7	Irlanda	2161	976	871	869	816	1,138.60
8	Grecia	318	288	292	332	250	296.00
9	Spania	3732	2840	2459	2505	2305	2,768.20
10	Franţa	16313	14139	14237	11149	11475	13,462.60
11	Croaţia	121	74	69	67	72	80.60
12	Italia	6177	5303	3878	3922	4454	4,746.80
13	Cipru	12	17	13	18	23	16.60
14	Letonia	70	40	38	33	32	42.60
15	Lituania	200	73	67	66	61	93.40
16	Luxemburg	475	456	421	468	452	454.40
17	Ungaria	339	368	382	286	254	325.80
18	Malta	40	44	48	38	30	40.00
19	Olanda	5798	4452	4794	4905	5121	5,014.00
20	Austria	1673	1262	1182	1146	1048	1,262.20
21	Polonia	3048	821	728	701	678	1,195.20
22	Portugalia	397	378	374	353	346	369.60
23	România	361	353	278	235	226	290.60
24	Slovenia	150	98	82	81	75	97.20
25	Slovacia	152	131	127	108	125	128.60
26	Suedia	5118	5017	5939	5101	5541	5,343.20
27	Finlanda	1448	1266	1150	1068	881	1,162.60
	Media anuală	3,220.67	2,628.89	2,551.04	2,256.48	2,311.52	

Source:https://ec.europa.eu/eurostat/databrowser/view/sdg_17_20/default/table?lang=en
accessed 26 March 2024

The map generated using the same criteria, presented in **Figure 3** only for 2022, highlights the concentration of financing values according to color. According to the attached legend, Romania ranks 18th out of 27.
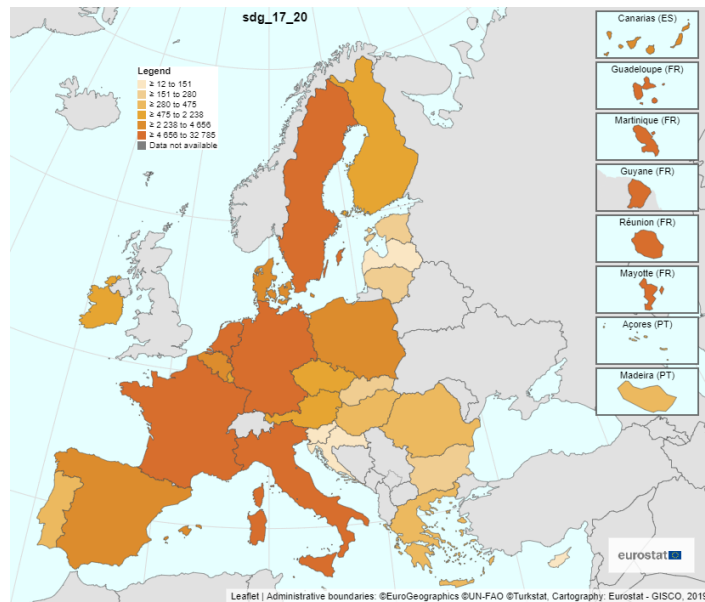
Figure 3: Map of EU funding for member countries
Source:https://ec.europa.eu/eurostat/databrowser/view/sdg_17_20/default/map?lang=en

5. Presentation and interpretation of results

The research identified a series of very varied funding possibilities; besides the well-known ones, many possibilities are known in the EU but less exploited in our country. Among the sources managed by EU Commissions or other EU bodies, several programs in different fields provide funding to non-profit organizations, to name but a few:

- social inclusion, gender equality, and equal opportunities
- culture, audiovisual, and media – supports initiatives in the audiovisual, cultural, and creative sectors
- civic spirit and sense of belonging - aims to protect and promote the rights and values of the Union, supports open, democratic, equal, and inclusive rights-based societies and the rule of law
- research and innovation - both organizations and individuals can apply for funding for research projects in many areas
- development and humanitarian aid - established NGOs can get funding under most thematic or regional programs
- transport, energy, and information and communication technology - finances projects related to energy, transport, and ICT

The answer to the second research question proves the diversity of funding sources for NGOs, which are grouped into two broad categories: public and private. Public funding sources can also be international or national funds, grants, subsidies, or thematic funds, with a multinational scope extended to areas such as education, health, social assistance, or humanitarian aid in case of calamities, war, and others. Private funding sources can be of international or national origin, from other non-profit organizations, own sources, contributions, donations, sponsorships, tax redirections, Norwegian Funds for Local Development and Combating Poverty, community fundraising (street, competitions, auctions, concerts, donation boxes, other fundraising events, SMS donations) or the form of fundraising called peer to peer fundraising, which consists of forming an active network of donors, for example on the occasion of their birthday or the grant provided by Google.

The notion of "Community Fundraising" implies carrying out activities that facilitate donations from individuals, among which many sponsorship activities can be organized, and there are legal ways of financing. Another novelty can be dedicated platforms, through which donations can be organized on the occasion of the birthday of each of those who joined. The grant offered by Google AdWords is another legal source for any NGO that meets the required conditions, i.e., to operate and run humanitarian campaigns following the legislation of the country of origin, to accept and agree to the documentation required at registration, regarding non-discrimination, receipt, and use of the donation and to have a functional website, with a substantial amount of content can apply for this new grant. The third research question was answered by comparing NGOs' funding levels in Romania through EU commissions or grants, noting that Romanian organizations receive far too little funding compared to some EU countries. The causes are the low degree of information, the economic and political circumstances still uncertain in these times, the degree of doubtful confidence regarding the feasibility of projects, and the lack of initiative. Romania ranks lower in the ranking of NGO funding. However, there are hopes that in the near future, these organizations will take advantage of the opportunities that have appeared and are dedicated to them.

5. In conclusion

The purpose of this study focused on the inventory of the main categories of financial resources available today for Romanian NGOs, managing to identify and present as whole accessible funding sources and minimal details about potential problems that could be encountered in the current situation of these organizations. The conclusions regarding the financing of NGOs in relation to the social burden assumed, and their role in covering social needs are:

- while the need for funding is essential, insufficient importance is often given to the financial preparation of the proposed activities;
- NGOs can access specific funding sources that are available only to this type of organization.

In the case of NGOs, such as public institutions or economic entities, the resources available are insufficient to cover the organizational burden undertaken, and the methods used are only sometimes adequate to pursue their funding objectives. Therefore, NGOs often act in a rather emotional, intuitive manner, to the detriment of a systematic planning process, whereas they need expertise in managing activities effectively. However, we have identified that NGOs often do not have sufficient internal resources or do not pay enough attention to developing the necessary expertise by training their staff. The exhaustion or scarcity of current financial sources endangers the existence of non-profit organizations. That is why non-profit organizations are beginning to care about modern techniques and methods of acquiring financial funds. In addition to income from their activity and donations from the entrepreneurial sphere or individual donors, their activity is supported mainly by state grants and community budgets.

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THE INTEREST OF COMPANIES FOR FINANCIAL EDUCATION IN THE CONTEXT OF THE DIGITAL BANKING REVOLUTION

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Abstract: *Financial knowledge is necessary not only for consumers of banking products and services when purchasing products but also for the unbanked population when they have to decide how much to borrow or save to keep their monthly budget in a comfort zone and to meet medium and long-term financial goals*

Keywords: *financial education*, *digitization of banking services*, *the banking market*.

JEL classification: G21, E42

1. Peculiarities of the banking market in Romania

On the banking market in Romania, at the end of 2022, according to the NBR reports, a number of 34 credit institutions were active, of which 2 savings-lending banks in the housing sector, 7 branches of credit institutions from other member states and an organization credit cooperative.

From the point of view of capital, according to the BNR financial reports, there were 2 banking institutions with full state capital (CEC and Eximbank), 4 banks with majority domestic private capital, 21 banks with mixed capital in which foreign capital predominates and 7 branches of foreign banks. Approximately 75% of the net asset is owned by banks with majority foreign capital, down from previous years, in 2018 the percentage was 91.3%. The largest share is held by banks with Austrian capital, followed by banks with French and Dutch capital.

According to the aggregate indicators of the NBR regarding credit institutions from December 2022, the average rate of financial return (ROE) was 8.66%, while the average over the last 10 years, 2010-2017, was 0.4%. This one value placed the banking sector in Romania on the 8th position.

Analyzing the rate of economic return (ROA) it stood at December 2022 for the banking sector in Romania at an average of 0.95%. In the last ten years, the average ROA is 3.9% and places the national banking sector in 12th place among the EU states.

At the end of 2020, there were 4,624 bank branches and agencies in Romania. The year 2021 continued with a tendency to decrease bank staff and the number of territorial units. In a World Bank report at the end of 2021 the number of banking units decreased to 4,018 branches. The purpose of these reductions is to optimize operational expenses. However, the effects are negative in terms of the degree of financial inclusion, especially in rural areas and small towns. The increase in the level of digitization and access to electronic payment methods in these rural areas is not as accelerated as in heavily urbanized areas to compensate for the narrowing of the physical presence of the banking sector.

There is an increase of 11.6 percentage points in the share of the group of banks with majority Romanian capital in the total of the banking market asset, from 14.7% in 2012 to 26.3% in 2021, mainly determined by the increase in the share of Banca Transilvania's assets in the market by 11.5 percentage points. At the same time, there is also an increase in the weight of the branch group of foreign legal entity banks by 5.2 percentage points, from

7% in 2012 to 12.2% in 2021, mainly due to the increase of ING Bank by 5.4 percentage points in total market asset. The group of banks with majority private capital decreased by 16.6 percentage points due to the takeover of the assets of Volksbank and Bancpost by Banca Transilvania, the termination of RBS Bank's activity, but also some increases in the absolute values of the asset which were lower at BCR and BRD, the main banks in this group .

At an individual level, the analysis shows an increase in net assets in 2021 compared to 2012, at the main banks in the market with Romanian majority capital as follows: at Banca Transilvania the asset increased by 306.4%, Eximbank increased by 116.9%, CEC increased net assets by 51.7%. In the group of banks with majority foreign capital, the most significant increases in net assets in 2021 compared to 2012 are at OTP Bank, with 234.1% more in 2021 compared to 2012, at Unicredit where a 118% increase in net assets is observed and Raffeisen Bank which saw an increase of 96.8%. BRD saw net asset growth of 17.6% and BCR had a growth of only 5%. In the branch group of foreign legal entity banks, the evolution of ING Bank from 12,047.6 million RON in 2012 to 44,621.5 million RON in 2021, which represents an increase of 270.3%, is significant.

Decisions regarding operational efficiency in the banking sector, with the aim of increasing market share, also consider consolidation in the future, especially for banks with financial returns below the cost of capital and in the situation of banks that want to limit their exposure to the Romanian market. A recent example is Bank Leumi Romania, which ceased its banking activity as of 30.04.2020, as a result of the merger by absorption process by First Bank.

The banking sector is predominantly oriented towards the natural persons sector due to the diversification of risks, but also the higher returns, 28% of the total assets being represented by loans granted to the population and 41% of the liabilities being represented by the deposits attracted from the population.

Deposits with a maturity of less than one year remain the favorites of Romanians, 93% of the total local deposits, respectively 63% of the total liabilities per sector, as of December 2020.

Following the weighting of the strategy on the companies segment, loans granted to companies represent 23% of assets and deposits attracted from this sector represent 23% of liabilities.

The figure below shows the dynamics of the connection between the public sector and the banking market in the European Union. In the figure, the banks' exposure to the government sector is represented in yellow, as represented by government securities and loans granted to the state in total banking assets in each state, as of June 2021. Also, the graph shows the decreasing values for the government debt situation compared to GDP .
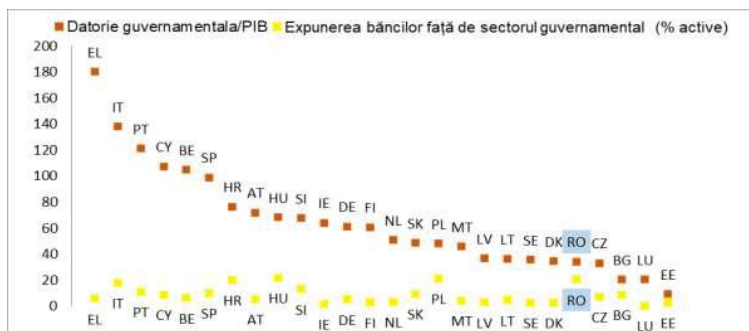
Figure no. 1. Banks' exposure to the government sector and government debt / GDP (%)
Source: author processing

Regarding the dynamics of banks' exposure to the government sector in Romania, an increase was observed from 5.1% in Dec. 2010 to 20.2% in June 2021.

Romania has a share of government debt in GDP of 34.2% (a low level compared to other countries) but this debt is accumulated with an exposure of the banking sector to the government sector of 20.2% (3rd place after Hungary and Poland with the highest percentages). Much of the government debt comes from loans from the Romanian banking market, which increases the vulnerability of the banking system.

The prospects for the profitability of the banking system are also limited by the historical risk of legislative initiatives with an impact on financing capacity, which affected the predictability of an evolution. In order to have a more detailed picture of the evolution of the first 3 banks in the Romanian banking market, the financial results for the period 2018-2020 were analyzed and the relative year-on-year growth indicators were calculated.

Data were collected from the financial results of BRD, Banca Transilvania and BCR banks for the indicators of credits and advances granted to customers, deposits attracted from customers, the evolution of assets and net profit. It can be seen how the 2020 indicators for Banca Transilvania were boosted by the acquisition of Bancpost, following the consolidation of Banca Transilvania, the bank recording a significant increase in volume indicators and a slight recovery in net profit, an increase of 2.82% compared to 2019, subsequently noting that the strategy had a result that also led to a 32.93% increase in net profit in 2021 compared to 2020. The success of this consolidation has elevated Banca Transilvania to first place in the top banks on the banking market in terms of total assets, almost 17% higher than the BCR asset. The net profit recorded in 2021 by BT is also the highest among banking institutions, at 1,620 million lei, while the followers BRD and BCR recorded decreases compared to 2020. The net profit of BCR was influenced by the creation of an exceptional provision related to the activity of BCR Banca pentru Locuințe, based on the loss of the case against the Court of Accounts at the High Court of Cassation and Justice. The bank appealed the decision by which he had to return to the state the premiums granted to clients, used in the bauspar system without justifying the use of the amounts for housing purposes.

The data showing the year-on-year evolution of net interest income, net income from bank commissions, operating income and operating expenses were extracted from the financial reports of the three analyzed banks in order to observe the evolution of the operational result in the period 2019-2021 , of operational efficiency.

The three banks in the first places in the ranking of the banks in the market from the point of view of the assets held on the banking market, had a more modest evolution by income category in 2019 compared to the previous year and recorded even decreases in income. Thus, in 2019, operating revenues at BRD had an increase of 0.28%, Banca Transilvania a decrease of 4.61% and BCR an increase of 0.69%. 2020 saw a rebound, with 2020 seeing increases of over 10 percent in net interest income and operating income. The year 2020 is a year in which the net profit recorded increases compared to the previous year at all three observed banks.

The evolution of the profitability of the banks in the top three, both the return on assets (ROA - return on assets) and the return on equity (ROE - return on equity) and the comparison with the average indicator on the Romanian banking market (data provided by the BNR in interactive database in the statistics section). From the comparison with the banking market average, it was observed that BRD and BT had a level of ROA and ROE above the market average in the period 2018-2021, and BCR recorded an above average return on assets in 2018 and 2020 and a return on equity above average only in 2018.

2. The impact of Covid19 on the banking market

For the context of Covid 19, the effect of the pandemic on the economy is based on economic models and data from previous crises, with the disadvantages that the scenarios only partially fit the current context. Scenarios that used data from the MERS, SARS, Ebola or Spanish flu epidemic predicted a steep decline followed by a strong rebound. The immediate

and significant reduction in consumer demand also led to a significant reduction in demand for financial products. Central banks injected liquidity into the economy to prevent insolvency.

The consumer behavior of customers and the way of doing banking has changed with the triggering of the state of emergency. At the beginning of the state of emergency in March 2020, the preference for liquidity, specific to times of crisis, led to a record level of cash withdrawals, but no syncopes occurred. The liquidity of the banking sector's assets is high (mainly government securities), compared to the economic crisis of 2008, this indicator being monitored and tested periodically by the NBR through stress testing exercises.

The rate of non-performing loans in December 2019 was 4.08%, according to the definition of the European Banking Authority. The situation of the banking system subsequently underwent significant changes following the economic crisis generated by the Covid 19 pandemic, with a focus mainly on increasing digitization and operational efficiency.

The banking system came during the lockdown period to support the population affected by the pandemic with its own solutions to postpone payment, proactively, in addition to the solution adopted by GEO 37/2020 of postponing the payment of credit installments for 9 months. In a press release sent on April 24, 2020 by the Romanian Association of Banks, it was mentioned that the number of requests for installment payment suspension, received from private customers, was approximately 260,000, and the requests received from legal entities reached approximately 10,000. These figures represent 17% of the portfolio of loans to individuals and approximately 10% of loans granted to legal entities. Banks quickly developed technical solutions to implement moratoriums for near-maturity customers who faced reduced income. In order not to affect the sustainability of the banking sector, the recommendations of the ARB were that the payment suspension measures should only apply to customers who have financial difficulties in order not to affect in the long term the banks' ability to financially support the economy and to continue to offer support to customers who facing financial difficulties.

At the beginning of the pandemic, banks ensured business continuity by rapidly redesigning operating models, access flows to premises, the way to interact with customers, so that the risk of contamination was reduced as much as possible. The teams working in the front office were divided, only a part coming into direct contact with customers so that in the event of a suspicion of contamination they could enter a period of quarantine, and the continuity of the activity was ensured by the reserve teams that had carried out all this time activities that did not involve exposure to human trafficking in the units. Some banks have closed banking units in this context, due to small teams, others just reducing the staff present in the front office in each unit.

At the same time, the banks' focus was also on improving digital solutions that support social distancing measures, but also on facilitating access to the card or banking equipment, without going to a bank branch. A first priority was to protect the employees and the customers they interacted with in the banking establishments.

From the measures that have come in support of social distancing, facilitating customers' access to banking resources, without going to the premises of the units, I mention the sending of the card by courier, the elimination of bank commissions for cash withdrawals at other banks' ATMs, the resizing of contact center teams to cope with the much higher requests coming through this channel, the improvement of Internet banking applications with new utilities and easier access to services of mobile banking.

During this period, the state met the business environment with government programs to support small and medium-sized enterprises in order to secure their working capital and the financing needed for investments. An aid offered to companies was the governmental SME Invest program through which the state guaranteed up to 90% of the loans offered by banks to companies that need help to ensure the liquidity necessary to continue their activity and to make investments. In the same program, the state also subsidized part of the financing costs.

Banks have supported the economy through financing, but carefully evaluating the risk conditions they can assume because there are also people who remain without income and companies who fail to overcome the economic crisis generated by the pandemic, so there is a risk of an increase in the credit rate non-performing and trade credit blockages can generate chain effects.

3. Dynamics of the banking market in Romania

A bank's strategy viewed from the point of view of market dynamics can be a strategy of growth, maintenance or withdrawal.

A bank's growth strategy in the market can be achieved by simultaneously choosing several action plans: increasing sales volumes for existing services through more effective market penetration, supported by promotional campaigns and better distribution through actions of force emulation for sale; the development of new, digital services with a faster absorption in the market; geographical expansion by opening new work points; merger with other banks, by absorbing the client portfolio; partnerships with nationwide retailers for the sale of products in installments; strategic partnerships in the relationship with the state to stimulate certain economic sectors, access to European funds or subsidies.

The elements of the economic environment are closely related to the banks' strategy. Economic events in the business environment resonate in the banking market. The economic stimulation of a certain sector of activity or, on the contrary, the failure of some programs creates immediate reactions of adaptability on the part of the banks. Banks come to support growing businesses and the accumulation of wealth and quickly withdraw their support when a particular sector experiences problems because they have the leverage rationale behind them. It occurs when the return on borrowed capital is higher than the interest rate. That's where it comes from *banks give you your umbrella when it's sunny and take it away when it's raining*.

The Start-up Nation program was one such partnership with the state through which the government wanted to encourage the creation and development of new businesses and jobs. Banca Transilvania, CEC and BCR offered service packages containing bridging loans for eligible entrepreneurs in the program, based on this financing agreement with the state.

An observed situation is related to large fluctuations in the evolution of the exchange rate. These have direct effects on companies that carry out import/export activities, but they also have a braking effect in other areas where transactions are carried out with the Euro exchange rate as a reference, such as the real estate market. The increase in the costs of related risks also affects the banks that provided financing.

Banks, although they function as a catalyst in the economy, amplifying or reducing the economic phenomena changes and transforms with them, adapts its strategy permanently to the economic environment. For these reasons, banks sometimes choose a retention strategy or even a withdrawal strategy when the economic and competitive environment is no longer attractive.

4. Objectives and assumptions

The general objectives are to identify the attitudes, opinions and behavior of the organizational consumer of banking products towards financial education in general, respectively financial education specific to entrepreneurial activity in particular and to identify marketing strategies and communication opportunities between companies and banks on this subject.

In the first phase, the following hypotheses were established, in the form of assumptions regarding the interest of the research: most companies, as organizational consumers of banking products and services, are interested in financial education for entrepreneurship; most of the companies' management have acquired the financial knowledge necessary for financial analysis and business decisions through their own experience, mistakes and individual study; interest in courses organized by banks with the theme of financial education

for business is high; the degree of interest in the level of financial education of employees is low; there is no interest from employers in offering benefits in the form of financial education courses or private pension for employees; the preferred way of interacting with the bank is using online services; on average, companies collaborate with at least two banks; electronic payment methods (card, Internet banking, phone payment) are preferred over the traditional cash payment method.

The following statistical hypotheses were taken into account: the mean of interest companies for business financial education is 4 (1 - Very little, 5 - Very much); the average of companies' interest in business financial education is different from 4 (1 - Very little, 5 - Very much); company representatives appreciate the level of financial skills and knowledge possessed as being at an average of 3 (1 - Very poor, 5 - Very good); company representatives appreciate the level of financial skills and knowledge possessed as different from an average of 3 (1 - Very poor, 5 - Very good); there is no concentration of answers regarding the number of banks they collaborate with; there is a concentration of answers regarding the number of banks they collaborate with; there is no connection between the variable regarding the type of position held within the company and the degree of appreciation of the level of financial education of the employees in the company; there is a link between the function type variable held within the company and the degree of appreciation of the level of financial education of the company's employees; there is no connection between the number of employees of the company and the way in which it is considered that employees would appreciate access to financial education courses during work hours; there is a relationship between the number of employees of the firm and how it is considered that employees would appreciate access to financial education courses during work hours.

5. Establishing the research population and the sampling method

The selection of the sample was made with the help of Listafirme.ro, a site that provides the list of companies in Romania and where selections can be made based on different criteria. The population that was the object of the research was given by the active companies with their registered office in the municipality of Dolj County, with a number of employees between 1 and 249, with Romanian capital in a proportion of at least 75%, the turnover according to the balance sheet at 2022 between 100,000 RON and 99,999,999 RON and a minimum profit in 2022 of 10,000 RON. Or selected only the companies that had the information regarding the e-mail address and name of the contact person. The selection provided a volume of the researched population of 2,267 firms. These firms are classified under the law as small and medium-sized enterprises (SMEs).

The method applied for data collection was as electronic survey applied online and the instrument used for data collection was questionnaire.

The sample selection was random based on the collection of email address information. Electronic e-mail messages were sent to all addresses provided by the site based on the selection. The companies thus selected were contacted at the e-mail address provided by the site.

6. Sample validation

During the research, it was returned to obtain answers by message to those companies where completions of the number of questionnaires were needed to request the completion of the questionnaire, according to the monitoring of the sample from the point of view of the number of employees. At the end, a number of 314 valid questionnaires were collected, and the response rate was 14%.

Using the formula of Cochran William Gemmell, it was determined that the sample size n, for a maximum allowed error E = ±5%, p = the percentage of the population in case of success (the value not being known, consider the maximum value of 50%), q = the percentage of the population in case of failure (the maximum value in this case is considered equal to 50%) and z = 1.96 the value according to the distribution table for α = 0.05.

The maximum allowed error for the n = 314 valid questionnaires collected where the surveyed population N = 2,267 will in this case be:

$$E = \sqrt{\frac{z^2 * p * q * (N - n)}{n * (N - 1)}}$$

$$E = \sqrt{\frac{1,96^2 * 50 * 50 *}{314 * (2.267 - 1)}} = 5,14\%$$

To validate the sample, stratification was used in terms of the number of employees.

Table no. 1. Breakdown of companies according to the characteristic number of employees

No. by the employees	N	%	n	%	drums
1-9 employees	1,688	74%	219	70%	1.82
10-49 employees	495	22%	82	26%	1.73
50-249 employees	84	4%	13	4%	0.39
Total	**2,267**	**100%**	**314**	**100%**	

Source: author processing

The following hypotheses were established to check the validation of the sample based on the test of comparison of differences between percentages: the percentage in the researched population represented by companies with a certain range of the number of employees is equal to the percentage in the sample; the percentage at the level of the researched population represented by companies with a certain interval of the number of employees is different from the percentage at the level of the sample.

$$H_0: \pi = p; \ H_1: \pi \neq p$$

where: π = the relative frequency calculated as the percentage of the surveyed population represented by companies with a certain range of the number of employees; p = the relative frequency calculated as the percentage in the sample represented by firms with a certain range of the number of employees

It is noted that in order to test whether the differences are statistically significant, the critical ratio was calculated for the established hypotheses.

The response rate obtained at the end was 14% after returning to the groups where necessary increasing the response rate. The data collection was completed by obtaining the answers to a number of 314 valid questionnaires. The data was exported from Google Forms to an excel file where it was processed and formatted so that it could be used and loaded into the SPSS program.

7. Analysis and interpretation of results

The first question in the questionnaire referred to respondents' general interest in financial education for business. The question was asked using an interval numerical scale with semantic support for extreme levels. Level 1 indicates low interest *Very little* and level 5 represents high interest *Very much*.

It is observed that there is a high interest in financial education in business, there were no answers declaring an interest 1 - very little. In the questionnaire, to this question 52.87% declared that they are 5 - very interested in financial education for business. The average

frequency of responses on the scale from 1 to 5 was at 4.34 for the sample N = 314, having the median of 3 and the standard deviation is observed at 0.804.
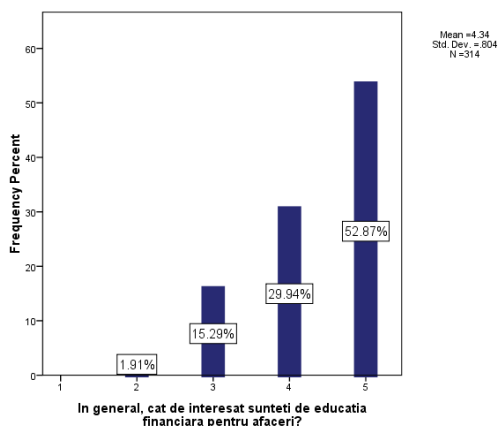
Figure no. 2. Degree of interest in financial education in business
Source: author processing

The second question aimed to collect information on the degree to which the respondent self-appreciates his abilities and his knowledge of money management. As in the previous question, a numerical scale of interval type from 1 to 5 was used, with semantic support for the extremes where the skills and knowledge are self-assessed as 1 - Very poor and 5 - Very good.
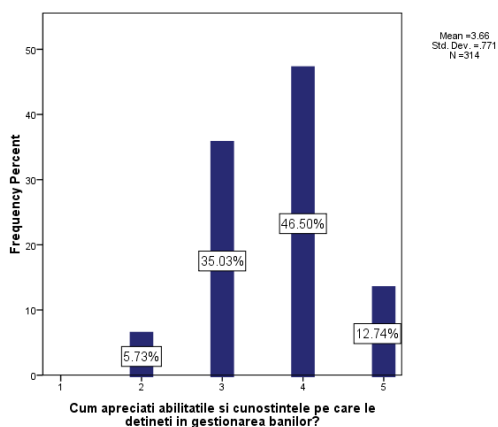
Figure no. 3. Appreciation of one's own skills and knowledge in money management
Source: author processing

It is observed how zero responses were obtained for the minimum of the scale while 12.74% of the respondents selected that they have skills and knowledge in managing money 5 - Very good. The average rating of the sample subjects was 3.66, with a median of 3, standard deviation 0.771.

A multiple-choice nominal scale was used to analyze which sources of financial education are most commonly recognized as a source for acquiring financial knowledge for business analysis and decision making.

It can be seen how the most frequently mentioned source of financial education for entrepreneurship is own experience and self-taught accumulation. Of the 314 respondents, 82.5% mentioned it as one of the sources *I learned by myself* (own experience, self-taught),

this answer being selected with a frequency of 48.4% of the total of 535 while school was mentioned 73 times (13.6% of 535 answers and 23.2% of subjects) .

A nominal multiple-choice scale was also used to elicit what information firms, through their representatives, would most need from a financial education course.

From the analysis of the answers, it can be seen how the highest interest of the SME representatives in the sample was for the topic of investments. In the selection of 628 answers, the need to have information about what to look for when investing was selected with a frequency of 168 times and in a weight of 26.8%, by 53.5% of the 314 subjects.

Question five of the questionnaire sought to collect the interest of company representatives in participating in financial education courses for businesses supported by a bank.

You can see the descriptive statistics indicators calculated for the interval numerical scale used to collect the 314 responses. The arithmetic mean is 3.22, the standard deviation from the sample mean is 0.071, with a median of 3 and a modal value of 4. The standard deviation is 1.262 and the variance (mean of the squared deviations) is 1.592.

It can be seen how 27.39% of company representatives selected an interest of less than 3 points (13.38% are very little interested and 14.01% evaluated their degree of interest with 2). At the same time, 46.50% declared a high interest (16.56% are very interested and 29.94% have a degree of interest of 4 on the scale from 1 to 5). By comparison with the answers to question 1, it was observed that only 1.91% declared a low general interest in financial education in business, below 3 points, and 82.81% a high interest (cumulative level of 4 and 5). It can be interpreted that the interest in financial education is not found in comparable weights and in an immediate availability to participate in courses organized by banks.
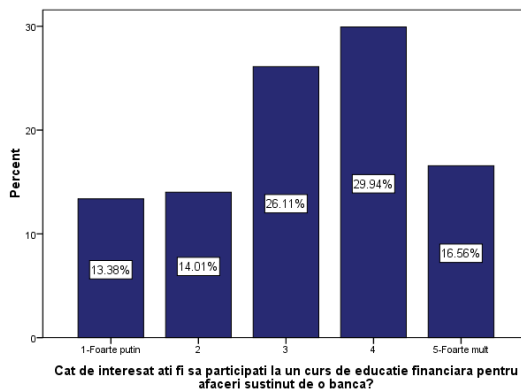
Figure no. 4. The degree of interest in participating in financial education courses organized by banks
Source: author processing

A percentage of 26.11% assessed that their level of interest is medium, they can be considered to participate in financial education courses organized by banks, they can be attracted by the event promotion strategy and influenced according to certain circumstances .

The present article aimed to collect information about the efficiency achieved by the banks involved in the organization of such courses in Craiova, both from the point of view of the promotion of the events carried out but also of the perception of the participants in them.

It is observed how a share of 64.33% of the respondents have not heard of the existence of financial education courses organized by banks, and 35.67% have heard of such courses. It can be seen how the percentage of those who heard about the organization of such

courses is lower than the percentage of 46.50% who mentioned to the question that they would have a degree of interest greater than 3 for participating in such events. The research thus obtained an image of the effectiveness of the promotion policy for events of this type organized by banks participating in the banking market in Craiova. Of the 112 SME representatives in the sample who heard financial education courses organized by banks, 86 did not attend such a course and 26 actually attended, representing 8.28% of the total of 314 subjects.
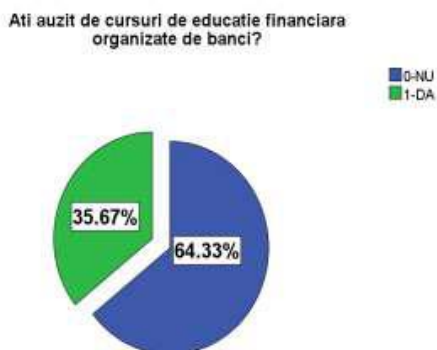
Figure no. 5. The level of information regarding financial education courses organized by banks
Source: author processing

It can be observed that subjects who participated in financial education courses in Craiova indicated only four banks organizing such events: BRD (31%), Banca Transilvania (31%), Unicredit (23%) and BCR (15%).
Regarding the evaluation of the usefulness of the information received on an interval type scale with semantic extremes 1 - Very little useful and 5 - Very useful, the 26 respondents who declared that they participated in such courses organized by banks numbered 4 (16 %) rated the courses at a low level of usefulness, while 16 people (62%) gave a score of 4 or 5 points.
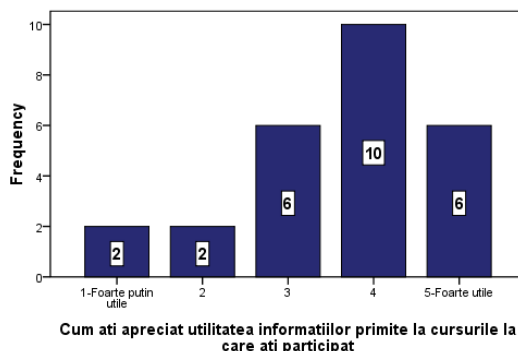
Figure no. 6. The degree of appreciation of the usefulness of the information received
Source: author processing

An interval numerical scale was also used to assess the degree of appreciation of the level of financial education held by the company's employees.
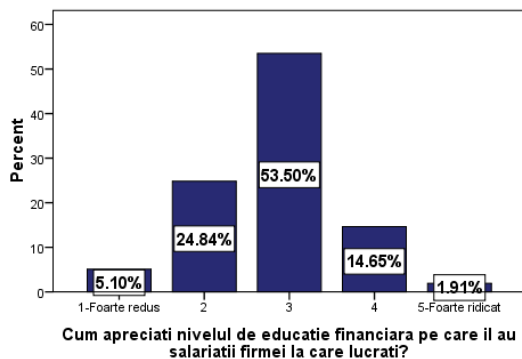
Figure no. 7. The level of appreciation of the financial education of the company's
employees
Source: author processing

From the graphic representation of the descriptive statistics analysis, it can be observed the
frequency of selecting a level equal to the value of 3 points for 53.50% of the answers, while
the average of the frequency of the answers is 2.83, the median and the module have the
value 3 and the standard deviation 0.806. Only 16.56% appreciated that the level of financial
education of the employees is high (cumulative 4 with 5 - Very high).
During the research, data were also collected about the degree of importance for the
respondent that the company's employees have basic financial notions. This topic has an
importance on a scale of 1 to 5 in a proportion of 66.88% (cumulative 4 out of 5). The average
importance given by the respondents to the possession of basic financial notions by
employees is 3.94 on a scale from 1 to 5 (1 - Very little and 5 - Very much), the median value
is 4, the module value is 5 and the standard deviation is 1.056.
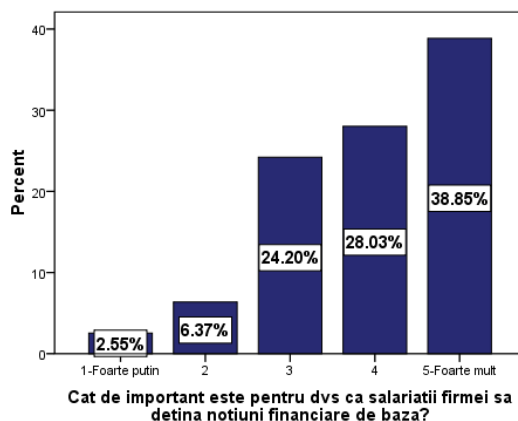
Figure no. 8. The level of importance given to the financial education of the company's
employees
Source: author processing

The research also aimed to collect data on the existence of opportunities for banks to
organize financial education courses at the headquarters of the companies they collaborate
with.
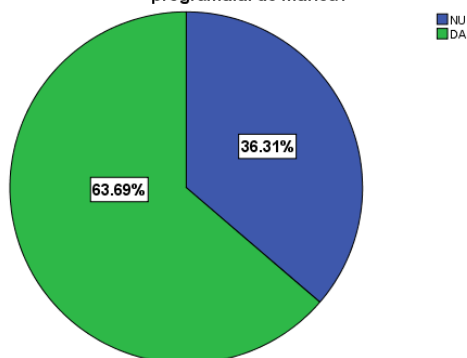
Figure no. 9. Interest in facilitating the organization at the company headquarters
Source: author processing

63.69% of the respondents believe that the company's employees would appreciate it if the employer allowed access to financial education courses during work hours, and 36.31% of the total n = 314 believe that the employees would not appreciate it.

One of the sensitive aspects related to financial education is the planning of financial resources in the medium and long term. The public pension system is deficient even today in supporting a standard of living of pensioners similar to that of period of active work. The optional private pension is an alternative to increase income after retirement of taxpayers. Contributions to private pensions related to pillar III of pensions can be made by both employees and employers for their own employees. The amounts representing employers' contributions to the voluntary pension funds are tax deductible when calculating the profit tax and within the limit of 400 Euros annually. They can be part of the benefits package offered by the company to employees, with effects on their future and are frequently used in developed countries. In Romania, the private pension system is mainly supported by the II pillar of pensions which is mandatory and less by optional pension funds, although the public pension system is deficient in demonstrating its long-term sustainability. In order to capture the long-term interest in investing in a voluntary pension fund both from the point of view of the employees, but also of the employer's motivation, the question was asked about the degree of interest of the employees towards the private pension. The results were requested in the form of an interval-type numerical scale, and the extremes were represented by semantic meanings with opposite meanings 1 - Very little and 5 - Very much.
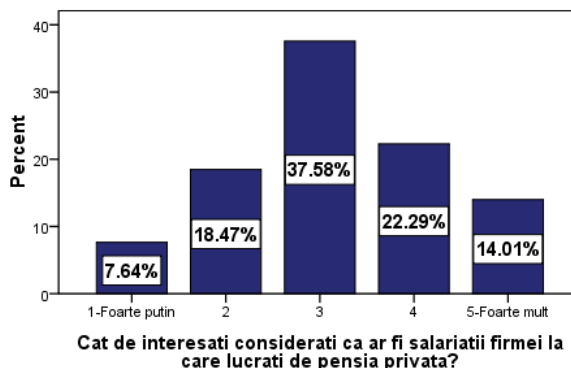
Figure no. 10. Estimation of the degree of interest of employees for the private pension
Source: author processing

The majority of company representatives (37.58%) considered that the interest of employees in the subject related to the pension private is an average one. It was assessed that employees are very little interested in the private pension by 7.64% of the respondents and 14.01% considered that the employees are interested 5 - Very much in the private pension. Thus, for n = 314, the average of the responses was 3.17 points, the median and the module had the value 3 and the standard deviation is equal to 1.118.

A section of the research followed the behavior of the organizational consumer of banking services, with the aim of identifying the identification of opportunities within banking marketing strategies.

The pandemic has accelerated the digitization process and this fact was observed in the research through the importance given by company representatives to the digitization process of the offer of banking services and products.

It can be seen how only a cumulative percentage of 11.5% represented the frequency of responses that gave between 1 and 3 points for the usefulness of developing the digital offer of banking services and a share of 88.5% of respondents gave a score of 4 and 5 points on a scale from 1 to 5 in which the usefulness was rated with a numerical interval type scale with semantic extremes where 1 - Very little and 5 - Very much.

Considering the interest in marketing strategies on the banking market regarding the integration of financial education in the partnership with the organizational client, it was aimed to obtain some data on the relationship with the banks and the most frequently used communication channel.

During the research, it was observed how the majority (81.53%) of companies prefer interaction through online Internet banking services, 10.19% prefer interaction at the bank's headquarters, 6.37% prefer telephone conversation and 1.91% would prefer not interact at all. It is known that a majority of 43.31% of respondents state that the company works with only one bank, 37.58% stated that the firm works with two banks, 15.92% stated that the firm works with more than two banks and 10 respondents out of 314 stated that they do not know / do not answer.
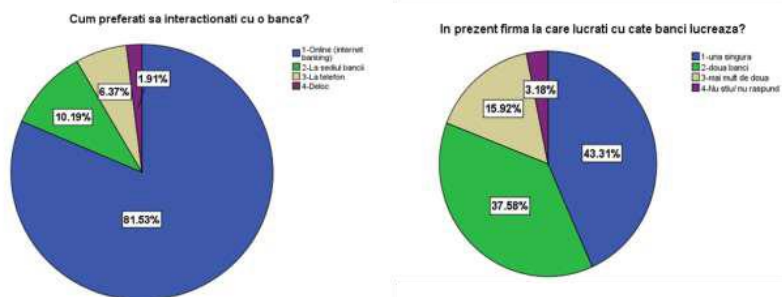
Figure no. 11. The company's interaction with the banks
Source: author processing

The research also checked the degree of satisfaction of the representatives of the companies in the communication with the banks in order to check if the answers to the questions are correlated with the appreciation of the communication with the banks.

Observing the results obtained from the processing of descriptive statistics, the cumulative percentage of appreciations with 4 and 5 points is 73.89%, a cumulative percentage of 7.64% appreciating communication with the bank with 2 points and one point, respectively.

In the section on the collection of statistical data on the characteristics of the companies participating in the sample, there was a particular interest from the point of view of the

representativeness of the answers. Thus it was observed that a majority share of the respondents from the management of the company was obtained, as it was followed.

A share of 62.74% of the respondents declared that they are part of the company's management. Also within this section, the collection of information on the type of position held was also pursued. It can be seen how 85.99% of the respondents declared that they hold a management position. The points of view expressed by the respondents as representatives of the companies come mostly from the management of the company or from respondents in management positions in the company. For research, this fact is a success, bringing a plus regarding relevance the answers obtained on behalf of the company from the respondents.
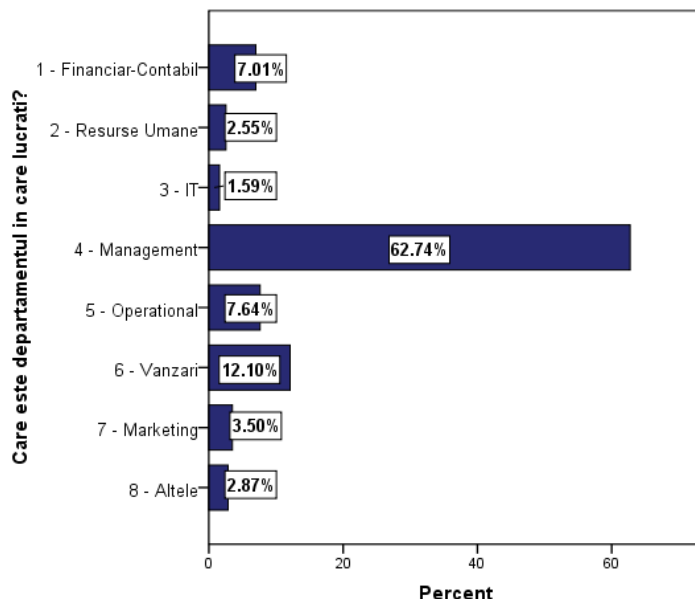
Figure no. 12. The department within the company where the respondent works and the type of position held
Source: author processing

8. Statistical hypothesis testing

The sample mean for interest in business financial education is 4.34 on a scale of 1 to 5, with a standard deviation of 0.804. The testing of the research hypothesis in the case of univariate analysis for testing the mean parameter was carried out using the t-Student test. It can be guaranteed with a probability of 100% that the average of the assessments of the representatives of the companies on the level of financial skills and knowledge possessed is different from 3.

Qafter applying the Kolmogorov-Smirnov test, 0.076 < 0.192 is observed. There is no relationship between the number of employees of the firm and how it is considered that employees would appreciate access to financial education courses during work hours.

9. Conclusions

Measuring respondents' interest in financial education led to the conclusion that there is a high interest in the market for this subject, the average being 4.34 points, respondents indicating in proportion of 82% a level above 3 (cumulative score for 4 and 5 points). This

represents a potential for integrating financial education into marketing strategies in the banking market.

Regarding the self-assessment of the skills and the degree of knowledge held in money management, the respondents appreciated that they have a high level of skills and knowledge, the average being 3.66 points on a scale from 1 to 5, and the main source through who acquired the necessary information for business analysis and decisions was their own experience, mentioned by 82.5% of respondents.

The main information needs when talking about financial education were mentioned as related to what to look for when investing (mentioned with a frequency of 26.8%) and general business financial management (mentioned with a frequency of 24.8 % of the total answers). Regarding financial education from the perspective of banks' involvement through the delivery of specialized courses, it was found that there is a high willingness on the part of companies to participate in financial education courses organized by banks, the average being 3.22 on a scale from 1 to 5 .

The research also followed a situation of the current status of the efforts carried out by the banks present in the Craiova market. It was found that 64% of the respondents had not heard that banks would organize financial education courses. 36% of respondents heard that banks organize such financial education courses and only 8% stated that they participated in such a course organized by one of the banks: Banca Transilvania, Unicredit, BRD and BCR. They rated the usefulness of the courses they attended at an average of 3.62 points on a scale from 1 to 5 (38.5% gave 4 points and 23.1% gave 5 points).

A section of the research concerned the employer's perception of the issue of financial education of employees. This one section contained four questions in which an evaluation of the employer of the level of financial education possessed by the employees, but also the interest of the employer from this perspective was sought. Thus, the importance given to the financial education of employees and their willingness to get involved with time and financial resources were evaluated. The respondents representing the companies involved in the research evaluated the level of financial education of the employees as slightly low, the average being 2.83 points on a scale from 1 to 5.

Company representatives considered it important for them for employees to have basic financial knowledge, the average importance given being 3.94 points on a scale from 1 to 5. At the same time, 63.7% of the respondents answered that employees would appreciate if the employer would allow them to participate in financial education courses during the work schedule and an average of 3.17 points appreciated that the company's employees are interested in the private pension. Both the natural person, the employee, and the legal person, the employer, can contribute to this, with funds in the human resources strategy of developing benefit packages for employees. In conclusion, there is a potential for the development of the marketing strategy within the collaboration between the companies and the banks in Craiova to facilitate the strategies of the banks to develop programs and financial solutions for the employees of the companies.

Another section aimed at collecting data on the behavior of the organizational consumer of banking products and services to check if there are correlations between the behavior of firms in the relationship with the bank and the data collected for the variables within other sections. During the research, it was confirmed that there is a high interest of the organizational consumer of banking services in Craiova for digital banking services, through the answers of the company representatives. So, 81.5% of respondents said they prefer online interaction with the bank. At the same time, regarding the usefulness of the increase in the digital banking offer, the average of the answers was 4.22 points on a scale of 1 to 5 (1 - Very little and 5 - Very much). The majority opinion of the company representatives was that they highly appreciate the usefulness of increasing the offer of banking services and products via the Internet.

A control key between the score given to the questions regarding the interest in digitization and the behavior of the company representative in terms of the existence of digital skills and

the availability of making payments in the digital environment was given by the question regarding the way the respondent prefers to make payments. Thus, 54.1% answered that they prefer online payments, with card authentication and Internet banking, 24 (8%) answering that they prefer to pay at the store with the card, a share of 11.5% preferring payments by phone and only 9, 6% choosing cash payments as the preferred method.

For the characteristics of the companies in the sample, the validation of the sample was obtained based on the dimensioning from the perspective of the range of the company's number of employees. This aspect was considered to be of value for the interest shown from the employer's perspective for the financial education of its own employees.

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MACHINE LEARNING CLUSTERING IN FINANCIAL MARKETS: A LITERATURE REVIEW

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Abstract: *This paper aims to present a concentrated overview of innovative research in machine learning clustering techniques as applied to to different facets of financial markets and stock market investing. Research on techniques such as K-Means Clustering or Agglomerative Hierarchical Clustering and their derivatives play a pivotal role in augmenting the stock market research and investment strategies. Wheter it is time series clustering and prediction, portfolio selection and optimization, or risk management, machine learning clustering has potential to enhance already existing processes by improving performance, reducing time spent on repetitive tasks or mitigating human errors. A truly innovative tool in the investor's toolset, it is imperative to not overlook its limitations, such as the necessity of selecting the appropriate technique for specific datasets, or the need for human supervision to maximize its utility and insights extracted.*

Keywords: *artificial intelligence; machine learning; clustering; finance; investing; financial markets*

JEL Classification: C38; C53; C55; C61; C8; G10; G11; G17

1. Introduction

With higher availability of data and increase in the computing power experimented in the last years, Artificial Intelligence (AI) and Machine Learning (ML) have started to become re-enter the sphere of interests for many domains, scientific or commercial alike. It is safe to assume that the rise in popularity of Open AI's Generative Pre-trained Transformer, ChatGPT, has provided the spark that reignited the general public's interest to AI as well.

Within the ML subset of AI, the clustering subset of techniques and its use in financial markets is the focus of this paper. Clustering refers to the grouping of more observations in a way that similar observations end up in the same grouping called cluster. Clustering has many aplication in a plethora of domains, and the financial and investing fields are no exception.

Some of the use cases in which clustering can be used in financial markets are:

- *Portfolio construction*. Grouping similar stocks based on their risk and return profiles, or other relevant factors can prove useful in building diversified portfolios, thus reducing idiosyncratic risk.
- *Risk management*. Grouping stocks with similar risk profiles help investors a better understanding of similar-risk stocks.
- *Asset allocation*. Having clusters based on asset classes or sector provenience, investors can avoid including similar equities in their portfolios and reduce their overall concentration risk.
- *Market analysis*. Clustering different macro regimes and business cycle phases can prove useful in adapting the investing style to different circumstances to maximize returns and/or to minimize losses.

- ▪ *Factor identifiation*. Having clusters based on several attributes of stock market companies, an investor can identify the factors that drive the stock's movements and capitalize on them.
- ▪ *Trading strategies identification*. By clustering equities that display similar patterns, investors can develop trading strategies to obtain better returns or follow specific objectives.
- ▪ *Investor segmentation*. Clustering different types of investors (such as large institutional investors and individual investors) and their behavior can aid the generation of useful information about the positioning of other investors in the stock market.
- ▪ *Anomaly detection*. Having equities clustered by specific measures, investors can more easily see the equities that display abnormal behaviors and react accordingly.
- ▪ *Other investment-related research*. Considering that the number of factors that influence the movement of publicly traded assets is so enormous that is near-impossible to quantify, using clustering techniques on different metrics that the investor thinks might have an impact on the asset's prices can be a great tool to validate or invalidate these hypotheses.

In this paper, a literature review of research done in the field of ML clustering, with applications to the financial market is presented to highlight various techniques that can be used to improve or simplify various aspects of the stock investment process.

2. Literature review

Madhulatha (Madhulatha, 2012) provides a description of clustering as a widespread technique employed in diverse domains, such as machine learning, data mining, pattern recognition, image analysis, and bioinformatics. The author states that clustering involves the act of categorizing similar objects or dividing a dataset based on a specified distance metric. The heavy dependance on the analyst's decision is emphasized here. It is suggested that combining diverse clustering results yield more robust clusters that are not excessively reliant on criteria. Specific constraints that are linked to clustering are acknowledged as well. The study advises against generalizing clustering outcomes beyond the examined dimensions or variables, because clustering consistently generates clusters even in the absence of an intrinsic group configuration in the data.

Rani and Sikka (Rani & Sikka, 2012) offer a comprehensive survey and synthesis of previous research on time-series clustering. The use of time-series clustering plays a crucial role in the field of data mining, as it facilitates understanding of the underlying mechanisms responsible for the generation of time-series data and enables prediction of future values. The paper underscores the varied selection of application domains that have been investigated in relation to time-series clustering, encompassing fields such as science, engineering, business, finance, economics, healthcare, and government. The conclusion highlights the growing interest focused on the extraction of valuable insights from time series data, with a particular emphasis on the domain of time-series clustering. The careful assessment of proposed algorithms is essential due to the large size of time-series data and the possible existence of outliers.

Cai et al. (Cai, et al., 2016) highlight the increasing significance of financial data analysis and the use of clustering techniques within this field. The authors underscore the lack of research that is specifically centered on clustering techniques for the purpose of analyzing financial data. By assessing various clustering techniques in the context of analyzing diverse financial data sets, encompassing both time series and transactions, the objective of the study is to improve understanding related to the internal framework of financial datasets

while assessing the proficiency of individual clustering techniques within this field. The article assesses various clustering algorithms and evaluates their effectiveness by utilizing metrics such as the Dunn Index (DI) and Davies-Bouldin Index (DBI). The paper underscores the importance of using normalized centroid-based clustering in the context of financial data analysis, while also drawing attention to the constraints of current methodologies. The study suggests that density-based clustering is an unsuitable approach for financial datasets. Normalized centroid-based clustering with a higher Dunn Index (DI) or a lower Davies-Bouldin Index (DBI) has been determined to be the optimal approach for determining the appropriate number of clusters for financial data classification. The authors recognize the limitations associated with clustering techniques, including the tendency of K-means to identify spherical clusters and the limited effectiveness of centroid-based clustering in handling noise. Thus, exploration of alternative centroid-based clustering techniques that are tailored for financial data sets is proposed.

Puerto et al. (Puerto, et al., 2020) present an innovative methodology that integrates clustering techniques and portfolio optimization to efficiently tackle the issue of portfolio selection in the field of finance. The proposed framework integrates a clustering-based criterion into the process of portfolio selection, providing a comprehensive solution that clusters assets and selects the optimal portfolio simultaneously. The key novelty of the approach resides in its use of a metric founded on correlation coefficients among the returns of assets to guide the clustering and selection process. The use of mixed-integer linear programming enables the model to efficiently distribute investment capital, considering both the cluster structure and the trade-off between risk and return. The integrated clustering and portfolio selection framework proposed provides various benefits in contrast with traditional two-step methodologies. The combination of clustering and selection into a single phase optimizes the decision-making process and improves effectiveness. Moreover, the framework's flexibility enables the integration of diverse risk measures and correlation metrics, rendering it adjustable to a range of investment tactics and inclinations.

Carta et al. (Carta, et al., 2021) introduced a methodology for real-time event detection by combining traditional newswires and microblogging platforms. This approach enables the extraction of significant information related to events across diverse domains. The algorithm employs clustering techniques to identify interrelated news articles from credible sources and integrates them with microblogging content to assess the significance of events in the public's perception. This study is centered on the financial sector and aims to verify the effectiveness of the methodology using empirical data obtained from Dow Jones, Stocktwits, and the S&P 500 index. The assessment showcases the proficiency of the approach in precisely identifying significant incidents, encompassing notable instances such as the Brexit Referendum and the Covid-19 pandemic. The methodology involves utilizing domain-specific representations of textual data, employing a hierarchical clustering technique, and eliminating outliers to produce significant groups of events. The proposed method is suitable for the detection of events in real-time situations and can be conveniently customized for diverse application domains with minimal modifications.

Vijayalakshmi Pai and Michel (Vijayalakshmi Pai & Michel, 2009) focus on the issues of diversification in small portfolios, as well as portfolio optimization problems that encompass a range of constraints, such as fundamental, bounding, cardinality, and class constraints. The authors highlight the need for an evolution strategy-based approach as a potential solution for addressing portfolio optimization challenges that involve various constraints. The employed methodology utilizes k-means cluster analysis as a means of simplifying the model and eliminating the cardinality constraint. The research shows that portfolio sets clustered through k-means offer dependable outcomes by displaying proximity to the exact efficient frontier. Additionally, this approach encourages dimensionality reduction, which leads to faster convergence. In terms of efficiency and robustness, the proposed evolution strategy shows superior performance when compared to other methods such as generational genetic algorithms and quadratic programming. The proposed strategy is well-suited for small

portfolios seeking diversification, especially in cases where there are constraints within asset classes.

Ahmed et al. (Ahmed, et al., 2020) provide a thorough overview of the k-means clustering algorithm, emphasizing its constraints and the need for improvement in the field of financial asset analysis. This study examines crucial concerns related to the k-means algorithm, such as the random initialization of centroids, the need for predetermined cluster numbers, and the algorithm's inability to manage diverse data types that are frequently encountered in financial asset analysis, with the aim to improve the understanding of the k-means algorithm and identify potential areas for further research to overcome its limitations. This study distinguishes itself through an in-depth review of prior literature and the implementation of broad experimental evaluations on benchmark datasets, aimed at assessing multiple iterations of the k-means algorithm. The findings show that the challenges presented by the k-means algorithm do not have a universally applicable solution, and instead, various adaptations are customized to suit specific data types or applications. The authors highlight the importance of creating a robust k-means algorithm that can handle the obstacles posed by initialization and mixed data types in a unified manner.

Wu et al. (Wu, et al., 2012) introduced a novel framework for forecasting stock trends through the integration of sequential chart patterns, the K-Means algorithm, and the AprioriAll algorithm. The employed methodology involves the conversion of stock price sequences into visual representations using a sliding window technique, followed by the clustering of the resulting charts into distinct patterns via the application of K-Means clustering. The chart patterns are subject to a detailed analysis to extract recurring patterns using the AprioriAll algorithm. This approach facilitates the identification of market behaviors that are associated with trends and empowers the prediction of such trends. The method provides precise forecasts of trends and provides traders with signals for buying or selling to augment their predictions of stock prices. The system exhibits a favorable outcome in financial forecasting, resulting in additional gains and outperforming traditional investment strategies. Nevertheless, it is crucial to consider certain constraints of the research, such as the robustness of the suggested model under various market conditions, or the potential impact of external factors on its efficacy.

Bini and Mathew (Bini & Mathew, 2016) have proposed an analytical framework that employs data mining techniques to detect companies with higher profitability in the stock market. Their study centers on the use of clustering and regression as data mining methodologies. The authors conducted a comparative analysis of diverse clustering methodologies, namely partitioning-based, hierarchical, model-based, and density-based techniques, using validation indices. The findings suggest that the K-means algorithm, and the Expectation-Maximization algorithm, exhibit superior performance compared to the hierarchical and density-based techniques. Subsequently, the outcomes obtained from clustering are used in a multiple regression analysis to make predictions about future stock prices. The authors suggest the creation of an online stock prediction system as potential future research.

Bin (Bin, 2020) investigates a portfolio-building algorithm which uses a combination of the Sharpe ratio and K-means clustering on financial ratios to produce diversified stock market portfolios. Dissimilarity metrics, including historical stock price fluctuations, return on assets, and asset turnover ratios, are employed in the clustering of S&P 500 companies. The results suggest that portfolios generated through clustering techniques using stock price movements exhibit poor performance, whereas those constructed based on financial ratios exhibit consistent outperformance relative to the market average. The algorithm and Sharpe ratio are recognized to have certain drawbacks, such as their susceptibility to the investment horizon and assumptions about portfolio returns. The study's findings are subject to limitations due to the restricted dataset of only 232 companies, highlighting the need for further comprehensive data analysis.

Zhu and Liu (Zhu & Liu, 2021) present a novel financial risk indicator system that uses K-means clustering to identify early warning systems in the context of financial risk

management. Besides its efficiency, simplicity and obiectivity, the K-means algorithm is advantageous due to its capacity to overcome subjective biases, estimate the likelihood and magnitude of risk occurrence, and facilitate risk management. The results indicate that the use of the K-means algorithm enhances the accuracy of risk forecasting, facilitates precise distinction among various risk levels, and establishes a scientific foundation for the mitigation and control of risks. However, the study lacks a thorough analysis of the effectiveness of the suggested financial risk early-warning system under various market conditions, as well as the ability of the approach to handle complex and large datasets.

Fang and Chiao (Fang & Chiao, 2021) investigate the use of the K-means clustering algorithm, along with an Artificial Fish Swarm Algorithm (AFSA) in the forecasting and recommendation of stocks. The K-means algorithm's sensitivity to initial parameters and local optimization issues can be tackled using the AFSA for optimization, which leads to the development of KAFSA. The authors further showcase the algorithm's precision in predicting stock performance. The reliability of the clustering results is supported by the analysis of financial metrics such as closing price, price-earning ratio, earnings per share, and return on net assets. The KAFSA algorithm has shown efficiency in the field of financial stock prediction and recommendation. It has been shown to provide accurate classifications and scientific recommendations to investors. However, the article's treatment of the scalability and robustness of the KAFSA algorithm in relation to larger datasets and its effectiveness in dynamic market conditions is not thoroughly examined. Furthermore, the authors do not explore the potential influence of outside factors on the accuracy of stock prediction, and it neglects to consider the computational complexity of the suggested methodology.

Creating an investment portfolio that optimizes returns while minimizing risk is a complex undertaking. Traditional portfolio theories frequently exhibit limitations in the automated identification of high-performing stocks from a vast array, while considering industry and market differences. In addition, there is a lack of consideration for risk aversion in the context of stock market downturns. Wu et al. (Wu, et al., 2022) introduced a novel approach to constructing portfolios, which capitalizes on the persistent trend features of the financial market. They use the K-means clustering algorithm for the purpose of clustering stocks according to their trend characteristics. The portfolios that have been created show superior returns and reduced risks in comparison to traditional portfolios. The approach involves screening stocks within individual clusters, in which those exhibiting the highest values of key metrics are chosen to form stock pools and portfolios. Moreover, the study determines the most favorable quantity of stocks in the portfolio via empirical analysis. The authors suggest the need for further research to improve the efficiency of clustering algorithms in the context of portfolio construction. This entails the investigation of alternative clustering techniques and the optimization of the approach to accommodate varied market conditions. This study contributes to the development of enhanced investment strategies by overcoming the constraints of traditional portfolio theories and using clustering algorithms.

Lee et al. (Lee, et al., 2010) introduce a novel clustering technique, namely HRK (Hierarchical agglomerative and Recursive K-means clustering), which aims to forecast near-term fluctuations in stock prices following the release of financial reports. The methodology entails the transformation of financial reports into feature vectors, followed by the application of hierarchical agglomerative clustering to divide them into distinct clusters. After clustering, recursive K-means algorithm is used to divide each cluster into smaller sub-clusters, in which representative feature vectors are selected for the purpose of prediction. The results indicate that the HRK approach is effective in forecasting near-term fluctuations in stock prices by utilizing financial statements. Furthermore, the incorporation of both qualitative and quantitative features in financial reports yields superior outcomes when compared to their individual analysis. The findings indicate the possibility of expanding the application of the approach to financial news articles, as well as integrating additional financial ratios, accounting elements, and technical indicators.

Yang et al. (Yang, et al., 2016) introduced a novel classification system, known as Business Text Industry Classification (BTIC), which aims to overcome the constraints of current industry classification systems. The authors underscore the importance of proficient industry classification in capital market research and acknowledge the constraints of current systems, including arduous manual processes and inconsistency. The subjective nature and slow adjustment of manual classification systems are emphasized by the authors while they introduce BTIC as an automated, innovative, and impartial alternative. The methodology includes the use of textual data extracted from corporate disclosures, with a specific focus on the business section of Form 10-Ks. The doc2vec document embedding technique is employed together with Ward's hierarchical clustering method to facilitate the categorization of the data. The results obtained by BTIC using financial ratios show its corresponding efficiency with commonly employed systems such as the Standard Industrial Classification (SIC) and the Global Industry Classification Standard (GICS) with regards to inter- and intra-sector homogeneity. The authors argue that BTIC outperforms SIC and GICS in various dimensions, such as process automation, objectivity, clustering flexibility, and result interpretability.

Nourahmadi and Sadeqi (Nourahmadi & Sadeqi, 2022) focus on traditional portfolio selection using cluster analysis. By using both k-means clustering and agglomerative clustering techniques to train four different models, the authors aim to create outperformant investment portfolios. The highest Sharpe ratio stocks from each cluster are chosen to create the portfolios. After developing four models and using various clustering techniques, the authors discovered that, according to silhouette scores and Sharpe ratios, agglomerative clustering with average linkage, trained on data from the previous year, generated the best results. The chosen portfolio outperformed random selection in terms of the Sharpe ratio, but it still lagged the market index. However, the portfolio outperformed the random selection and the average volatility of all clusters, with lower annualized volatility. The authors make several recommendations for improvement, including changing the training period, experimenting with various clustering parameters, and sharpe ratio-based portfolio optimization. Other performance evaluation metrics such as the Sortino ratio, Calmer, and Max Drawdown as well as qualitative analysis using industry data and time series analysis are also proposed as ways to improve the measurement of outperformance.

3. Conclussions

This paper presented several machine learning clustering techniques used for portfolio optimization, portfolio selection, time series clustering and prediction, identifying early warning systems in the context of financial risk management, analyzing diverse financial datasets, identifying higher profitability companies, or real-time event detection.

It can be seen that the use of ML clustering in the field of financial markets is of great interest to researchers and practitioners alike. Several aspects of the stock market investment process can be tackled either to provide improved performance, to save time spent doing repetitive processes, or to reduce human errors.

And although ML clustering is a powerful and versatile tool, it is not without its drawbacks. It is not a one-size-fits-all solution, and the most suitable techniques must be used with the datasets it would make the most sense and provide the highest improvement when used. And while it is a subset of artificial intelligence, this does not mean that these algorithms should be blindly ran unsupervised. There is still the need for human supervision and knowledge to analyze the results and extract the needed information from them.

These being said, ML clustering techniques can provide an efficient and versatile tool in every investor's toolset, but some human knowledge and insights is still needed to use them to the full potential.

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Legal aspects

BRIDGING TRADITION AND INNOVATION: A LITERATURE REVIEW ON PORTFOLIO OPTIMIZATION

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Abstract: *Portfolio optimization plays a crucial role in investment decision-making by balancing risk and return objectives. With the aim of improving portfolio performance, while enhancing risk management, this literature review explores traditional and artificial intelligence-powered approaches for portfolio optimization. From the traditional methods of portfolio optimization, methods such as random matrix theory, shrinkage estimators, correlation asymmetries and partial correlation networks are presented. While, from the artificial intelligence realm, techniques such as machine learning efficient frontiers, performance-based regularization, neural network predictors and deep learning models for direct optimization of portfolio Sharpe ratio are highlighted. Intertwining the traditional methods, with artificial intelligence techniques, this review highlights relevant portfolio optimization research useful for academics and practitioners alike.*

Keywords: *artificial intelligence; machine learning; portfolio optimization; finance; investing; financial markets*

JEL Classification: C01; C02; C58; C61; G11; G17

1. Introduction

Portfolio optimization is an important aspect of invesing decision-making. Itrefers to the problem of selection of the best combination of equities in order to build the best portfolio possible given specific constraints, or the selection of the best portfolio out of a pool of considered portfolios. The selection is done through the maximization of specific factors, such as maximizing the expected return or minimizing the undertaken risk, to fit specific investment objectives. Traditional methods of portfolio optimization have relied on statistical and econometric models and methods to measure potential risk and return and to estimate asset correlations and covariance matrices. Focusing on historical data, these methods prove to be inefficient in several situations such as volatile markets and changing market conditions. In the recent years, there has been a growing interest in using artificial intelligence and machine learning techniques to address the aforementioned issues and enhance portfolio optimization.

This literature review explores both the traditional, as well as the artificial intelligence-powered approaches to portfolio optimization to highlight techniques that could help investors in their stock market investment process. By synthetizing insights from various research, the aim of this review is to provide a glimpse in the evolving domain of portfolio optimization and explore the potential benefits of integrating artificial intelligence techniques with traditional methodologies.

2. Literature Review

The work of Laloux et al. (Laloux, et al., 1999) explores the use of random matrix theory (RMT) as a means of comprehending the statistical structure of correlation matrices in financial markets by examining the empirical correlation matrices of the S&P500 stocks and other major markets. The authors then proceed to compare these matrices with theoretical predictions that assume randomness in correlation matrices. The results indicate an agreement between the anticipated theoretical projections and the observed information, specifically with regards to the density of eigenvalues. The research highlights that a significant proportion of the eigenvalues present in the correlation matrices stick to the theoretical formula, thereby suggesting that a small portion of the eigenvectors carry significant information. The discovery implies that the use of random matrix theory can effectively extract relevant correlations among financial assets, thereby facilitating a deeper understanding of the underlying structure of the market. The discovery helps to improve risk management techniques through the detection and measurement of pertinent correlations within complex financial time series data. Using these findings, professionals can improve their risk management strategies and make well-informed decisions in regarding portfolio optimization.

Rebonato and Jäckel (Rebonato & Jäckel, 1999) introduced two methods for generating feasible correlation matrices in situations where the econometric matrix is either noisy, unavailable, or unsuitable. The initial method presents a broader scope in comparison to pre-existing methodologies and provides improved computational efficacy. The system facilitates the generation of a feasible solution that is optimal, considering the criteria specified by the user. The alternative approach, although less general in scope, exhibits remarkable speed and yields outcomes that closely approximate those obtained from the comprehensive methodology. The use of this approach may be either independent or serve as a starting point to facilitate the overall optimization process, thereby enhancing its computational efficiency. The aforementioned methods provide practical solutions for producing viable correlation matrices and make a valuable contribution to the existing research in this field.

Ledoit and Wolf (Ledoit & Wolf, 2003) have introduced a shrinkage estimator that can be used for the purpose of estimating the covariance matrix of stock returns. The use of the shrinkage estimator involves combining the sample covariance matrix with the single-index covariance matrix. The method offers a versatile means of integrating extra-market covariance, without requiring the specification of an arbitrary multifactor structure and displays superior performance compared to existing estimators, such as multifactor models, with respect to the selection of portfolios that have lower out-of-sample variance. The authors emphasize the advantages of accurate estimation of the covariance matrix, not only for portfolio selection, but also for various other applications, including assessments of the Capital Asset Pricing Model (CAPM) and predictive cross-sectional regressions. The adoption of a technique that involves reducing the sample covariance matrix towards the covariance matrix of the single-index model results in the creation of an estimator that is more efficient and well-conditioned. The study demonstrates that the ideal level of shrinkage intensity remains stable across varying sample sizes and proposes a reliable approach for estimating this constant. Empirical evaluations of alternative covariance matrix estimators reveal that the shrinkage method outperforms other methods, particularly in the context of constructing minimum variance stock portfolios using the Markowitz's (Markowitz, 1952) portfolio selection approach. The use of shrinkage estimator is aimed at fulfilling the requirement for an estimator that is both invertible and precise, thereby enhancing the efficacy and comprehensibility of such analyses. The research also advocates for the adoption of generalized least squares (GLS) regressions, which exhibit superiority over ordinary least squares (OLS) regressions due to their association with portfolio selection and recognition of the correlation among stock returns.

Andersen et al. (Andersen, et al., 2001) have examined the volatilities and correlations of daily equity returns that have been realized through analyzing high-frequency intraday transaction prices of individual stocks in the Dow Jones Industrial Average. Their initial observation is that the unconditional distributions of realized variances and covariances show a significant degree of right-skewness. On the other hand, the realized logarithmic standard deviations and correlations demonstrate a distribution that resembles a Gaussian distribution. The Gaussian distributions are also observed in the returns that have been scaled by the realized standard deviations. The second point relates to the strong temporal dependence exhibited by the realized volatilities and correlations, which can be effectively characterized through long-memory processes. Finally, substantial evidence suggests that realized volatilities and correlations move together in a manner consistent with a latent factor structure. Andersen et al. (Andersen, et al., 2001) enhance comprehension of equity return dynamics by emphasizing unique characteristics, including the news impact curve, the asymmetrical relationship between returns and volatility, and the volatility-in-correlation effect. The findings suggest the observed phenomenon can be attributed to a feedback mechanism related to the volatility risk premium, rather than a financial leverage effect. Moreover, the study highlights potential applications of the methodology, such as computing betas to evaluate the validity of the Capital Asset Pricing Model (CAPM), building clear factor models for covariance structure, and simplifying comparisons of volatility predictions produced by different models and techniques. Overall, the research offers significant insights on the intricacies of equity returns and introduces a methodologically simple technique for examining correlations in high-dimensional datasets.

The asymmetries in correlations among U.S. stocks and the aggregate market, with a specific emphasis on disparities between both upward and downward movements were examined by Ang and Chen (Ang & Chen, 2002). Their research presents a new statistic, namely the H statistic, which serves the purpose of comparing and assessing conditional correlation asymmetries. The results indicate that the downside correlations exhibit a considerably greater magnitude than the upside correlations, particularly in instances of extreme downward movements. The correlation asymmetries are distinct from other types of asymmetry measurements, such as skewness and coskewness. The authors have identified multiple factors that are responsible for the asymmetrical nature of correlations. Stocks with small market capitalization, value stocks, and stocks that have previously underperformed the market tend to display more pronounced asymmetric movements. Sectors that are conventionally considered defensive, such as utilities and petroleum, also play a role in the display of correlation asymmetries. The study suggests that stocks with higher beta values, which are deemed to be riskier, demonstrate a lower degree of correlation asymmetry. On the other hand, Ang and Chen's (Ang & Chen, 2002) research indicates that there is no conclusive relationship between correlation asymmetry and leverage. The research emphasizes that there is an inverse relationship between correlation asymmetries and systematic market risk. The inclusion of correlation asymmetries can prove advantageous in the field of portfolio allocation and risk management strategies.

Kenett et al. (Kenett, et al., 2010) have introduced the concept of partial correlation networks as a means of identifying the dominant stocks that drive correlations within a given stock market. Partial correlation analysis provides a deeper understanding of the correlation structure of a financial market, such as stock returns, by considering the effect of a third variable. The approach enables greater insight into the underlying mechanisms and driving forces that shape the correlation between the two variables. Their findings shed light into the influential role of financial stocks, specifically within the investment services sub-sector, on governing the market's correlation profile. The results underscore the significance of financial stocks in influencing the correlation framework, a function that is not discernible through conventional correlation analysis. The impact of financial stocks is discernible across various levels of stock aggregation, encompassing individual stocks, economic sub-sectors within the financial domain, and the entire sector. The consistency of the influence

of financial stocks over time has been demonstrated through the implementation of moving windows. The utilization of partial correlation analysis in conjunction with conventional correlation analysis is demonstrated as a means of enhancing understanding of the financial market and the underlying factors influencing its correlation structure.

Hartmann et al. (Hartmann, et al., 2001) have investigated the interdependence of asset returns in times of market tension through using an extremal dependence measure. In contrast to conventional correlation analysis, this non-parametric measure has the ability of accommodating non-linear associations and does not depend on presumptions of normal distribution. Their study centers on the use of this metric to examine the relationships among various asset classes during times of market instability. The findings, particularly with regards to the G-5 nations, provide insights regarding the interaction between stock and bond markets in times of market turmoil. The authors indicate that the probability of simultaneous stock market crashes is approximately two times higher than that in bond markets, indicating that stocks are more susceptible to market downturns. Furthermore, the study shows that stock-bond contagion occurs at a similar frequency as flight to quality from stocks into bonds, implying a strong relationship between these asset classes during market instability. The analysis also reveals that extreme cross-border linkages share similarities with national linkages, suggesting that in times of market turbulence, the correlation among assets across international borders corresponds to the correlation among assets within a singular nation. The findings offer investors other aspects to keep in mind when engaging in portfolio construction and optimization.

This study of Junior and Franca (Junior & Franca, 2011) examined the relationship between high market volatility and strong correlations among financial market indexes around the world. By analyzing correlation matrices and eigenvalues of indices during major market turmoil over the past three decades, including events such as Black Monday, the Russian crisis, the burst of the dot-com bubble, and the subprime mortgage crisis, the research shows that financial markets tend to exhibit synchronized behavior during periods of significant downturns. Their study supports earlier results that markets behave similarly during periods of extreme volatility through the investigation of correlation matrices of log-returns for various market indices during financial market crises. However, the study goes beyond a focus only on equities and broadens the analysis to encompass global financial market indices. The authors show that the correlation matrices' eigenvalue probability distributions differ noticeably from those predicted by the Random Matrix Theory, showing the existence of non-random correlations during crises. The study also identifies sets of indices that demonstrate coordinated movements, or "market modes." Additionally, during crises, the probability distributions of the correlation matrices show non-normal behavior with flattened distributions (low kurtosis). The relationship between volatility and average correlation, as determined by Spearman's rank correlation, suggests possible nonlinear relationships between them. A relevant indicator for severe crisis situations is the covariance between average correlation and the volatility of the market mode. The understanding of correlation linkages between financial assets during periods of high market volatility is aided by Junior and Franca's (Junior & Franca, 2011) findings.

Econometric indicators for assessing systemic risk, which can effectively account for the interconnectedness among various financial entities such as hedge funds, banks, brokers, and insurance companies were studied by Billio et al. (Billio, et al., 2012) by using principal components analysis and Granger-causality tests. The findings indicate a notable increase in the interconnectedness among the four sectors during the previous decade, emphasizing the intricate and ever-changing web of connections that contribute to systemic risk. The complex structure of the system leads to a rise in interconnectivity and systemic vulnerability. The findings indicate that principal components analysis and Granger-causality networks are efficient in detecting market disruption and adversity, exhibiting promising out-of-sample characteristics. Furthermore, the metrics formulated in the research exhibit promising forecasting abilities for economic downturns, in which hedge

funds are recognized as forward indicators of market disruption. The study underscores the significance of taking into consideration feedback effects, risk management practices, and the topology of the financial network in understanding systemic risk. Billio et al. (Billio, et al., 2012) underscore the importance of quantifying, observing, and predicting financial crises, and advocates for the adoption of various methodologies to evaluate the structure of the financial system in order to recognize potential risks and reduce their disruptive outcomes. Leaving the traditional domain of portfolio optimization techniques, the upcoming scientific papers focus on the use of artificial intelligence, machine learning and deep learning techniques to improve results and efficiency.

An innovative portfolio optimization model that integrates short-term investment opportunities through predictive analysis was proposed by Freitas et al. (Freitas, et al., 2009). A neural network predictor for stock returns was augmented using a risk measure is derived based on the prediction errors. The proposed model leverages efficient diversification through the discovery of predictors with low and complementary pairwise error profiles. Although the concept of using prediction for portfolio selection has been around for a while, traditional approaches have predominantly concentrated on determining the return series' distributions. The efficiency of a neural network predictor is dependent upon the network's topology, training techniques, and the characteristics of the data. The primary argument of Freitas et al. (Freitas, et al., 2009) was that while individual predictors may not demonstrate robust performance, their collective utilization across multiple stocks may yield superior outcomes. The empirical results indicate that portfolios based on prediction are better suited for short-term investment in comparison to portfolios based on mean-variance. The concluding remarks highlight the model's capacity to tackle the issue of varying predictor performances by computing risk metrics based on the individual and collective predictor performances, using the variances and covariances of their prediction errors. Additionally, it underscores the optimality of the model in the selection of efficient portfolios during portfolio transitions, thereby ensuring the generation of superior predicted portfolios.

Ban et al. (Ban, et al., 2016) have studied the limitations of traditional portfolio optimization models when applied to real-world scenarios and recommended the use of machine learning methodologies, such as regularization and cross-validation, to tackle these challenges related to estimation. Ban et al. (Ban, et al., 2016) proposed the use of performance-based regularization (PBR) in addressing mean-variance and mean-conditional value-at-risk (CVaR) problems. The approach involves the application of constraints on sample variances to mitigate the impact of estimation errors. Mean-variance problems are addressed using approximations that rely on rank-1 and convex quadratic techniques. On the other hand, the PBR model is demonstrated to possess a rigorous convex relaxation for mean-CVaR problems. The PBR models are structured as optimization problems that incorporate robustness, using innovative uncertainty sets. The study shows the asymptotic optimality of both sample average approximation (SAA) and PBR solutions. Additionally. empirical investigations using Fama-French data sets are used to compare these techniques to other regularization methods and equally weighted portfolios. The results indicate that PBR shows superior performance compared to alternative benchmarks in 66.7% of the analyzed data sets. Future research of these is recommended to increase their applicability to other decision problems.

Clak et al. (Clark, et al., 2020) presented an approach that integrated portfolio theory and machine learning. Their approach introduced an out-of-sample machine learning efficient frontier, with a particular emphasis on a two-asset portfolio characterized by high and low risk. The authors delve into the economic value of machine learning in contrast to the mean-variance paradigm for portfolio selection, while considering the potential effect of estimation risk. Despite the potential absence of normative appeal in the mean-variance model, the use of the machine learning approach can effectively leverage return predictability and downside risk. The results suggest that the machine learning efficient frontier, exhibits

superior performance compared to the traditional mean-variance efficient frontier during out-of-sample testing. This underscored the possible use of machine learning methodologies in the process of portfolio selection, particularly in the context of evaluating estimation risk. According to the authors, the machine learning efficient frontier exhibits superior performance during times of market instability by reallocating investments from high-risk assets to safe-haven assets, thereby demonstrating its adaptability to dynamic market conditions. Nevertheless, the research exhibits inconsistent findings regarding the effectiveness of the suggested machine learning portfolio strategy in comparison to the naive portfolio approach. Further areas of research include expanding the feature space to encompass a wider range of information, assessing various machine learning algorithms to determine the optimal ones for portfolio selection, and analyzing the influence of a larger number of assets on the effectiveness of the machine learning technique.

Zhang et al. (Zhang, et al., 2020) focused on the use of deep learning models for the optimization of portfolio's Sharpe ratio in a direct manner, thus eliminating the necessity of forecasting expected returns. Their study focused on the use of Exchange Traded Funds (ETFs) in trading market indices for the purpose of constructing a portfolio that leverages the strong correlations that exist among various asset classes. The methodology involves the comparison of the deep learning approach with a diverse array of algorithms. A sensitivity analysis was conducted to evaluate the significance of input variables, while the performance of the method is evaluated across varying cost rates and risk levels using volatility scaling. The successful implementation of deep learning models in the direct optimization of the Sharpe ratio of a portfolio is highlighted. The proposed methodology exhibits superior performance compared with various popular algorithms and techniques, such as those founded on reallocation, mean-variance optimization, maximum diversification, and stochastic portfolio theory. Furthermore, the evaluation of performance includes an important period that encompasses the COVID-19 crash, thereby showcasing the validity and feasibility of the suggested approach.

A novel machine learning framework that combines portfolio optimization and is aware of trading costs is proposed by Jensen et al. (Jensen, et al., 2022). The study employs a methodology that combines trading-cost-aware portfolio optimization with machine learning techniques. The framework developed involves a direct learning method for calculating portfolio weights, which is guided by an economic objective. The authors present the notion of an implementable efficient frontier that incorporates transaction expenses and showcase its superior net-of-cost performance while addressing the limitations of prior methodologies that disregard trading expenses. The empirical results indicate that the proposed method has the ability to widen the implementable efficient frontier in comparison to alternative approaches for portfolio selection. The framework exhibits superiority over sophisticated alternatives, as shown by significant out-of-sample gains and demonstrates the way the implementable efficient frontier applies to investors with greater size who encounter higher market impact costs. Thus, underscoring the real-world implications of incorporating trading expenses in the process of portfolio optimization. The concluding remarks underscore the innovative approach of the suggested technique, which prioritizes the identification of lasting economic features over temporary ones that may appear promising in theory but lack practical efficacy. This underscores the significance of considering the economic significance of securities when constructing a portfolio.

3. Conclussion

To conclude, the paper highlights various traditional and artificial intelligence-powered approaches to portfolio optimization. The traditional methods part starts with random matrix theory for better understanding correlation structures and using covariance matrix estimation for insights into portfolio selection and risk management and continues with

research on correlation assymetry, partial correlation networks and extremal dependence measures as used to obtain a deeper understanding of interdependencies among financial assets and market dynamics.Highlighting artificial intelligence, machine learning and deep learning techniques, the second part of the literature review focuses on newer, more innovative research that has the potential to improve several facets of portfolio optimization. Promising results are shown in improving portfolio performance, especially in times of higher volatility, are shown by models integrating machine learning efficient frontiers, neural network predictors or performance-based regulation. While the challenges in traditional portfolio optimization methods are tackled by deep learning models for direct optimization of portfolio Sharpe ratio, or machine learning techniques that take trading costs into account as well. Overall, the integration of artificial intelligence techniques with traditional portfolio optimization problems presents exciting opportunities for researchers and practitioners to improve portfolio returns, while enhance their risk mitigation strategies.

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THE ROLE OF FINANCIAL PERFORMANCE IN DIFFERENCE OF TWO MANUFACTURER'S BRAND VALUE

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Abstract: *Brands are becoming more and more important for enterprises that spend significant amounts on building strong ones. Howewer, the value of brands and the way it should be represented in financial reports is still controversial. Our general objective is to present a calculation method able to estimate brand value that we establish for the calculation method of Interbrand corporation and results of our own survey research. Our specific objective in the course of analysis is to determine Daimler AG Mercedes-Benz's and Nestlé cereal's brand value based on data of 2022. Firstly we calculated the so-called Economic Value of researched enterprises by analysing their financial reports. Applying the results from our survey research we determined the role of brand plays in gaining EVA, which is Brand Income. Finally we calculated a ratio using WACC which we discounted the Brand Income with we obtained the Brand Value. Our survey research is assembled according to Keller's Brand Equity Model. During our research we have confirmed our hypothesis that people filling the survey consider brand to be a more important purchasing aspect in case of Mercedes-Benz than Nestlé cereals; purchasing Nestlé cereals respondents consider brand as the most important purchasing aspect out of the given list; respondents choose analysed brands contra unknown ones which has the same features and price. Final results show that Mercedes-Benz and Nestlé cereals have strong brand knowledge, the Mercedes brand value was several times higher, while the difference between these brand values caused by not the different financial performance but rather the devation of brand power and strength of the analysed manifacture companies.*

Keywords: *brand value; IFRS; Interbrand model; manufacturing companies*

JEL Classification: *M31; M41*

1. Introduction

Most companies pay a lot of attention to building a reputation, loyal consumers for their products and a brand. In our study, we want to look at an item that clearly has value for the enterprise and indirectly constitutes its assets, yet is not necessarily included in the accounts. This asset is the brand, the value of which we will examine through the valuation of the internationally renowned Daimler brand Mercedes-Benz and the Nestlé cereal brands. In addition, we will determine how the amount of the brand can be shown in the accounts prepared in accordance with the international accounting standards.
In our research we look at two brands in two very different product categories. One of these categories is the automotive industry, where we assume that the brand is at the forefront of consumers' purchasing preferences. The other product category is the food category, where brand is assumed to play a minor role in product purchases. The analysis of brand equity is therefore carried out by examining two brands in product categories where the role of the brand may differ. The two brands mentioned were chosen because they were included in

the so-called "Best Global Brands" 2022 ranking published by Interbrand, which includes the most valuable global brands for 2022 according to Interbrand's calculations. In this list, Mercedes-Benz was at the top of the ranking among automotive brands and Nestlé among food brands. Today, it is increasingly important for a farmer to be aware of the internal and external factors that affect him: his strengths, weaknesses, opportunities and threats, so that he can plan and make appropriate decisions.

A brand is defined by the American Marketing Association (AMA) as a term, design, symbol or any other feature that distinctly identifies and distinguishes one entity's product or service from those of other entities American Marketing Association (2017). Based on these definitions, a duality appears in the conceptual definition of brand - the need for distinctiveness and the need for identifiability. On the one hand, the seller wants to permanently distinguish the product or service he sells from competing products, and on the other hand, the customer is able to identify the product or service he wants to buy based on the brand (Rekettye et al, 2016). It is observed that when buying a branded product, the perceived risk of a bad purchase is lower, so the consumer feels less weight in his decision. This was the case, for example, in 2014 with the sales of the Volkswagen Sharan and the SEAT Alhambra. The two car brands had similar equipment and specifications, the only difference was in the economic success of Volkswagen and SEAT. As a consequence, although Volkswagen sold its Sharan models at a higher price, its sales were still higher than those of the SEAT Alhambra. A brand can not only influence consumer perceptions of existing goods, but can also increase future economic benefits and cash flows, including through building brand loyalty and selecting the right consumer group (Meeh-Bunse et al., 2021). The estimation and conceptualisation of brand value has been the subject of some literature (Christopher, 1996; Barth et al, 1998; Haigh, 1999; Chandon, 2003; Arvidsson, 2006; Fehle et al, 2008; Gupta et al, 2020). Brand equity also affects the definition of the value of the company, which is of paramount importance from an investor's perspective (Kiss, 2015, 2016a, 2016b, 2016c, 2017). In the IFRS environment, the requirements for brand names are set out in IAS 38, which governs intangible assets, and IFRS 3, which governs business combinations (Meeh-Bunse et al, 2021).

Several models can be used to define brand equity (Jones, 2005; Soto, 2008; Vasileva, 2016; Borkovsky, 2017; He-Calder, 2020; Porokhnya, 2020), which indicate which elements of a brand make up and influence brand equity and how they are related to each other. One of the methods used to measure brand equity has been developed by Interbrand, a UK company that has been one of the world's leading consultancies for 40 years. Interbrand's model widely applied in the marketing study (Chu-Keh, 2006; Hanno, 2007; Jia-Zhang, 2013; Rozhkova et al, 2021), and is based on three factors to determine brand equity: operating profit achieved, the role of branding and brand strength, an approximate discount factor to determine the present value of brand equity (Bauer-Kolos, 2017). Here, operating profit achieved is called Economic Value Added (EVA) or residual income, which is determined using the company's IFRS financial statements. The turnover of the company under consideration must be reduced by operating costs, income tax on operating profit and the cost of capital employed, which is paid to equity holders and creditors - because we can only talk about true value creation if the company is able to generate returns in excess of its cost of capital. After the calculation of EVA, the role of branding is defined. The role of branding, according to Interbrand, is a ratio that shows how much of EVA is due to the brand. This percentage is estimated primarily through market research. The share of economic income that includes branding is called brand income. Interbrand calculates the brand strength, after determining the brand equity, as the sum of a risk-free rate and a so-called brand risk premium, which is the share of the risk premium attributable to the brand. The brand strength is the rate at which the brand income is discounted to obtain the present value of the brand income, so brand equity. The stronger the brand, the lower the brand strength ratio (Papp-Váry, 2020). The elements of brand equity are illustrated by Kevin Lane Keller through the Dimensions of Brand Equity model.

2. Data and methods

In our study, we analysed the value of the Mercedes-Benz brand owned by Daimler AG and the Nestlé cereal brands owned by the Nestlé Group. We will estimate the value of these brands based on Interbrand's calculation methodology. It is important to point out that there are several approximate methods and models for determining brand value (Bauer-Kolos, 2017; Gyulavári et al, 2017; Keller-Kotler, 2016), but there is no formally accepted calculation method for this.

The first step is to determine the EVA of the brand. This is done by calculating the return on capital invested and deducting the cost of capital employed, calculated using a weighted average cost of capital. The difference between the ROIC and the WACC is the return above the WACC, multiplied by the value of the capital invested to obtain the economic return of the company. This amount has to be divided among the brands of the company, which we have done as a proportion of each brand's EBIT. The next step is to calculate the brand income. This is the part of the EVA that is due to the brand. The ratio between the two is the role of branding, which we estimated using our questionnaire survey. Brand income is the product of EVA and the role of branding. According to the model, brand income can be considered as a cash flow that arises at regular intervals – in each year's accounts – in equal or steadily increasing amounts and over an infinite period of time - if we start from the going concern principle. Thus, using the perpetuity formula, we obtain the brand value by discounting the brand income by the brand strength. To assess the brand power, a questionnaire survey was conducted online in Hungary, using a randomly selected, non-representative sample of 144 respondents.

The variation between the brand values shown above can be broken down by a total of 5 factors using the absolute difference method:

$$Brand\ value = \frac{EVA * Marketing\ Power}{Brand\ Strength} =$$
$$= Equity * \left(\frac{1}{1 - Debt\ ratio}\right) * (ROIC - WACC)$$
$$* Marketing\ Power * \frac{1}{Brand\ Strength}$$

The method of absolute margins is suitable for showing the impact of the multiplying factors shown in the above formula on brand equity.

3. Results

3.1. The brand power and strength

Among the respondents to the brand power questionnaire, one third were under 30 years old, and the rest were older. Almost two thirds of respondents had an average financial situation, less than a fifth had an above average financial situation, 13% had a below average financial situation, just under 4 people, or nearly 3% of the 144 respondents, had a financial situation significantly below average, and 5.55% of respondents chose not to answer. The role of branding was therefore determined according to which of the four predefined purchasing criteria (price, appearance, perceived trustworthiness, brand) was considered the most important by which many people.
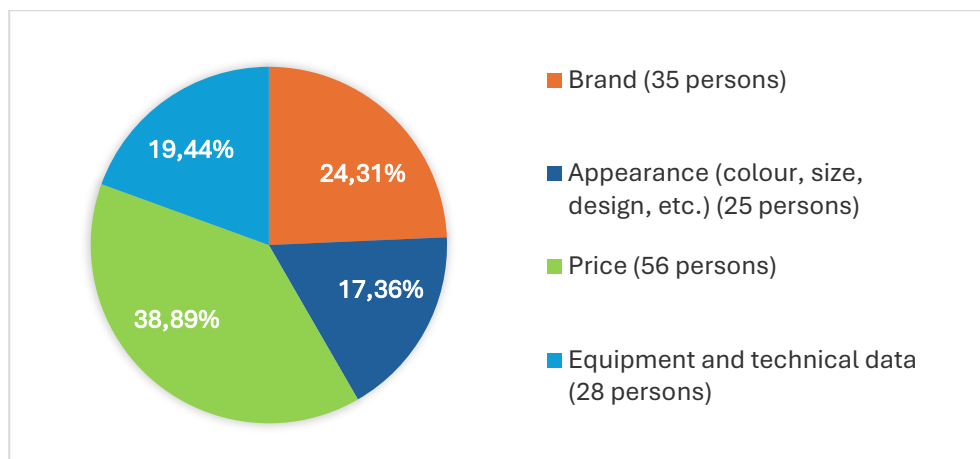
Figure 1: Most important aspect of buying a car according to respondents (n=144)
Source: Own editing based on the questionnaire used

As shown in the Figure 1, a fifth of the 144 respondents said that brand is the most important factor when buying a car, so the role of branding is estimated at 24.31% based on the Keller model at the Mercedes. The questionnaire used in the research indicated that the Keller model shows that Mercedes-Benz brand awareness is strong, with products of good quality and an impressive appearance and relatively high prices. The brand provides added value to the consumer, as well as an experience and symbolic meaning. Overall, it leaves a positive impression on the vast majority of consumers.
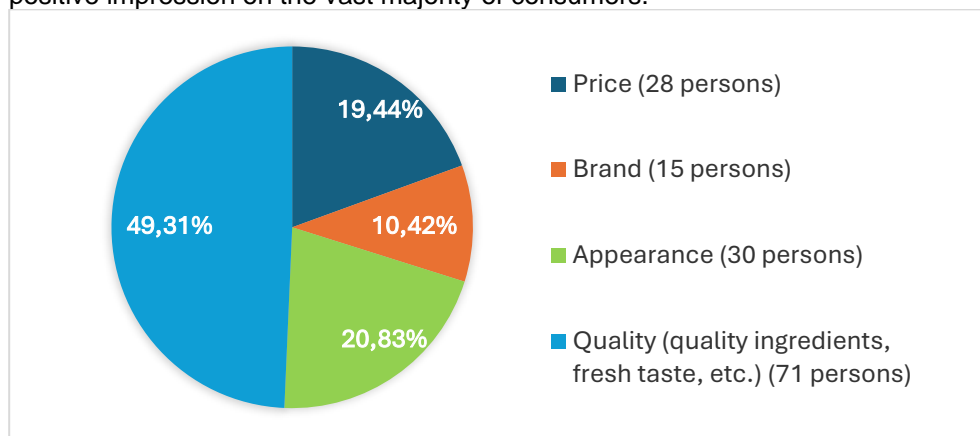
Figure 2: Most important aspect of buying a car according to respondents (n=144)
Source: Own editing based on the questionnaire used

As shown in the Figure 2, 10.42% of respondents consider brand to be the most important of the four criteria when buying cereals. It should also be noted that brand is the least important of the four criteria according to the respondents. In half of the cases, quality was cited as the most important purchasing factor. Similar to the Mercedes-Benz brand, the rate of 10.42% will represent the branding role of Nestlé flakes according to the analysis of the Keller model. Awareness of Nestlé cereals is particularly strong, both in terms of brand recall and brand recognition. However, we were unable to form an opinion on brand image for several aspects. The brand's products are perceived as very tasty by respondents and the packaging of the products is considered attractive by a large majority, but opinions are divided on the price of the products. The added value of the brand in the area of health is questionable, and there does not seem to be a clear symbolic meaning for the brand in the

same area. However, the divided opinion may also indicate that people's perceptions of cereals are changing and that they will subsequently see the brand as an added value or as an individual, social value, as an opportunity for a healthy lifestyle. In terms of attitude, it can be said that it is positive for the majority of respondents.

3.2. The calculation of Brand Income

To determine the economic return per Mercedes-Benz brand, it is first necessary to determine Daimler's return on capital employed. The company's earnings before interest and tax, less the German income tax rate of 15%, and multiplied by the average stock of invested capital, yield the following ROIC:

$$ROIC_{Daimler} = \frac{EBIT * (1 - t)}{Invested\ capital} = \frac{20458 * (1 - 0.15)}{198\ 377} = 8.77\%$$

The WACC is calculated as the weight and cost of equity and debt multiplied by the weight and cost of debt, adjusted for the tax effect of debt. In the case of Daimler, the WACC is based on the average cost of capital for the automotive industry in Western Europe, which was 4% in 2022 (Damudaran, 2022). The EVA per Mercedes-Benz brand was calculated as a proportion of the EBIT generated by the individual Daimler brands. Mercedes-Benz Cars accounts for 80% of the total EBIT of Daimler Group, so that the same proportion of the calculated economic income can be considered as the EVA attributable to the brand within the corporate EVA.

$$EVA_{Mercedes} = 198\ 377 * (8.77\% - 4.00\%) * 80\% = 7563\ million\ EUR$$

Based on Interbrand's methodology, after determining the brand equity, the brand strength was calculated, which was used to discount the predicted brand equity to obtain the brand's present value, so the brand equity. The risk attributable to the brand was calculated using the CAPM, which was also used to calculate the brand equity, after adjusting the risk premium for the branding role defined earlier. If the long term treasury bond rate is 1.51% and the risk premium to use for equity is 5.07%, then with an industry beta of 1.22 (Damudaran, 2022), the risk weighted by the brand power (, so the brand strength is 6.34%. Discounting the brand income by this value gives the brand equity:

$$Brand\ Value_{Mercedes} = \frac{7563 * 24.31\%}{6.34\%} = 29000\ million\ EUR$$

The calculation of the EVA of Nestlé cereals can be done in a similar way as before. The EBIT minus the tax rate and then divided by the capital invested gives the ROIC:

$$ROIC_{Nestlé} = \frac{EBIT * (1 - t)}{Invested\ capital} = \frac{12\ 326 * (1 - 0.15)}{97\ 104} = 10.79\ \%$$

In the case of Nestlé, the WACC is based on the average cost of capital for the food processing industry in Western Europe, which was 3.74% in 2022 (Damudaran, 2022). The Brand income of cereals in EUR was calculated as a proportion of the operating results generated by each type of Nestlé product. The operating profit for the cereals product type representing 22.22% of total operating income (Statista, 2022). On this basis, the economic revenue per Nestlé cereal brand is estimated at around €2 390 million:

$$EVA_{Nestlé} = 97\ 104 * (10.79\% - 3.74\%) * 22.22\% = 1521\ million\ EUR$$

If the long term treasury bond rate is 1.51% and the risk premium to use for equity is 5.07%, then with an industry beta of 0.71 (Damudaran, 2022), and the weight of 22.22%, the risk attributable to the brand, so the brand strength is 1.89%. Discounting the brand income by this value gives the brand equity:

$$Brand\ Value_{Nestlé} = \frac{1521 * 10.42\%}{1.89\%} = 8385\ million\ EUR$$

3.3. Examination of factors affecting the difference in calculated brand values

The examined factors' effect to the difference between Mercedes and Nestlé brand value showed in the Table 1.

Table 1: Examining the effects of factors affecting the variation between detected brand values using the absolute difference method based on IFRS reports 2022 data

	Factor Effects	Mercedes	Factor Effects						Nestlé
			1.	**2.**	**3.**	**4.**	**5.**	**6.**	
1.	Equity (in a billion EUR)	86.54	-43.75	42.79	42.79	42.79	42.79	42.79	42.79
2.	1 / (1 − Debt ratio)	2.29	2.29	-0.02	2.27	2.27	2.27	2.27	2.27
3.	ROIC-WACC	4.77%	4.77%	4.77%	2.28%	7.05%	7.05%	7.05%	7.05%
4.	Brand ratio based on EBIT	80.00%	80.00%	80.00%	80.00%	-57.78%	22.22%	22.22%	22.22%
5.	Brand power in %	24.31%	24.31%	24.31%	24.31%	24.31%	-13.89%	10.42%	10.42%
6.	1 / Brand Strength	15.77	15.77	15.77	15.77	15.77	15.77	37.14	52.91
	BRAND VALUE (in a billion EUR)	29.0	-14.7	-0.1	6.8	-15.2	-3.3	5.9	8.4

Source: Own calucation based on IFRS reports

The value of Mercedes cars was estimated to be some €20 billion higher than that of one of Nestlé's brands, based on IFRS accounts. The higher brand value of Mercedes was significantly affected by the fact that the average value of assets financed by owners and operations was estimated to be almost €44 billion higher in absolute terms than Nestlé, based on IFRS data to date. The higher equity of Mercedes would have resulted in a higher difference between brand values of around €14.7 billion. The effect of the financing capital structure can be separately identified in the difference in the estimated brand values, as the total amount of capital employed can be derived from equity through the proportion of interest-bearing debt. On this basis, the higher brand value of Mercedes cereals cannot be explained by the higher proportion of interest-bearing debt drawn by Mercedes's creditors, which alone induced a difference of EUR 0.1 billion in favour of Mercedes. The part of the return on invested capital (ROIC) above the average cost of capital (WACC) paid to equity holders and creditors, which also determined the size of the economic return, would have increased the difference between the two brands in monetary terms about €6.8 billion, in favour of Nestlé, if all other factors had been equal for the 2 companies. However, the former positive difference was offset multiply by the fact that the EBIT share of Mercedes within Daimler was four times than the EBIT share of cereals within Nestlé, which results more

than €15.2 billion, and which could ultimately reduce the size of the difference between the two brands significantly. In addition, in the empirical study, Nestlé cereals were perceived by customers as having a significantly lower brand equity than Mercedes, so the role of branding was found to be significantly stronger in the latter company's customer perception, which explained an additional brand equity difference of €3 billion in favour of Mercedes. In contrast, the role of brand strength as a discount factor improved the monetary advantage of Nestlé's cereals brand, which is in a better financing debt position, compared to the Mercedes.

Overall, therefore, if only the potential return on financial investment is taken as a basis for estimating the brand value, the value of Nestlé cereals would not be in a significantly more favourable position than currently estimated compared to Mercedes. If, on the other hand, the financial risks borne by the financiers of the two companies were considered to be the same as their realised return and only the customer perception, the role of the brand, was taken into account in the model calculation, the advantage would be clearly in favour of the Mercedes brand.

4. Conclusion

In our study, we determined the brand equity of Mercedes-Benz and Nestlé cereals by following the calculation methodology of the British company Interbrand, using our own calculations and a questionnaire survey we compiled. As a result, we found that the Mercedes-Benz brand is worthier than the Nestlé cereal brands. Interbrand has valued the Nestlé brand at amount of €10.921 million, while the Mercedes-Benz brand at a amount of €56.103 million (Interbrand, 2022), so our calculations for Nestlé are close to the value calculated by Interbrand (which may be due mainly to differences in the questionnaire results), although both results show that the Mercedes brand value was several times higher. In the case of Nestlé, the comparison of the results is not meaningful as Interbrand's calculations are not only for Nestlé cereals but for all Nestlé brands. In addition, my questionnaire findings revealed that both global brands have strong brand awareness, and from the sample surveyed, consumers basically consider them to be trustworthy, to perform as expected, and most of them have positive attitudes towards them. It was also found that brand equity in international accounting can basically be shown by an enterprise if the brand name is not its own - internally generated - but acquired from an external, independent source. On the one hand, respondents say that brand is a more important consideration when buying a car than when buying cereals. On the other hand, it was also confirmed that quality is a more important criterion than brand when buying cereals, and that respondents would prefer a well-known brand to an unknown or less well-known brand for the same parameters and price.

The use of the calculations presented here may be advisable not only for brands, but also for products that are about to be launched on the market, for example. Given the topicality of the subject and its wide range of practical applications, there are many opportunities for further research. In our view, it is certainly worthwhile to increase the sample size of the research, so the number of respondents - those who fill in the questionnaire. This will increase the accuracy and reliability of the results of the research. The questionnaire we have compiled was completed by 144 people, which is a small sample. It may be advisable to carry out a similar experiment with up to several thousand people. In addition, a sample that is representative of the brand is needed. In addition, you need to have a population that is representative of the brand. This requires ensuring an appropriate gender and age distribution of respondents, or even a distribution of nationalities for global companies. In some circumstances, it may be appropriate to narrow the survey sample according to what the company is looking for. If, for example, your main customer base is young men, it may be worth looking at their demographic group and then following their needs.

As there are other methods for determining the brand value, it may be advisable to use other calculation methods. Further development of the research could include the aforementioned extension of the basic data. By using their internal data and having a clear understanding of their operations and plans, individual companies can make more efficient, accurate and detailed calculations of their own brand equity. The use of the calculations presented here may be advisable not only for brands, but also for products that are about to be launched on the market.

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THE IMPACT OF PUBLIC INVESTMENTS FOR EDUCATION ON THE PERFORMANCE OF STUDENTS IN ROMANIA

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Abstract: *Through this research we aim to make a brief analysis of how the value of educational investments influences the performance of students in Romania. In order to achieve the proposed goal, it is necessary to analyze some specific indicators to education and compare them with similar data from other countries.* To carry out this research, both qualitative and quantitative research methods were applied. Education is an essential factor in economic growth and social development. The educational process has a significant role both in the growth of each individual and of society as a whole, being indispensable for personal development and well-being. Investments in education deliver long-term benefits to citizens, publicly funded institutions and the knowledge-based economy as a whole. Research over the last few decades has shown that investments in education and health are associated with the highest rate of return. *It is essential to prioritize public investments with the aim of ensuring the performance standards of educational institutions in Romania, in conditions of security and quality. For this, it is necessary for the school infrastructure to function properly, the constructions to be consolidated, the maintenance costs to be cost-effective and to ensure the efficiency of the use of space and resources in order to allow the activities of the users to be carried out in optimal conditions of comfort, health and productivity. Also, human capital is quantitatively analyzed as the first economic resource from the perspective of population evolution. In project evaluation, investment efficiency refers to the most effective, economical and rational way of using the investment resources made available to achieve the expected results.*

Keywords: *public investments; public spending on education; efficiency of education system; graduation rate; performance; management responsibilities in education;*

JEL classification: I21; I22; I28;

1. Introduction

Public investments must be rigorously analyzed because, at present, the needs are greater than the availabilities. Thus, their prioritization must take into account several aspects, such as: correlation with existing priorities at European/national level; orientation towards projects that generate greater economic benefits; applicability in the shortest possible term; obtaining project financing from grant funds.

The investment proposals, as well as all other expenses necessary for their realization, are included in the annual investment programs, provided that they comply with the technical-economic documentation, respectively the substantiation note that reveals the need and opportunity for the realization of the expenses regarding the investments, to be issued and approved in accordance with legal regulations.

In the European Union, spending on education and training financing exceeds 5% of GDP with the aim of developing human capital. Qualified professionals are the main pawn of economic development, work efficiency and international competitiveness.

In addition to public resources, the involvement of the private sector is also necessary, which can invest additional resources for education and help improve the material base of educational institutions.

2. Literature review

The specialized literature mentions the need for specific investments in order to achieve notable achievements in the educational field (Carey, 2002).

The investments made in the field of education produce direct effects (of a social nature such as increasing the quality of education, which are difficult to quantify or of an economic nature, evaluated through a various of incomes and savings, as well as the reduction of time that requires better identification) and indirect effects (propagated, very complex, which are considered to be the economic effects, evaluated according to the growth of the gross and net domestic product, the reduction of material expenses and the increase of profit for economic agents).

In the context of globalization, it is essential to unify the learning processes to the requirements of the world labor market, simultaneously with the adaptation of educational, socio-economic, cultural, political policies to the permanent changes of the environment that influence the whole society at the macro level, but also the staff didactic, which have the role of disseminating information in turn, at the micro level (Kitchen et al., 2017).

According to Busemeyer (2008), the educational process can be compared to economic processes in companies, schools being seen as an environment in which educational resources (teachers, books, buildings, equipment, students) interact with each other, the objective being the performance of students usually expressed in the form of test scores or future salaries of graduates.

The ability to accumulate income or capital varies, especially under the influence of investments made in the formation of human capital through educational processes or continuous training and specialization (Campan et al., 2022).

The main condition for sustaining economic competitiveness is investment in human capital (Ziberi, 2022). The educational system in Romania still requires massive investments to generate competitive resources for the labor market. However, there is uncertainty regarding the effectiveness of the educational system, because the real costs to obtain approved skills on the labor market are much higher than those borne by the national budget, which involves private investments.

Efficiency emphasizes the result in the exchange of financial resources and time, which the investment project entails, and when completed, fulfill for the advantages that are foreseen and the probability of the success of the investment product during its useful life. Also, efficiency expresses how convenient, profitable, this exchange is for the investor (Lockheed, 1994).

In the "investment costs and time resources - expected advantages - efficiency" connection, the necessary financial and time resources are the means of action, the driving force for the generation of advantages, and the costs and advantages associated with the projects are the determining factors for the formation of investment efficiency (Lafortune, 2018).

The investment in human capital recovers over time and is reflected in the efficiency of production. Qualified personnel in the field in which they carry out their activity are much more efficient than personnel who have another specialization or who have not improved.

Specialists have different opinions about the fact that education is a non-productive field, and the efficiency of the investments made in this field follow three main elements (Isac, 2020):
• the investment effort necessary to fulfill the intended purpose;
• the effort to maintain and capitalize on their operation;
• the effects achieved following the execution of these objectives.

3. Data and methodology
The most used methods for determining the effectiveness of the education system are the determination of the number of graduates in relation to the number of students entering education, the analysis of exam results and the counting of students who achieve higher education compared to the average of high school graduates. These measures show a very vague review of a school (Polcyn, 2016). They completely ignore the socio-economic context of the analyzed environment, the financial expenses incurred for the educational processes and the associated effects, as well as the educational level of the students at the entrance (Fartușnic, 2014).
The creation and implementation of a system of indicators in the educational field was based on the need for international analyzes and specific examinations, even with regard to national systems, because over time more and more emphasis was placed on standards of superior quality of learning, but also on an increase in competitiveness.
The use of indicators is the result of a combination of interests, such as:
• the need for public accountability, based on clear methods for quantifying progress; since educational systems have and use more and more resources, public authorities must periodically report accurate data, expressed through indicators;
• the need for data comparability, having common reference systems, within the framework of the standardization of activities and globalization (the European educational space, objective of the Lisbon Strategy);
• decentralization of educational units and quality assurance by using accurate methods of monitoring and representing common indicators;
• treating education from a perspective harmonized with continuous professional training and social inclusion that meets the requirements for the development of human resources;
• the integration of lifelong learning as the foundation of educational policies, helping to develop and branch analysis systems, to be able to include learning processes from all educational fields.

4. Result and discussion
Considering the development of the field of information technology, the most important that indicators represent the necessary tools to be able to define, apply and monitor educational policies are:

- *Public spending on education as a percentage of GDP*

From 2010 to 2019, education funding has fluctuated within 3% of GDP, with a low of 2.80% in 2013 and 2017, a slight increase to 3.60% in 2019 and 3.70% in 2020, but with a decrease to 3.20% in 2021, which highlights the underfinancing within the activity sector.
Romania's public spending on education is lower than the EU average or compared to international standards.
According to statistics, the average budget allocations for education in the EU had the highest value in 2020, to compensate for the effects of the COVID-19 pandemic, in the years 2011-2014 of 4.90% of GDP, and in the following years it had a constant involution, with an average of less than 5% of GDP: 4.70% in 2017, 2018 and 2019 according to data provided by EUROSTAT.
In 2019, public spending on education in Romania had the most significant increase in the EU, well above the average of 1.90% of the member states. The main determining factor was the increase in personnel expenses from 2019, but also in other categories of expenses, such as goods and services, development and maintenance of the material base of the educational system.
Although this increase was significant for Romania, overall, the allocation of 3.6% was much lower than the EU average of 4.7% of GDP.

However, comparing to the total public expenditure, the percentage was slightly above the EU average (10.10%, compared to the EU average of 10%), which demonstrates a rather low level of public allocations for education.
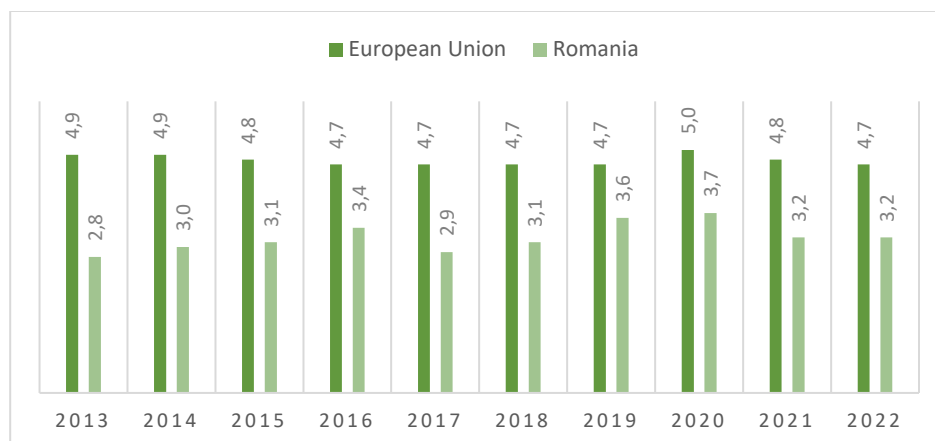
Figure 1: Public expenditure on education as a % of GDP in Romania versus EU average
Source: made by the author based on Eurostat data

- *Students per teaching staff*

In recent years, the number of students per teacher has decreased slightly, following the measures taken to restructure the activities in the educational system.

Compared to 2020/2021, in the 2021/2022 school year the ratio of students per teacher is approximately constant at each level of education, the average being 14 students per teacher.

The residence environment remains an important factor differentiating the values of this indicator. In recent years, in the case of early school education, the number of children per teacher is significantly higher in rural areas, in comparison with the urban environment (17 children, respectively 14 children per teacher). In primary education and secondary school, the ratio reverses, the value of the indicator being higher in urban areas.

Table 1: Student per teacher ratio in pre-university education

Education level	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022
Early school education	16	16	16	15	15	15	15	15	14	14
Primary	18	19	19	19	19	19	19	19	19	18
Secundary	11	11	11	11	10	11	10	10	10	10
High school, professional, post-secondary	16	15	15	15	14	15	14	14	14	14

Source: made by the author based on INS data

- *Secondary education graduation rate*

It represents the percentage of 8th grade graduates in relation to the total number of the population with the appropriate age to complete the lower secondary cycle (14 years). In the

2012-2019 period, indicator values of over 80% were obtained, with slight fluctuations from one school year to the next. There is a significant decrease in the value of this rate in the 2020/2021 school year, to 66%, a possible factor being the legislative change of the schooling age to 6 years and the appearance of the preparatory class.

A much higher success rate is observed in the urban environment, compared to the extra-urban environment. The causes would be, first of all, school dropout, often found in rural areas, but also the tendency to move from rural schools to cities, towards the end of the secondary school cycle (to have better chances to continue studies in high schools).
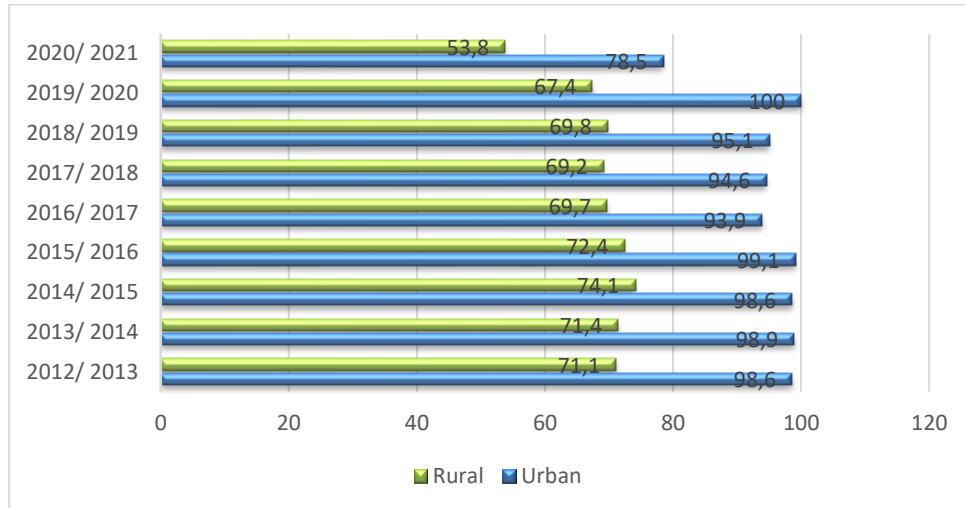
Figure 2: Secondary school graduation rate, depending on the area of residence
Source: made by the author based on INS data

- ▪ *High school graduation rate*

It is determined as a ratio between the number of those who graduated from high school and the total number of students of the age corresponding to the completion of high school studies. The specifics of high school forms and streams with different durations must be taken into account, which is why not all students finish high school studies at the age of 18. Moreover, graduating from high school does not automatically imply enrolling or passing the graduate exam upon completion of the twelfth grade.
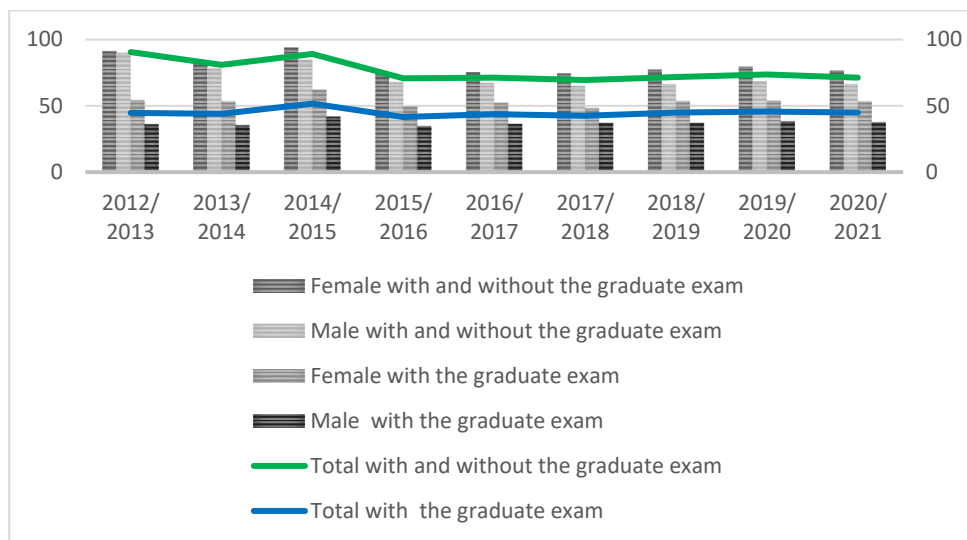
Figure 3: High school graduation rate (with or without graduate exam)
Source: made by the author based on INS data

- ▪ *Students' results in the baccalaureate exam*

Of the total high school graduates registered and presented for the baccalaureate exam, in the 2021/2022 school year, 77.6% obtained averages above 5, a higher level compared to the previous year. The highest rate was among graduates of the current class compared to graduates of previous classes.

- ▪ *The training level of the population aged 15-64*

The indicator is obtained by studying the information made available through the AMIGO survey, which notes a positive evolution of the education level of the population able to work, considering that the share of the population that has completed higher/post-secondary/high school education has increased, while the frequency has decreased to people with a lower level of education (professional/ secondary school/ primary school/ no primary school completed).

- ▪ *Participation in the economic life (labor force) of the population aged 15-64*

According to statistical data, in 2022 there is a 1.57% increase in the active population in Romania compared to 2021, and a 2% in the employed population, but also in unemployment percentage of 1%.

The specialized literature indicated the direct relationship between the level of education and the increase in economic-financial crime (Achim, Borlea, 2020), which affects the state budget through significant reduction of budget revenues. Consequently, government programs cannot be carried out in good conditions generating negative effects both on the volume and on the quality of public services in terms of public health, education, national security, which should lead to a major interest of all factors. involved to discourage school dropout.

5. Conclusions

Analyzing similar research models of the proposed subject and the specific indicators we can conclude that the establishment of performance criteria would help improve the quality of education and also the educational management. The most important would be:
- Ensuring didactic processes based on the knowledge acquired by the student;
- Adaptation of teaching methods to the specific needs of the educational unit;
- Application of standards for evaluation and monitoring of teaching and learning results;

- Respecting the objectives of the curriculum and methodical indications;
- Encouraging extracurricular activities and using them to increase educational quality;
- Compliance with regulations and legislation specific to the educational field;
- Involvement in the professional development and continuous training of learners.

The Strategic Objectives mentioned in the Strategy for the Modernization of the Educational Infrastructure 2018 – 2023: OS 1: Developing and updating the legislative framework of the school infrastructure to ensure a conducive environment for learning spaces and OS 2: Improving safety and operating conditions and modernizing learning spaces, were partially fulfilled by accessing European funds, the National Recovery and Resilience Plan provides for investments in all educational plans in the member countries of the European Union, through strategic actions, such as:

• Improving the normative framework applicable to the school infrastructure appropriate to the instructional-educational processes;
• Refurbishment of educational units in order to ensure the minimum standards of operation;
• Modernization and adaptation to safety conditions of educational institutions.

A prioritization of investments in facilities in the educational environment presupposes, first of all, an evaluation and a choice of investment requests by the competent authorities with the verification of compliance of the received proposals. After the validation of these proposals, if they comply with the general principles, they will pass through the filter of the prioritization criteria, in order to be able to establish exclusively the priorities for investments through compatible proposals.

Eligible and validated projects in accordance with the general proposals are also subject to a set of criteria composed of four dimensions and eight strategic sub-dimensions considered essential for prioritizing investments to improve the educational infrastructure, as follows:

Public policies depend on the social, cultural and economic context that requires tools to measure, compare and evaluate the characteristics, at the international level.

An increase in the amount of investments (both from public and private funds) correlated with the application of an acceptable internal managerial control allows the use of good practices, through the verification, evaluation, adjustment and permanent updating of their implementation and can generate benefits for the entire educational system.

Investments in education are needed to reduce the gap between skills and knowledge acquired during schooling. Studies have shown that one in five Europeans has not acquired the basic skills that would allow them to participate in lifelong learning processes and facilitate easy adaptation to the permanent transformations of the working environment. For 15-year-olds who cannot achieve level 2 in the Program for International Student Assessment (PISA), coordinated by the Organization for Economic Co-operation and Development (OECD), there are still a high percentage.

Given that education is the 'engine' of a country's economy, the reference indicators necessary to be able to carry out comparative studies between different member states of the European Union should include: the values of the points obtained in the PISA tests, the GDP per capita, the rate of early school leaving and higher education (tertiary level) graduation rate.

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AN EXPLORATORY ANALYSIS OF ACCOUNTING ESTIMATES DISCLOSURE PRACTICES. THE CASE OF ROMANIAN PRIVATE LISTED COMPANIES

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Abstract: *The research aimed to identify and evaluate the level of disclosure of accounting estimates in the annual reports of companies listed on the Bucharest Stock Exchange (BVB) on the premium segment. Excluding the banking sector and suspended companies from the total premium companies, 55 companies were identified in the sample. The companies' annual reports for 2018-2022 were analyzed to identify accounting estimates and any changes in these estimates. For each business, a score of 1 was assigned for changes in estimates and 0 for non-change. Using qualitative research methods, the set of data on accounting estimates was obtained by examining public information in the notes to the annual financial statements. The analysis of descriptive statistics was carried out to interpret the data, classifying companies according to turnover, total assets, average number of employees, and net result. Companies were also clustered into three categories, and the analysis highlighted industries with varying levels of disclosure. These findings provide insights into the level of disclosure of accounting estimates among Romanian companies listed on BVB, with stakeholder involvement and policy development for sustainable economic development.*
Keywords: *qualitative analysis; annual reports; descriptive statistics; accounting estimates.*

***JEL** Classification: M41; C38*

1. Introduction

In the financial environment, transparency and quality of accounting information are fundamental to understanding and evaluating a company's performance. In this context, proper disclosure of accounting estimates in annual reports becomes crucial for investors, analysts, and other stakeholders in making financial and investment decisions. This research aims to analyze the level of disclosure of accounting estimates in the annual reports of private listed companies on the Bucharest Stock Exchange (BVB), focusing on the premium segment and excluding the banking sector and suspended companies. By applying methods of qualitative research and descriptive statistical analysis, we will assess financial transparency and identify trends and practices in the disclosure of accounting information. This analysis aims to provide a deeper understanding of how Romanian companies report their accounting estimates.

2. An overview of the relevant studies in the literature

Accounting estimates are strongly present in accounting, most items in the balance sheet and profit and loss account are based on estimates. (Ding, et al., 2020; Gamoi, 2020; Shaw & Whitworth, 2022). Accounting estimates have a significant influence on the quality of an organization's financial and non-financial reporting and are a necessary approach in

accounting to deal with situations where accurate information is not available or cannot be accurately quantified. (Bertomeu, 2020; Ding, et al., 2020; Mohammed, 2022; Zeng, 2022).

A particular area of interest in empirical research is the analysis of the behavior of presenting accounting estimates in the annual reports of listed companies. This research is essential to assess the usefulness and reliability of accounting estimates in financial reporting. It provides insights into the extent to which these factors affect the quality and transparency of financial information.

To conduct empirical research on accounting estimates, researchers use various methods and measures. For example, some researchers examine the relationship between disclosed accounting estimates and increased financial performance and the share of research and development in value-added industries (Wedari and Shafadila, 2022; Ferguson and Seow, 2011; Farcane et al., 2010). They found that higher-quality accounting disclosures are associated with increased growth and development in equity-funded industries. Other researchers may focus on the accuracy and reliability of accounting estimates (Bertomeu, 2020; Ding, et al., 2020).

3. Research Methodology

This study aimed to identify and assess the level of disclosure of information on accounting estimates in the annual reports of companies listed on the Bucharest Stock Exchange (BVB) in the premium segment, excluding the banking sector and suspended companies. This procedure led to the identification of 55 companies that were included in the study sample. The companies' annual reports for 2018-2022 were analyzed to identify accounting estimates and any changes in these estimates.

Based on the study conducted by Farcane et al. (2010), the dataset on accounting estimates was conducted using the qualitative research method. The publicly disclosed information in the notes to the annual financial statements on the selected categories of accounting estimates was examined. Special attention was paid to information relating to property, plant and equipment, revaluation of fixed assets, investment property, intangible assets, impairment of assets, assets held for trading/sale, inventories, provisions for litigation, provisions for decommissioning fixed assets, provisions for the environment, employee benefits, borrowing costs, development and innovation costs, costs of restructuring business activities, and provisions for restructuring, leases, contracts with customers, deferred tax.

To determine the average degree of presentation and quantify the quality of the information disclosed, the range of scores from 0 to 3 was used, where 0 represents the complete lack of information related to the subject; 1 – the disclosure degree is unsatisfactory, the information is poorly presented, very little information has been presented; 2 - medium or satisfactory information is disclosed, and 3 - information is very well presented and communicated in detail. Also, each company scored 1 if there were changes in estimates and 0 if not. Python software was used to perform descriptive analysis and graphs.

4. Results

In light of the updated provisions of OMFP 2844/2016, each company is mandatory to compile the financial statements following the instructions specified in the accounting regulations adopted by Order of the Ministry of Public Finance (OMFP) no. Regulation (EC) No 1802/2014. The provisions lay down size criteria for medium-sized and large entities. Starting from these regulations, in this study we clustered companies into three categories,

companies with good performance, companies with average performance, and companies with poor performance. To achieve clustering, we imposed the following criteria regarding the accounting net result: net result over 10,000,000 RON; net result below 10,000,000 RON and over 1,000,000 RON; and net result below 1,000,000 RON.
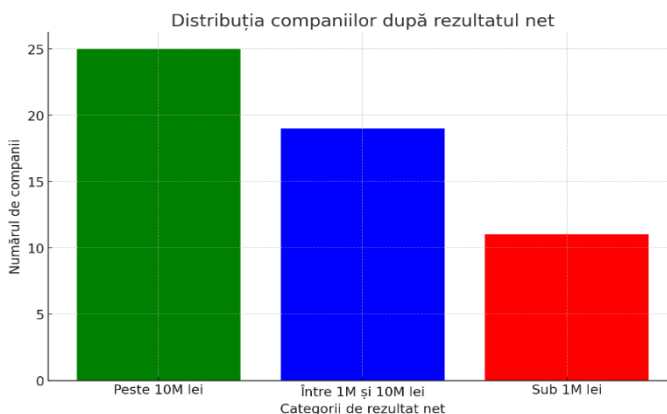
Figure no. 1 Classification of companies by the accounting net result
Source: own processing

Figure no. 1 presents a clear view of how sampled investigated companies are spread over three ranges of accounting net results. The largest category is that of companies with a net result of over 10 million lei, comprising 25 companies such as OMV Petrom S.A., S.N.G.N. Romgaz S.A., S.N., Nuclearelectrica S.A., etc., which indicates that there are a significant number of strong and profitable companies in the sample. The second category includes 19 companies, Turism Felix SA., Farmaceutica Remedia SA., Ropharma SA, etc., companies with a net result between 1 million and 10 million lei, and is also well represented. The category with net result below 1 million lei has the lowest number of companies, 11 such as Casa de Bucovina Club de Munte, Conted SA, Industrial Group Electrocontact SA, etc.

The next clustering that has been done divides the sampled companies into very large companies, medium-large, and large companies. For this, size indicators such as turnover, total assets, and number of employees were used. The aim will be to create clusters so that companies with high values for turnover, total assets, and number of employees are grouped. For this clustering we used the K-Means clustering method, its purpose is to divide a data set into groups or clusters so that objects in the same group are more similar to each other than to those in other groups (Hartigan, and Wong 1979; Perez and Blasco, 2022).
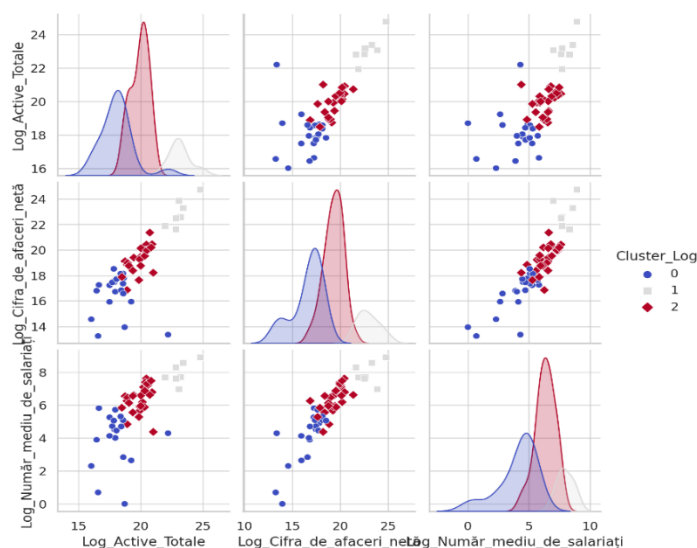
Figure no. 2. Clustering of companies
Source: Self-processing in Python

To achieve the desired clustering, where the first cluster contains the companies with the highest turnover values, total assets, and number of employees (called "very large companies"). This method involves applying the logarithm to the values of turnover, total assets, and number of employees to reduce data dispersion and make distribution more normal, which can help in identifying clusters. After logarithm, we used the K-means algorithm because the K-means algorithm can be applied to data directly or after logarithm, to automatically divide companies into clusters based on their similarities. If we want to ensure that a particular cluster comprises "very large" companies, we can adjust the number of clusters and analyze the results to choose the best division. Companies are classified in the three clusters in figure no.2, as follows:

Cluster 0: These companies are usually smaller or medium-sized, having smaller values for total assets, net turnover, and average number of employees. Companies in this cluster include PTR, BRM, CNTE, STZ, PREB, CMCM, CBC, MECE, AAG, ELJ, ECT, ELGS, ARM, MECF, UAM, ALU, RMAH, CAOR, BCM, BNET, EL.

Cluster 1: Represents "very large companies" with high values for total assets, net turnover, and average number of employees. The companies in this cluster are SNP, SNG, RRC, ALR, SNN, TEL, and TGN.

Cluster 2: Includes medium-sized to large-sized companies with moderate values for said features. The companies in this cluster are VNC, ATB, BIO, SCD, ARTE, TRP, ROCE, PPL, CEON, PREH, ELMA, MCAB, UCM, CMF, CMP, SNO, TBM, IARV, ARS, IMP, RPH, OIL, SOCP, COTE, EFO, TUFE, and M.
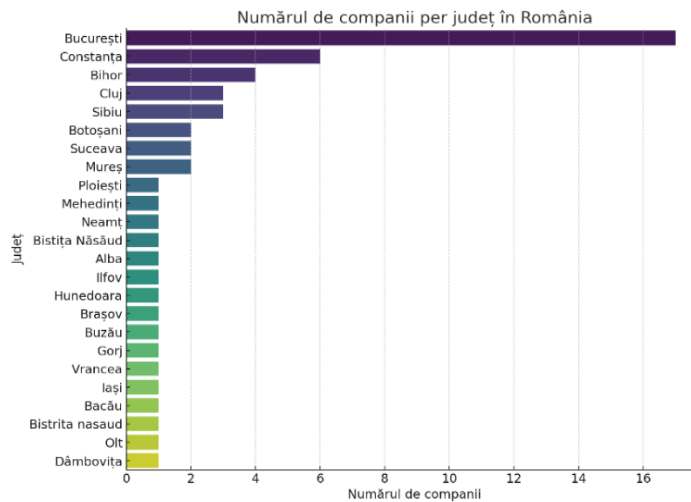
Figure no. 3 Distribution of companies by counties
Source: Self-processing in Python

Figure no. 3 presents the companies assigned for each county in Romania. In this graph, Bucharest has the highest concentration of companies, followed by Constanta, and Bihor. This graph provides a clear representation of the geographical distribution of companies in the research sample.

The distribution of companies by economic sectors reflects the structure and dynamics of the market for the sample, as follows: extractive industry (3 companies); production and supply of electricity and heat, gas, hot water, and air conditioning (2 companies); construction (1 company); wholesale and retail trade; repair of motor vehicles and motorcycles (3 companies); transport and storage (4 companies); hotels and restaurants (4 companies); information and communications (1 company); professional, scientific and technical activities (1 company); health and social work (1 company). The presence of a small number of companies in these categories may indicate a concentration of industries in a few large entities, which is quite common in these sectors. This may also be due to high barriers to entry, such as the need for substantial capital and strict regulations. The manufacturing industry (35 companies) is the largest category in the sample, which suggests that manufacturing is an important engine of the economy. This includes a wide range of activities, from food and beverage production to machine and equipment manufacturing, highlighting the diversity and maturity of the manufacturing sector.

Further on, we proceeded to examine the information on accounting estimates disclosed in the notes to the annual financial statements and to score the degree of disclosure of information according to the selected methodology. Following the qualitative exploration of the information, a descriptive statistical analysis of data on the disclosure degree of accounting estimates was employed.
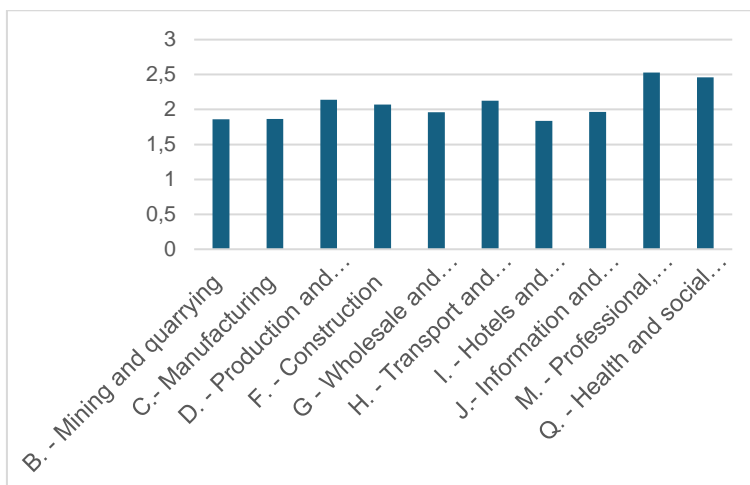
Figure no. 4 The average disclosure score of accounting estimates by industry
Source: own processing

Figure no. 4 highlights the level of disclosure of accounting estimates. We calculated the average corporate disclosure score over five years and found that industry M – Professional, Scientific and Technical Activities (1 company) stands out with the highest score, proving excellent information disclosure. Next is the activity sector Q - Health and Social Assistance (3 companies), and in third place is sector D - Production and Supply of Electricity and Heat, Gas, Hot Water and Air Conditioning (2 companies). These data indicate an interest on the part of these sectors in disclosing information related to accounting estimates in an accurate and well-structured manner. The manufacturing sector containing the most companies has a score of 1.88, with this score being the second lowest placed in this ranking.
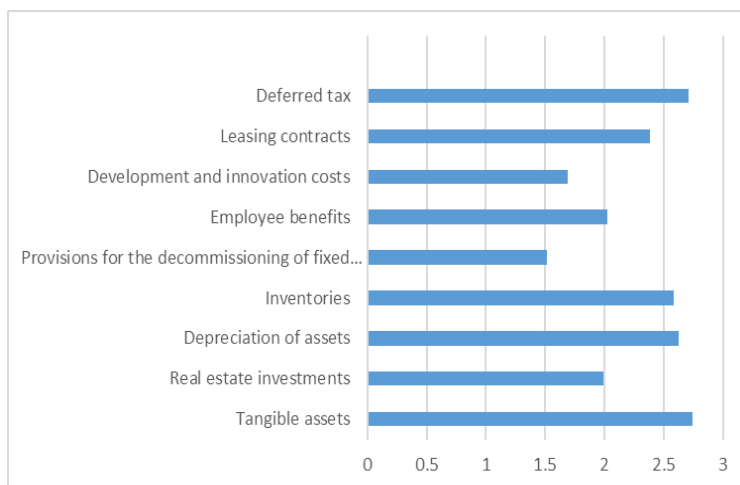
Figure no. 5 The average disclosure score of accounting estimates
Source: own processing

Figure no. 5 represents the categories of accounting estimates examined in this research. The average disclosure score over the past five years was determined and found that the most carefully prepared accounting estimates were for property, plant, and equipment, deferred tax, and impairment of assets. These estimates are presented in the most detailed way in companies' annual reports.

The average disclosure score of accounting estimates recorded for each sampled company is presented in Figure 6. Thus, it can be seen that some companies managed to stand out by paying attention to the granularity of information in the disclosing accounting estimates. Among these companies, we note ELGS, with a score of 2.89, ALR with a score of 2.61, and MECF with a score of 2.65. The results indicate that these companies are concerned about providing transparent and accurate information, thus providing a clearer picture of their financial situation to investors and other stakeholders.
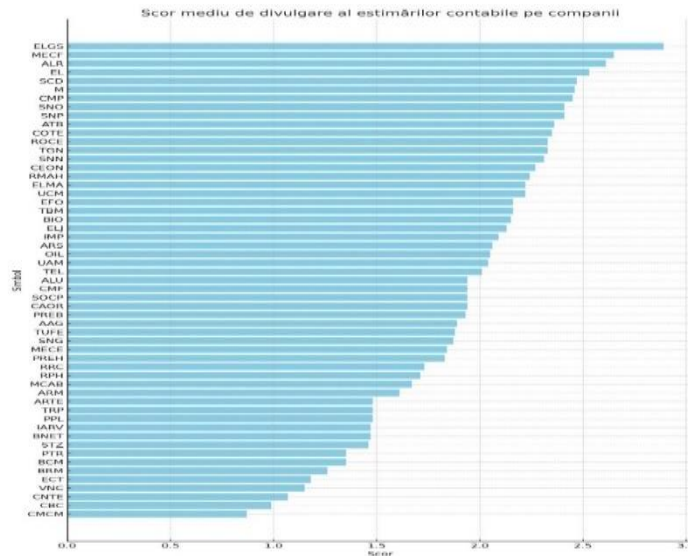
Figure no. 6 The average accounting estimates disclosure score by company
Source: own processing in Python and Matplotlib

5. Conclusions

The empirical study focuses on the analysis and assessment of quantitative and qualitative financial data, providing a broad view of the results. The descriptive statistical analysis for a sample of 55 companies listed on the Bucharest Stock Exchange (BVB) revealed several significant aspects regarding their characteristics. First, the sampled companies were clustered into three distinct categories by size. The largest cluster, called Cluster 1, comprises companies characterized as "very large", with considerable values for total assets, net turnover, and the average number of employees. These companies include SNP, SNG, RRC, ALR, SNN, TEL, and TGN. In contrast, most of the sampled companies fall under Cluster 2, which includes medium-sized companies. Looking at the geographical distribution of these companies, we noticed that most of them are located in Bucharest, followed by Constanta and Bihor counties. From an industrial point of view, manufacturing companies predominate in our sample.

The analysis also included assessing the average disclosure score for companies over five years. The results indicate that Industry M (Professional, Scientific, and Technical Activities) scored highest, signifying excellent information disclosure. The analysis also revealed that the most carefully prepared accounting estimates over the past five years were those for property, plant, and equipment, deferred tax, and impairment of assets. Among the limitations of the study, the low number of companies included in the sample and the short period must be mentioned. Afterward in the research, we want to emphasize the importance of investigating the topic concerning the link between the advanced artificial intelligence

technologies and the perception of professional accountants with emphasis on training the main competencies.

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IMPROVING WRITING SKILLS IN BUSINESS ENGLISH STUDENTS – THE IMPACT OF ARTIFICIAL INTELLIGENCE BASED TECHNOLOGY

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Abstract: *Today, more than ever, effective communication, regardless of the shape it takes, is important for every company's success. Having as a target the idea of going global, employers search for employees who know exactly how to express themselves in order to be understood efficiently and correctly, constantly ranking writing ability among the most popular skills for business graduates to possess. Nowadays, the global business image needs professionals who possess communications skills, especially writing skills since businesses want to convey their idea, a message, a concept to employees, customers, partners, contractors all over the world. We can think of a lot of reasons why writing skills are important in the business world. As communication technologies and information are having a great impact on all the aspects of the language use, written communication changes, too. The more diffused computer-mediated communications are, the more we witness a modification in the purpose of writing, the genres of written communication and the nature of the audience. For both teachers and students, writing has always been a problematic issue, due to several aspects, among which the most significant ones are: it is more time-consuming, it is not very dynamic, it is not very interactive and therefore, it is more difficult to be integrated in the structure of the course of Business English. The whole picture has changed. One of the most used platforms among students is WhatsApp, being a popular instructional learning medium. The present article is based on research using semi-structured interviews, in the qualitative phase, as an instrument for data collection, aimed to find out the students' perspective towards the use of WhatsApp group in improving their writing ability in English. The sample of the study consists of 45 students at the Faculty of Economic Sciences, University of Oradea, first and second year of study. The author wants to research how today's technology influences the development of writing skills in Business English students, more exactly the impact of the WhatsApp groups, in the case of the above-mentioned students. The elements discussed are the following: tone, simplicity, clarity and concision. The results show that the students feel that their writing skills have improved after a period of using WhatsApp group and benefit during the teaching and learning process. It also shows that it can develop the writing ability of the students. This result is supported by the opinions of the students who gave more good responses than bad ones. Thus, the result shows that the WhatsApp group is one of the most appreciated and appropriate learning platforms for today's Generation Z.*

Keywords: Business English; technology; writing skills; WhatsApp application.

JEL Classification: Y8, Z19

1. Introduction

The last decades have witnessed a lot of changes in our lives, mostly related to the appearance, incredible development of the Internet and the unbelievable technological advancement. The available technology, the interconnection created with the use of various electronic devices, as well as a change in management styles have led to an unprecedented increase in written communication (Crainer&Dearlove, 2011) The new millennium is facing an educational process in which both students and teachers use technology in fundamental ways. Students and teachers alike have access to their own source of information and the ability to learn though different platforms and communicate with teachers have driven to a more direct link to a range of different knowledge sources. The industrial Revolution 4.0., in which education is done through advanced technology, artificial intelligence and robotics, have pushed technological innovations to a higher that ever level. In this context, applying technology in developing the students' skills seems to be the only approach that can stimulate the students' enthusiasm. As Sim M. & Pop M. (2017), 'students love technology so they are likely to be excited about it and continue learning outside of school hours. If students are really excited about studying inside the classroom, they are likely to continue learning outside of it and they can do so with mobile technology'. However, this is not an easy thing to do. In order to master a language, you need to develop the four skills: reading, writing, listening and speaking. Business English students have to master writing skills as they represent one of the essential competencies in today's business world. Due to this fact, written communication has become one of the particularly important questions in teaching Business English methodology.

1.1. Statement of the Problem

Being one of the foremost important communication skills in business contexts, teachers face the challenge of investigating teaching models and techniques which can be efficient in today's challenging landscape of the digital era, which is not an easy task to achieve. Researchers across the world have been examining the situation of integrating mobile technology in the educational process and its impact and value. Due to lack of time, as the university level syllabus does not provide enough time for the students to practice the writing ability in class, teachers are trying to use WhatsApp as an alternative tool to help students. Although the use of technology has proved to be helpful so far, researchers have found several problems in using technology, ranging from the right type of technology that can attract students, the right approach regarding time in using it, up to the problem of the authenticity of the learning environments. This study wants to throw some light on the idea of using different kinds of platforms in the improvement of the writing skills and the students' approach to this subject, at the Faculty of Economic Sciences, University of Oradea.

1.2. Research Questions

This study is based on the following questions:
1. Year
2. Specialization
3. Do you think that your writing ability has improved by using WhatsApp groups?
4. Do you think using WhatsApp groups is difficult?
5. Does WhatsApp develop your writing ability during the learning process?
6. Do you think that WhatsApp groups create interaction between students?
7. Is WhatsApp group an appropriate tool to dev**elop students' writing ability?**

2. Review of Related Literature

It is needless to say that social networks have proved to be extremely popular among young people, gaining an important place in our lives. The development of the technology has led to a change in the learning/teaching process. Generation Z students regard technology-based activities as a means of synchronous or asynchronous instruction which is founded on various tools, which seem to be extremely appealing and challenging at the same time. These activities can be applied to various subjects, including English for Specific Purposes, in our case Business English, bringing a serious contribution to the enhancement in the learning experiences of the students, in the acquisition and development of different skills. According to Naveen Joshi, *'the Industrial Revolution 4.0. has pushed technological innovations that have a fundamental disruption or change impact on people's lives. The Education world in 4.0. describes various ways to integrate cyber technology both physically and into learning '*. It is absolutely obvious that the teaching and learning process has been impacted, providing various methods which seem to be suitable for the learners' characteristics, being in clear opposition with the traditional way of approaching education. As Porumb (2020) says *'the use of new digital technologies does not exclude the use of traditional communication devices, but it is a complement to them '*. In order to master a foreign language, more exactly Business English in our case, the students must master the four language skills: listening, speaking, reading and writing. Reading and listening are perceptive skills while speaking and writing are productive skills, implying a process of organizing ideas and being creative by means of text. The writing skill is one of the most important since through the written text we can observe the writer's ability to deliver ideas and express opinions. As this is not something to be taken for granted, teachers must use technology to support the development of the writing skills. As Carrio-Pastor states *'the role of technology in the education systems all over the world has influenced the way of teaching from conventional to modern way. Technologies nowadays mostly bring positive effects towards the education world especially in learning English '*. WhatsApp is one of the most popular social-networking application that has emerged among the students as a useful and appreciated instructional learning mobile medium. A study conducted by Carrio-Pastor (2017) showed that regarding the use of WhatsApp as a medium of English Language acquisition, the students proved to be confident, independent, enthusiastic and had a positive attitude related to the topic. In 2019, Sari&Putri also presented a study having a positive result regarding the use of WhatsApp group in their writing class, where the respondents admitted that the use of this platform can intensify the interaction between the members and the effectiveness in submitting the writing assignments. This research presented WhatsApp as a medium to teach writing since *'it can help students' ability to write the text-based instruction on the application (…) besides, during the process of writing, the students can explore ideas, show expressions and increase the vocabulary '*. In 2015, a complex study was conducted by Dahlstrom et al. in 112,000 university students from the USA and 13 other countries. The conclusion was that between 2011 and 2013, there has been a significant growth in the use of smartphones for academic activities. Similar studies undergone in the European Union between 2015 and 2020 show that students, regardless of region, use their WhatsApp application as a tool for academic purposes, appreciating its mobility (learning can take place anywhere), its technology (storing and accessing resources), being conceptual (learning contents are administered using different applications so that the students can easily access the needed information) and being social (users can connect). Studies undergone on the use of messaging platforms in education show that they have potential to increase learning (Smit 2012), the students being more active in their approach (Cifuentes & Lents, 2017), having a sense of belonging (Keser H., Ozdamli F. 2012) and increasing their motivation (Sweeny, S. M. 2020).

3. Research Methodology

3.1. Research Design

In this paper, the selected approach is the qualitative type of study. The qualitative approach underlines descriptive data collection techniques, using inductive attitude in studies, in natural environments together with the opinions of the respondents (Bogdan & Biklen, 2007). The Concise Oxford Dictionary offers the following explanation (1998) *'in qualitative studies the key concern understands the phenomenon of interest from the participants' perspective, finding out their opinions and feelings rather than information that can easily be shown in numbers'.* Qualitative research uses techniques including structured and semi-structured interviews, focus groups, and participant observation, not only to help generate hypotheses which can be more rigorously tested with quantitative research but also to help researchers delve deeper into the quantitative research. According to Sweeny, S. M. (2020) *'qualitative interview approaches to research can be stimulating and rewarding experiences for both researcher and participants '.*

3.2. Sample of the Study

This study has been conducted at the Faculty of Economic Sciences, University of Oradea, the sample being 45 students from the first year of our faculty (35 females and 10 males), all specializations of the faculty. The students' level in English is upper-intermediate.

3.3. Research Informants

In order to examine and get a clear image of the usage of WhatsApp platform in learning foreign languages, having clear reference to Business English, writing skills, we have chosen key informants that could provide relevant information, being chosen following the inclusion criteria:
1. students in Economics who have English selection exam scores above 80 points;
2. students in Economics who have taken Introduction to Business English Course during the first semester.

3.4. Research Instruments

The instrument of this research is a semi-structured interview, containing five questions, regarding the students' experience and perspective about using WhatsApp application in learning foreign languages. Thus, this study provided the students an opportunity to express their opinion in their own words.

3.5. Data Collection and Analysis

All interviews were conducted in English, being anonymous and written. The length was between 7 and 10 minutes. Each interviewee was asked to describe their personal experience regarding the usage of Artificial Intelligence apps and platforms in developing communication skills in Business English.

Table 1 (showing the characteristics of all the participants in the study)

Characteristics	
Age	18-21 years old
Female/Male	35 Female, 10 Male
Educational Status	College students

School	University of Oradea, Faculty of Economic Studies
Specialization	Accounting – 20 students; Marketing – 5 students; Tourism – 5 student; Finance-Banks – 10 students; Management – 5 students.

The first-year students in Economics, the study programs of Finances-Banks, Accounting, Management, Marketing, and Economy of Commerce, Tourism and Services were the respondents to the five questions in the questionnaire. The total number of respondents was 45 students and the representation of each study program is seen in Figure 1.
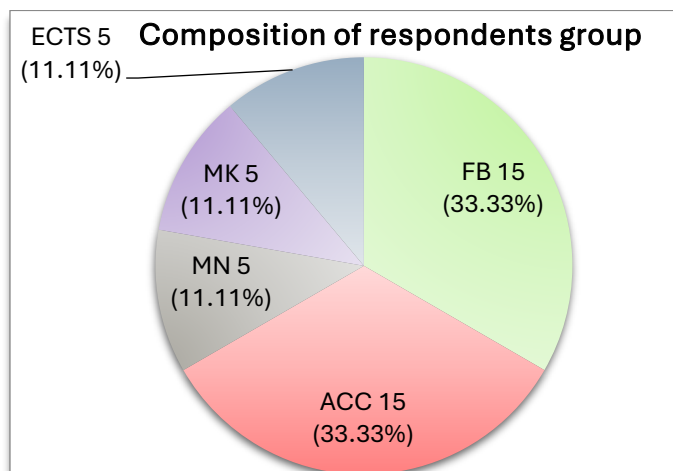
Figure 1. Number of respondents in each study programme
Source: own design on the basis of the data received from the respondent students

A synthesis of the positive or negative responses of the 45 respondents to questions 1-5 is presented by the chart in Figure 2.
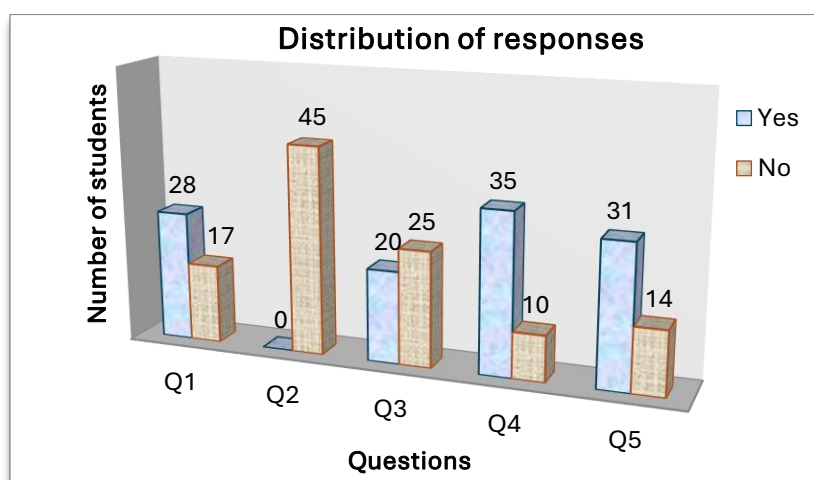
Figure 2. Replies (Y/N) to the questionnaire (Qs 1-5)
Source: own design on the basis of the data received from the respondent students

The students' perception on how the use of Whatsapp groups has helped, helps or can help them, according to their answers to the five questions in the querstionnaire, can be found in Figure 3.

Hierarchy of WhatsApp Groups Characteristics

- Develop personal writing ability during the learning process (Q3) — 20
- Improved personal writing ability (Q1) — 28
- Appropriate tool to develop students' writing ability (Q5) — 31
- Create interaction between students (Q4) — 35
- Easy to use (Q2) — 45

Positive answers
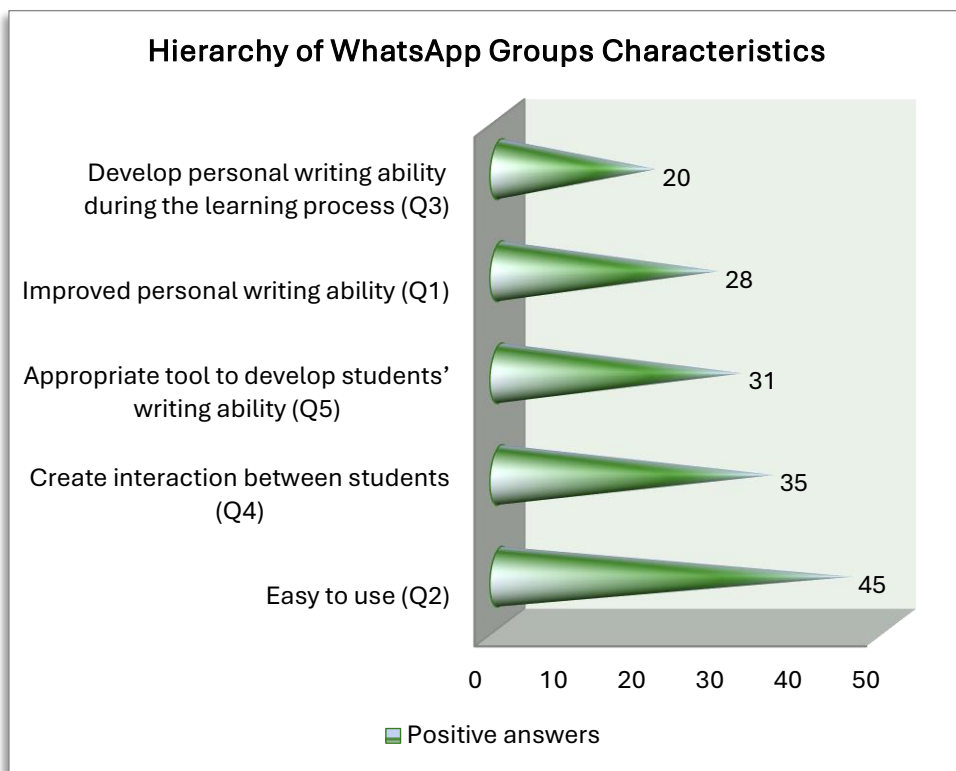
Figure 3. Perception of WhatsApp groups usefulness
Source: own design on the basis of the data received from the respondent students

4. Conclusions

We are all living in a digital era where the students' lifestyle is synonymous with the use of technology-based gadgets, where instant messaging, video sharing, blogging and podcasting represent the reality of our daily lives. These realities have started to shape the way people are formed and educated, due to the increasing time, scope and frequency of use. The high number of people using the programs based on people interaction, between individuals and groups, have led to the conclusion that the students' need for interaction and for these networks is immense. After the introduction of web based social network, such as Facebook, Twitter, and Instagram, the appearance of messaging applications, such as WhatsApp, BBM and Line, proved to be a great success. However, it has taken quite a long time for these platforms to be used in education. The studies undergone in the field of Business English acquisition in the European Union countries have shown that these apps have both positive and negative effects over different variables, such as motivation, social interaction, academic success and communication; as negative effects, we can mention concerns regarding privacy, getting beyond the limits in personal relations, losing attention and excessive use. The present study shows that students consider that using WhatsApp group can develop their writing ability, producing a positive effect and a visible development in writing skills. The incorporation of WhatsApp group in Business English courses

encourages the students to establish their learning goals as well as the level of their implication in the activities. The students admit that, having the possibility of peer correction, giving comments and having discussions about the topic with the others engaged in the activity can have a visible improvement in their writing ability. The fact that this platform gives the chance to share information and knowledge also comes as a support in building interaction among students. Thus, mobile technology, more exactly the use of WhatsApp application in improving the writing skills in Business English is definitely an alternative to traditional teaching. It has impacted the students' interests in accomplishing the educational tasks, raising students' satisfaction and generating a greater collaboration in their activity. Moreover, the use of this App encourages the students to be more active and supportive with their peers, commenting, discussing and correcting on the topic. On the other hand, the students are familiar with this type of interaction, finding it enjoyable and appropriate for the improvement of their writing skills. Analysing the results of this study, we can conclude that students find technology-based tools as having a positive impact on the development of their writing skills, and the use of WhatsApp as a helping application in Business English courses is welcomed substantially. It should be noted that the above-mentioned app has the potential of a natural educational technology and the qualities by which it contributes to education a real technological support.

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IS ECONOMIC PERFORMANCE CONTRIBUTING TO ENVIRONMENTAL QUALITY? A CROSS-SECTIONAL ANALYSIS USING A GLOBAL DATASET

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Abstract: *The European Green Deal strategy aims to decarbonize the EU economy and achieve ambitious sustainability goals. By evaluating and promoting environmentally sound development practices, the EU strives to lead by example and inspire global efforts towards a sustainable future. Moreover, The EU and OECD countries, alongside international frameworks, are committed to supporting vulnerable nations and advancing sustainable development worldwide. Through collaborative efforts and innovative policies, the EU and OECD aim to mitigate the impacts of climate change and pave the way for a more resilient and sustainable world.*

Analyzing the ecological sustainability of development patterns within the EU is integral to enhancing the EU's initiatives under the European Green Deal. In the opinion of the present study, the feasibility of European Green Deal needs further assessment from the perspective of a cost – benefits analysis, as the methodology employed in computing the costs involved raises several questions.

This study underlines the multiple dimensions of environmental quality and proposes a methodology for building an aggregated index of environmental degradation. Subsequent analysis uses structural equations framework to investigate the impact of economic performance on environmental degradation index. Results are in line with previous findings in the field. Thus, present research has documented a positive and statistically significant impact of economic performances at macroeconomic level on the environmental degradation index. However, we also have shown that, while economic activity can contribute to environmental degradation, it can also drive positive environmental outcomes through technological innovation, investment in environmental protection, improved policies, sustainable consumption and production, creation of green jobs, and increased education and awareness. Thus, we have shown that, from a policy perspective, it is important to harness economic growth in ways that promote sustainability and environmental quality.

1. Introduction

Climate change is impacting countries around the world (Gillingham and Stock, 2018). However, in EU, the level of greenhouse gas emission have reached 66% of the1990' level (EEA, 2021, Neagu and Teodoru, 2019). A switch from coal to gas for power generation and improvements in energy efficiency are also considered the main drivers of greenhouse gas reduction in EU (EEA, 2021).

The EU has envisaged an ambitious environmental strategy. The greenhouse gas emission targets have been revised in 2021, when the European Green Deal committed to at least 55% reduction by 2030 and climate neutrality by 2050 (2050 Long Term Strategy, 2019).

The feasibility of the European Green Deal has already been questioned. Gillingham and Stock (2018) finds a positive and optimistic answer to the feasibility of achieving the objectives of European Green Deal. McKinney & Company Report (2020) is even more optimistic, showing that the objectives of the European Green Deal are feasible at zero-net cost. Same report appreciates that most of the technologies required are already available, although innovation remains critical and investing more than €28 trillion in green technologies over the next 30 years is necessary. Yet, as stated by McKinney & Company Report (2020), the optimal path to achieving the proposes environmental objective involves passing not only the savings but also the costs of decarbonization through to households. This not only necessitates shifting social norms and expectations of stakeholders to zero-carbon but also re-thinking land-use and changes in alimentation behavior to reduce the emissions in agriculture sector (McKinney & Company Report, 2020).

Not all studies share an optimistic opinion about the feasibility of EU' long-term decarbonization strategy. For example, Millar et al. (2017, p. 741) conclude that reaching the European Green Deal' near-term objectives on emission reductions would necessitate 'economically, technically or politically unfeasible' decreasing rates.

A worrying finding is that the costs involved by replacing old carbon-based technologies with cleaner, energy efficient ones vary widely depending on local conditions such as wind or local fuel prices (Gillingham and Stock, 2018). Moreover, several studies in the field have reported negative abatement costs, which have fueled a longstanding controversy in environmental economics, with voices arguing that marginal negative costs are in fact proof of unaccounted-for costs (Gerarden, Newell, and Stavins 2017, Allcott and Greenstone 2012). McKinsey curve (McKinsey & Company 2009), a prominent attempt to estimate the costs of the measures to abate pollution is also known for reporting negative abatement costs (Gillingham and Stock, 2018). Consequently, one might ask if McKinney & Company, in their 2020 report has accounted for all costs involved by the proposed decarbonization of the EU long term strategy.

2. Multidimensionality of environmental quality

The concept of environmental quality is increasingly recognized as multidimensional, reflecting a complex network of influences between economic activity and the environment (Sachs, 2015). Exploring the multiple dimensions of environmental quality, the interconnectedness and challenges associated with each dimension can better serve policymakers in developing ambitious environmental policies impacting every aspect of our lives.

Ecological sustainability is considered one of the dimensions of environmental quality. Ecological sustainability concerns the overall status of ecosystems, ensuring that consumption of resources does not jeopardize their availability for future generations (Costanza et al., 2017). Ecological sustainability metrics covers aspects such as biodiversity conservation and overall ecosystem resilience (Millennium Ecosystem Assessment, 2005). Assessing this dimension of environmental quality involved carefully examination of the impact of economic activities (for example deforestation) on natural ecosystems (IPBES, 2019).

Assessing environmental quality also involves optimizing the utilization of resources, recycling and minimization and adequate disposal of waste. Resource efficiency is also closely related to organizational performance, as firms are investing in green technologies and emphasize recycling (OECD, 2018).

Another dimension of environmental quality concerns reducing air pollution (IPCC, 2014). Transitioning to green energy sources, green logistics or green supply management are

focusing on curbing emissions of CO_2 or other gases responsible for global warming and climate change (UNFCCC, 2015).

Effective environmental governance frameworks are essential for promoting accountability and fostering collaboration between relevant stakeholders (Young, 2002). Lastly, building an overall index of environmental quality must address how environmental policies and practices impact local communities (Schlosberg, 2007). According to Agyeman et al. (2003), environmental quality must ensure a throughout cost -benefits analysis, which once again underlines the importance of involving local communities in environmental decision-making (Agyeman et al., 2003).

3. Method

Socioeconomic data and application center (SEDAC) has made available a database combining data on 58 environment performance indicators, from 180 countries. These indicators are grouped into 11 categories, covering all relevant aspects on environmental quality, climate change and health of natural ecosystems. Not ultimately, SEDAC database provides clear policy guidance for countries, establishing policy targets and weighing environmental quality against the targets set.

This research used SEDAC database to collect indicators on environmental degradation from two categories: (a) climate and energy and (b) pollution. Indicators used in present analysis are presented below:

Climate and energy
- CO_2 emissions
- Methane emissions
- N_2O emissions
- Black Carbon Emissions

Pollution
- SO_2 emissions
- NOx emissions
- Nitrogen contamination
- Lead exposure

Countries' economic performance is a strong predictor of their corresponding environmental quality (Block et al., 2024). Based on Block et al. (2024) we investigate the relationship between economic performances (measured by Gross Domestic Product per capita) and Environmental quality. Most of the empirical research in the field has documented a linear negative relationship between economic performance and environmental degradation. In other words, economic performance leads to environmental degradation (Lieb, 2003). The same review shows that economic performance can also foster positive environmental outputs through technological innovation and investment in environmental protection and education. Most importantly, there are also studies in the field documenting a nonlinear relationship between the two variables of concern. In the case of a quadratic relationship, evidence supports the existence of an EK curve. However, documenting the relationship between economic performance and environmental quality is challenging. Including quadratic or higher order forms of GDP per capita in the estimation can lead to high multicollinearity (Hasanov, Hunt and Mikayilov, 2021).

Taking all these aspects into consideration, we appreciate that further research is needed to document the relationship between economic performance and environmental status. Based on Block et al. (2024), our main research hypothesis is:

H_1: GDP per capita has a positive influence on environmental degradation.

H_2: Technological innovation has a negative influence on environmental degradation.

Our strategy is to employ a Confirmatory Factor Analysis (CFA) to test the hypothesis that the relationships between observed variables and their underlying latent constructs follow a

specific structure. Unlike Exploratory Factor Analysis (EFA), CFA is used to confirm what theory asserts about the respective factor structure (Jolliffe and Cadima, 2016). An alternative strategy for building aggregated indexes employs Principal Component Analysis (PCA). Using PCA analysis is often advisable, especially when the goal is to reduce dimensionality and create a composite index that captures the maximum variance in the dataset. PCA helps in summarizing the information contained in multiple indicators into a few principal components, which can then be combined into a single overall index (Abdi and Williams, 2010). However, in our case, since the purpose was to confirm a clear structure, this research has employed the CFA for constructing the composite index measuring the environmental quality.

All variables employed in the analysis we first standardized. All indicators were pooled together, and the CFA was used to construct a composite Environmental degradation Index (EDI). Subsequently we have estimated the structural model using R statistical software.

Technological innovation was measured using a global innovation index. Data is available at: (https://prosperitydata360.worldbank.org/en/indicator/WIPO+GII+6). Environmental data and GPC per capita (PPP 2017 US $) are obtained from SEDAC database (https://epi.yale.edu/). The proposed empirical research uses a global dataset with 175 observations at country level. Data was collected for a single year (2019).

4. Results

We use Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), The Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Squared Residual (SRMR) to assess the overall fit of our CFA model. n our case, CFI is 0.97, TLI is 0.93. RMSEA is 0.056, SRMR is 0.007. Consequently, all indices indicate a good fit (Hu and Bentler, Henseler et al., 2014). Examining factor loadings in Table 1, we see that all factor loadings are well above the 0.5 threshold required for the indicator reliability condition (Hulland, 1999). In addition, all outer loadings are highly statistically significant (p =0.000). All items used to measure our constructs are good measurements of the respective construct. The Cronbach's alpha is above the 0.7 threshold value.

Table 1. Factor loadings

Indicators	Estimate (std. err.)
EPI =~ CO2 emissions	1.000***(0.000)
EPI =~ Methane emissions	1.130***(0.096)
EPI =~ N_2O emissions	1.056***(0.086)
EPI =~ Black Carbon Emissions	1.132***(0.088)
EPI =~ SO2 emissions	0.992***(0.091)
EPI =~ NOx emissions	1.273***(0.096)
EPI =~ Wastewater management	0.944***(0.089)
EPI =~ nitrogen contamination	0.999***(0.088)
EPI =~ Lead exposure	0.930***(0.094)
AIC	7057.7
BIC	7140.1

Table 1 shows that all outer loadings are highly statistically significant (p =0.000). All items used to measure our constructs are good measurements of the respective construct. The Cronbach's alpha is 0.822, indicating good fit. Table 2 presents the estimated variances.

Table 2. Variances

Variances	Estimate	Std.Err	P(>|z|)
EDI	0.286	0.040	0.000
CO2 emissions	0.270	0.024	0.000
Methane emissions	0.380	0.034	0.000
N_20 emissions	0.288	0.026	0.000
Black Carbon Emissions	0.267	0.025	0.000
SO2 emissions	0.398	0.034	0.000
NOx emissions	0.291	0.028	0.000
nitrogen contamination	0.347	0.030	0.000
Lead exposure	0.472	0.040	0.000

As shown in Table 2, all the estimated variances are highly significant.

Table 3. Results of structural model

Variable	Std. Beta	Std. Error	p-values
GPD/capita	0.69	0.070	0.00
Technological innovation	-0.02	0.002	0.00

Estimation result presented in table 3 shows that indeed the economic performance, measured by GPD/capita has a positive impact on environmental degradation. However, Table 3 also shows that environmentally positive spillovers can be generated by investment in technological innovation.

Thus, both of our research hypotheses are supported. We conclude that data supports the existence of a positive impact of economic performance on environmental degradation. More relevant, technological innovation contributes to increasing the quality of environment.

5. Conclusion

Countries around the world are grappling with the formidable challenges posed by climate change. Among these, the European Union (EU) and the Organization for Economic Co-operation and Development (OECD) member states, excluding Turkey, have taken proactive steps to support the least developed countries in their efforts to mitigate greenhouse gas emissions. This commitment underscores a global effort to address the impacts of climate change and promote sustainable development.

Present research contributes to existing literature in the field by proposing a methodology for constructing an environmental degradation index. We also have documented the negative impact that economic development, measured by GDP per capita, has on a multidimensional index of environmental qualitys.

Future research must further analyze the relationship between GHP per capita and environmental qualitys. Employing quadratic or even cubic forms of GDP per capita would allow testing the validity of EKC hypothesis. Even more important, future research must use a longitudinal approach to testing the EKC hypothesis. In this respect we intend to further the knowledge and understanding in the field by employing a comparative analysis of the efficiency of several longitudinal estimation' techniques which can employ directly latent variables in the analysis. Tsuch an approach has also the advantage of requiring data for a small number of periods. Provided that the period covered by data is long enough, meaningful inferences can be drawn based on a relatively limited number of periods considered in the analysis.

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CHATBOT IN HUMAN RESOURCES MANAGEMENT; WORLD EXPERIENCE VS. ROMANIA

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Abstract: *Artificial Intelligence (AI) is rapidly penetrating the public sector as agencies strive for higher efficiency, better quality, and more personalized service to their customers. Social security is no exception. While AI applications are diverse - each with its own far-reaching implications - "IA conversational" or "chatbots" have led the way in terms of AI adoption by government agencies. Chatbots are a useful tool with great potential for government. All types of chatbots have a great benefit and revolutionary impact for users of public administration Describe the basic characteristics of chatbots, their classification, and, in the form of a SWOT analysis of the strengths and limitations of this technology in their application in public administration, it is confirmed that chatbots (and their subsequent changes and development variants, such as VoiceBots or digital assistants) will become an integral part of the modern apparatus that public administration will use for public relations.*

Keywords:*artificial intelligence; chatbot; SWOT analysis, advantages and disadvantages of using chatbots*

JEL Classification: M15; O30; O32

1. Artificial Intelligence and Human Resource Management

■ Artificial Intelligence (AI)

Long-term existence of artificial intelligence (AI), it has several applications over time, but recently it has been developed and implemented in an aggressive form. We will break down the word AI artificial intelligence and we will analyze each part. The definition of "A", that is, artificial, is a universal term and does not need such a complex definition. According to the Oxford Dictionary, the definition of artificial means "made or produced by humans rather than occurring naturally, especially as a copy of something natural" (Oxford Dictionary, which is, 2019).
Another aspect of the definition of artificial intelligence is the need to measure human intelligence in order to compare it to that of robots or machines.
Kaplan (2016) states that from his perspective, artificial intelligence is "the ability to make appropriate generalizations in a timely manner based on limited data". In this article, AI is defined as the ability of things like machines to learn, interpret, and understand on their own in a way identical to humans. (Coursera, 2023; Miaihle, N. and C. Hodes (2017), Johansson, J., Herranen, S. (2019).

2. Chatbots

■ General Characteristics of Chatbots

Various names have been used for chatbots: conversational AI bot, AI assistant, intelligent virtual assistant, virtual customer assistant, digital assistant. They are "intelligent conversational computer systems designed to mimic human conversation to provide online guidance and support" (Caldarini et. al. 2022). Chatbots have become popular among customers around the world because, thanks to modern technologies (mobile), they make it possible to get information about practically anything at any time (day, night) and anywhere. Jurasek (2022).

■ What is ChatGPT?

An artificial intelligence (AI) chatbot that uses natural language processing to create a human-like conversational dialogue. (Heter, 2023). A form of generative artificial intelligence - a tool that allows users to enter requests to receive human-like images, text, or video created by artificial intelligence. (Craciu, 2018). It is similar to the automated chat services found on customer service websites, as people can ask questions or seek clarification on ChatGPT's responses. "Generative Pre-trained Transformer", which refers to how ChatGPT processes requests and formulates responses. Training with learning by reinforcement through human feedback and reward models that categorize the best answers. This feedback helps improve ChatGPT with machine learning to improve future responses.

■ What is Virtual Assistant?

This is a software based on artificial intelligence that uses the most advanced techniques to help users perform daily tasks.
- has the ability to understand the intent of users and provide accurate solutions to their questions, eliminating any trace of ambiguity;
- has the ability to interact with people in an intuitive way and, over time, learn people's habits and preferences;
- in the field of human resources, virtual assistants become important in an HR department that wants to automate repetitive and time-consuming processes, but also increase productivity.

■ What Are the Benefits of a Chatbot?

Companies and users are still exploring the benefits of ChatGPT as the program continues to evolve. (Pophal, 2022; Selvarage, 2023).
Some benefits include the following:
- enough savings;
- improved content quality;
- education and training;
- improved response time;
- increased availability;
- multilingual support;
- personality;
- scalability;
- natural language understanding;
- digital accessibility.

■ What Are the Limitations of ChatGPT? How Accurate Is It?

Some limitations of ChatGPT are the following:
- It doesn't fully understand the complexity of human language;
- 2021 - lack of knowledge of dates and events;
- answers may sound machine-like and unnatural;
- citing sources, but not giving the sources;
- doesn't understand sarcasm and irony;
- might focus on the wrong side of a question and can't change.

■ Classifying Chatbots

It is useful to classify chatbots, to distinguish them by criteria. (Trofymenko, 2021). Research and analysis of the characteristics of modern chatbots allowed to divide chatbot programs into seven classes as follows:

● *By Purpose:*

- chatbot for conversations are designed for user dialog on abstract topics and do not have a clear purpose;
- chatbot focused on dialog only on a specific topic or to solve a specific problem or purpose.

● *By Interface Type:*

- button communication - the communication of the user with the bot is organized by pressing the selected button in the list of buttons with different names;
- text communication - the communication with the user is carried out in the form of text messages. Chatbot recognizes words that are common in user query, clarifies questions and offers solutions;
- mixed models to form a text response to inquiries, the bot can provide the user with the buttons with clarifying questions;
- communicates the voicemail to the user. The voicemail is first programmatically converted to text, analyzed, and only then synthesized audio response to it. Voice assistants are more natural and easier to use than graphical interfaces;
- runtime interface without dialog interface. The system is complete without a robust runtime interface, which is required to connect virtual agents to external systems. This interface is necessary to communicate with external systems and obtain dynamic information to continue the conversation or fulfill certain intentions.

● *By Number of Users:*

- personal chatbots, which in turn can be divided into two groups: 1. for personal use without data transfer to others; 2. interactive chatbot - some kind of user assistants in interaction (data exchange) with other users or other programs to perform certain actions on behalf of the user; personal calls, search and playback of audio and video files, etc.
- Business chatbots are designed to allow simultaneous use in business to automatically communicate with many customers without involving employees in the service process.

● ***By the Form of Access:***

  ▪ chatbots of certain groups (chats) Messenger are a useful means of communication among its group members and coordination of their interaction;
  ▪ chatbots in the Messenger dialog can be called directly in any dialog just by typing the icon and bot name;
  ▪ subscribed chatbots allow you to collect a chatbot subscriber base on the site and send mass and personal emails within Facebook Messenger, Slack, Viber and Telegram, among others.

● ***By Algorithm:***

  ▪ Simple chatbots interact with users on the basis of a prepared script - a decision tree of a tree structure containing a set of common answers, i.e., the answers are selected from the template phrases of the script by keywords.
  ▪ "Intelligent chatbots" are based on an artificial neural network that "understands the meaning of the conversation. The conversation path is determined by default based on the preparation of data (training samples) used to teach the machine learning model.
  ▪ Hybrid chatbots are a combination of the first two types of chatbots. Bots of this type communicates with the user in a predetermined way but uses AI to recognize that of the user's intentions, but also extract valuable data from user messages (name, date, point, etc.).

● ***By Functionality:***

  ▪ information and communication - a chatbot that does not have a specific purpose and is designed solely to support communication with people, for example, to share information about special offers and discounts;
  ▪ "Questions and Answers-" chatbots designed to provide simple answers on the principle of "one question, one answer;
  ▪ chatbot that generates data based on user responses to achieve specific goals;
  ▪ chatbot that allows immediate execution of certain actions.

● ***By Location:***

  ▪ chatbots are found on websites. In large part, companies are willing to embed chatbots on their websites to help the customer to answer questions or resolve other requests or communication issues related to tasks or settings unique;
  ▪ in messaging. They are used for quick interaction with customers, even in slow internet or roaming conditions. The reason for the creation and popularity of certain groups in messengers in Facebook Messenger, Slack, Viber or Telegram is a combination of people in groups with certain common interests;
  ▪ in specialized software applications, the use of chatbots facilitates and accelerates the process of goods or services.

■ **SWOT Analysis of Chatbots**

A number of studies have conducted a SWOT analysis of chatbots and their use in the private and public sectors. (Jurasek et al., 2022)

● ***The advantages of chatbots, from our point of view, based on the mentioned studies, include:***

- it is a valuable source of customer information;
- offers new ways of customer support;
- it helps to optimize costs and improve customer satisfaction.

● *However, There Are Also Some Disadvantages of Chatbots, for Example:*

- inhuman approach of chatbots can hurt customers;
- (failing to understand requests, misunderstanding the subtleties of human dialog, inaccurately performing tasks, problems understanding accents, providing inaccurate information, triggering false alarms, triggering false alarms, using inappropriate/offensive language);
- implementing chatbots takes time;
- (new data can be added continuously);
- lack of chatbot training data (Help Net Security 2019), which can lead to reduced capacity for conversational nuance.

Internal Factors
A. Forte Points
automation of standardized conversations;
simple without the need to use an external application (+extensibility) compared to other AI technologies;
low cost;
incremental improvements over time;
(conversation, training);
the above mentioned advantages.
B. Weakness
- correct data, because;
- (not the naturalness) of the conversation;
- unemphatic technology;
- the lack of AI technology equipment for sophisticated conversations;
- wrong answers due to mixing keywords with robots that work on the principle of text recognition.

External Factors
A. Opportunities
- the interaction with the more natural and easier chatbot;
- vocal assistants' cause;
- virtual agents' cause;
- new technologies (RCS);
- a friendly and welcoming approach to public administration towards younger generations and technology-based individuals.
B. Management
- negative user attitudes towards chatbots;
- conservative public administration by nature;
- (chatbots are certainly not for everyone).

3. Human Resources Chatbots

An HR chatbot is an advanced conversational AI programmed to handle various HR-related tasks and questions. It is not just a tool for answering basic questions, but an intelligent system equipped with generative AI and natural language processing (NLP) capabilities.

These capabilities enable it to understand and answer various HR questions ranging from benefits and leave policies to more complex issues such as performance appraisals, integration processes and training programs. (Selvaraj, 2023)

The main objective of an HR chatbot is to automate and streamline tedious and repetitive HR tasks. This can significantly improve the employee experience, reduce the workload of HR professionals, and allow them to focus on strategic and complex issues. These chatbots are adept at conducting employee surveys, collecting feedback, and facilitating self-service portals, making them an integral part of the modern HR toolkit.

HR chatbots are versatile and can be integrated across multiple platforms, including intranets, corporate websites, messaging apps, and mobile applications. This multi-platform presence ensures that employees can access HR support whenever and wherever they need it, promoting a more connected and efficient workplace.

■ What are the benefits of HR chatbots?

The integration of HR chatbots is redefining the efficiency and effectiveness of HR departments in various industries. (Selvarrage, 2023)

Here are the key benefits that these digital assistants bring to HR:

- Accelerated processes
- Easy query resolution
- Transparency of responses
- Increased productivity
- Simplified referral processes
- Cost-effective solution
- Facilitates remote work
- Effective processes with real-time analytics

● *Here's a Look at Some Compelling Statistics that Paint a Vivid Picture of the Human Resources Chatbot Landscape:*

1. Improve employee engagement
2. Large-scale adoption and future plans
3. Manage employee requests

● *Future Human Resources with Chatbots*

The role of human resources chatbots is becoming increasingly important in the workplace. They are not just a trend, but an essential tool in the evolution of human resources management. With the ability to streamline processes, improve the employee experience, and provide useful information, HR chatbots are reshaping the HR landscape. As companies continue to navigate the complexities of the modern workplace, the adoption of HR chatbots will be critical to remaining competitive, efficient, and responsive to employee needs.

4. Artificial Intelligence in the Public Sector Using Chatbots

Artificial Intelligence in Social Security: The Case for Intelligent Chatbots

Artificial Intelligence (AI) is rapidly entering the public sector, as public institutions seek to develop efficiency, excellent quality and personalized service for their customers. Social security institutions are no exception to this phenomenon. While AI applications are diverse, "IA conversational" or "chatbots" are leading to the adoption of AI by government agencies. In a survey of 166 government agencies around the world, chatbots emerged as a leader, with 26% of public agencies already implementing them and another 59% of public agencies

planning to implement them within three years. In an analysis of 230 AI-enabled public services in the European Union, chatbots emerged as the first choice, accounting for more than one-fifth of the cases (European Commission, 2020). The global market for conversational artificial intelligence, including chatbots and intelligent virtual assistants, is expected to grow at a compound annual growth rate (CAGR) of 22% between 2020 and 2025, reaching nearly $14 billion (USD) (Deloitte, 2017).

A chatbot (or virtual assistant) is an algorithm that conducts a textual or verbal conversation. While chatbots are not really a new technology - for example, the first chatbot was planned back in 1966 to find out if people could figure out if they were talking to a person or a car - the potential of chatbots is now significantly higher due to advances in AI technologies and ever-changing communication models (Van Noordt and Misuraca, 2019).

Chatbots are computer programs that are able to recognize a user's input using technology matching models, access information, and respond with information found in the knowledge base. While basic chatbots communicate through pre-programmed responses, the most advanced use AI, which allows machines to better analyze and process the context of language (known as natural language processing, or NLP), which in turn allows chatbots to handle more complex tasks and have more human-like conversations. Chatbots are increasingly being used by governments to manage large volumes of contact with citizens, helping them navigate complex policies and laws to ultimately access quality public services (Henman, 2020).

While chatbots can improve petitioner satisfaction, which can improve operational efficiency, implementing a chatbot is not an easy process. The opportunities, costs, and risks associated with chatbots can vary significantly depending on the implementation techniques, means of communication, objectives, operational capacity, and communication channel (ISSA, 2021).

The International Social Security Association (ISSA) promotes the responsible use of chatbots through its guides. ISSA Guide on communication by social security administrations (ISSA, 2019), Guide 10 refers to the "strategic use of new communication technology" in all areas related to the use of chatbots in social networks and messaging systems, Guide 14 is about customer-centric information. In the ISSA Guide on Quality of Service (ISSA, 2019), Guide 5 focuses on "understanding users' needs and experiences", which also applies to the development process underlying chatbots. Finally, the ISSA Guide on Information and Communication Technology (ISSA, 2022) refers to the implementation of a service and processing office of requests, applications, and, including virtual service offices and potential uses of emerging technologies, which contextualize the use of chatbots as an application of artificial intelligence.

The ISSA has facilitated discussions among member institutions to highlight the complex nuances surrounding chatbots. In particular, a session dedicated to artificial intelligence at the 16th ISSA International Conference on Information and Communication Technology in Social Security highlighted the opportunities and complexities associated with AI-enabled chatbots.

The National Employment Office (Office national de l'empoi - ONEM) in Belgium launched a chatbot to alleviate the pressure on the contact center caused by unprecedented volumes following the COVID-19 crisis (National Employment Office, 2021 and 2022).

The first chatbot, called Marc, was launched on the ONEM website in May 2020. In its initial phase, the chatbot was designed to handle only one type of customer request: it provided citizens with quick access to the copies of tax certificates they needed and helped them file their tax returns. In May 2021, the chatbot's capabilities were significantly expanded and a new chatbot named Ori was launched. Based on the analysis of the questions customers asked Ori, an updated version was released in December 2021.

Finland's Social Insurance Institution (Kela) has launched two chatbots, Kela-Kelpo and FPA-Folke, to help customers find information about benefits on Kela's self-service web portal. Based on natural language processing, the chatbots speak two languages, Finnish

and Swedish, and understand English. Kela initially launched chatbots in 2017, which were supplemented with information about a growing number of benefits in 2017 and 2021. Different chatbots were consolidated as Kela-Kelpo/FPA-Folke in 2020 to prevent customers from switching between different chatbots to learn about different benefits. These conversational chatbots make it easier to discover and interpret information, and complete benefit applications. In addition, the enhanced chatbot provides personalized advice based on contextual variables when customers complete applications for parental benefits and social support. During the COVID-19 crisis, a dedicated chatbot was temporarily installed to answer questions about COVID-19-related social assistance.

The German Pension Insurance (Deutsche Rentenversicherung Bund - DRV-Bund) introduced a chatbot to answer frequently asked questions from its members (Deutsche Rentenversicherung Bund, 2021). The main goal was to ensure 24/7 access to information. The chatbot simulates natural language based on artificial intelligence technologies and has the potential to free up staff time for more complex issues. The chatbot is in the early stages of implementation and usage remains at 5%. DRV-Bund plans to expand the capabilities of the chatbot to include form filling assistance in the near future.

The Malaysian Employees Provident Fund (EPF) launched the ELYA (EPF Loves You Always) chatbot, a bilingual virtual assistant that uses natural language processing and is supported by live chat (Employees Provident Fund, Fund, 2021 And 2021). EPF has a contact center to manage questions, the daily volume of 5,000 calls, which exceeded its capacity of 4,000 calls per day, resulting in the removal of 25% of calls. At the same time, 82% of the questions had already been answered on the EPF website, indicating an inefficient use of the contact center. Another survey showed that 55% of customers found the EPF website difficult to navigate. Therefore, ELYA was introduced to help customers find information themselves and to reduce the workload of civil servants.

The launch of the ELYA chatbot was preceded by a detailed analysis of problems and needs in 2017-2018. A basic bot was first introduced in 2019-2020, followed by the current conversational bot in 2021-2022. EPF plans to further enhance ELYA's capabilities in 2023-2024 to enable the bot to provide advice. ELYA knows both English and Bahasa, the Malaysian language, and provides conversational and interactive queries on 30 EPF products and services. It is available 24/7 on the EPF website and is supported by real-time escalation to a human agent during business hours. ELYA is based on a representative knowledge base that has been carefully consolidated based on input from customer agents, customer emails and FAQs received by the contact center. ISSA Guidelines on Communication by Social Security Administrations, in particular Guide 14. Customer-centered information was mentioned in the design of ELYA. It also supports the four principles of the ISSA Guidelines on Good Governance (ISSA, 2019), namely transparency, predictability, participation and dynamism, as well as the use of clear and simple language, with a focus on user-centered platforms.

According to some estimates, by the end of 2022, on average, people will talk to robots more often than to their own husbands (Deloitte, 2017).

Therefore, chatbots will become an integral part of the overall strategy of communication with customers of social security institutions. They have some characteristics:

They are complementary to existing digital and human channels: they can replace some channels, improve others, and in some cases other channels will coexist because chatbots may not be desirable due to privacy and legal frameworks. The development cycle associated with chatbots cannot be underestimated: the absolute complexity of developing algorithms to translate administrative information into conversational content, taking into account the customer's context.

Chatbots need to be built on customer insights, which means regular interaction with customers for feedback. Finally, chatbots raise new legal and ethical concerns for social security institutions (Henman, 2020). For example, ONEM had to ensure that the bot did not collect personal data in accordance with strict privacy laws. As AI becomes more

sophisticated, a key concern is that it could learn harmful behaviors from customer interactions (ISSA, 2020).

As the above experiences show, public institutions proactively manage any liability and customer protection issues and are better positioned to fully reap the benefits of intelligent chatbots. The ISSA supports member institutions to successfully adopt chatbot technology and address implementation challenges, particularly those related to the application of AI, through guidelines (ISSA, 2022), sharing of institutions' good practices (ISSA, 2020 and 2022), and organizing meetings.

5. Technostress – the Dark Side of Technology

Although technology is largely beneficial to employees and public institutions in general, it can also have "dark sides", such as technostress. Technostress is a psychological state of stress associated with the use of IT or the demands of using IT. It is associated with feelings of anxiety, mental fatigue, skepticism, and ineffectiveness. Workplace technologies can be intrusive, contribute to a sense of techno-invasion, and become overwhelming, leading to high pressure in daily work, perceptions of work overload, information fatigue, frustration, demoralization, loss of motivation, exhaustion at work, poor performance at work, poor performance at work, intentions to quit a job regardless, and job dissatisfaction.

The effects of technostress have consequences such as anxiety, fatigue, skepticism, and ineffectiveness related to the use of ICT, with computer anxiety being one of the most studied technostress experiences. Research on attitudes towards computers and the Internet, more recently from the invasion of artificial intelligence through the use of chatbots in public institutions, have reported that some adults manifest a high level of anxiety towards the computer, technology in general, and experience feelings of unease, discomfort, and frustration and stress, anticipating the disastrous consequences of their mistakes. The sense of professional instability in the use of ICT is another component of technostrain and refers to the perceived level of inefficiency in the use of ICT (Schaufeli & Salanova, 2007).

Researchers have also often examined computer anxiety and computer self-efficacy in relation to the dimensions of the technology acceptance model (Venkatesh, 2000), such as perceived usefulness, perceived ease of use, and behavioral intention, behavior, and computer skills. In institutional settings, the technology acceptance model has been linked to issues such as the reasons for collaboration, the costs and benefits of collaboration, the characteristics of the work group, and attitudes toward change. Previous research has shown that public institutions that want to promote the use of an IT system should provide monitoring support and improve extended peer relationships to facilitate a more favorable attitude toward IT systems (Lee, Rhee, and Dunham, 2009).

Another dark side of technology could be explained by excessive and compulsive work with ICT, namely technodependence.

Technodependence is considered a form of workaholism (Porter & Kakabadse, 2006), (Salanova et al., 2013).

Thus, technodependence is a form of technostress due to an uncontrollable compulsion to misuse ICT for long periods of time (Salanova et al., 2013). As expected, higher levels of technodependence are associated with lower levels of well-being (Huang, 2010).

6. Iris Chatbot for Human Resources Management in Romania (IRIS, Virtual Assistant for HR)

Changes in the labor market, the digitalization of HR, the need to streamline work processes determine companies and public institutions to put more and more emphasis on the employee experience. In recent years, an HR department has become a priority the need to

create physical and digital spaces that provide employees with experiences that increase job satisfaction, retention, loyalty, productivity. For this phenomenon, a virtual chatbot assistant has been created that provides constant support to employees and reduces the workload of the HR department.

The IRIS virtual assistant can be found in the Employee Self Service application of the colorful.hr platform. To communicate with IRIS, the user must have access to the Me (Employee Self Service) application of the colorful.hr platform. IRIS knows how to respond to you in both Romanian and English and adapts according to the language you have chosen to authenticate to the platform. The role of the IRIS assistant is as follows:

- employees get the answers they need immediately.
- provide employees with interactive and user-friendly experiences.
- improve employee productivity.
- it eliminates human errors.
- reduce the workload.
- reduce costs.

Iris is used to make the best decisions.

- Let's find out what problems employees have and offer customized solutions.
- s Identify the professional training opportunities in the company.

Who needs IRIS?

- Small companies that don't have an HR department.
- Large companies where the HR department is overburdened.
- Entrepreneurs who want to focus on business development and delegate repetitive tasks.

What can you find out with IRIS? Once you have made your request, IRIS will show you the latest version of your payroll. Situation of the remaining days of leave. IRIS displays

- the number of days of leave according to the employment contract.
- number of additional days of leave.
- Number of vacation days taken.
- the number of planned leave days.
- the remaining leave balances.

Conclusion

With the help of this virtual assistant, Romania could introduce the recruitment and selection of public employees, including in the pension houses, an essential condition is the increase of salaries and new visions in the new salary grid by hiring high performance people and reducing people, equipping them with high performance IT technology.

A chatbot helps the economy of the country and the well-being of both civil servants and petitioners.

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ACTIVE VOICE - PASSIVE VOICE TRANSFORMATION WITH MOODLE. INTRODUCING GRAMMAR ASPECTS OF PASSIVIZATION ON THE E-LEARNING PLATFORM

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Abstract: Passivization or Active to Passive Voice transformation is extensively used in professional communication, as the formal register of the language implies a somewhat more distant tackling of subjects. At this level, collocutors are more likely to be interested in communicating that a certain activity has been performed and there now is a concrete result of it (hence using a Passive construction), instead of stressing who performed that particular action (which is the straightforward implication of the Active Voice structures). Languages for Specific Purposes (LSP), as professional communication devices, witness multiple instances of Passive Voice constructions. Thus, there is a clear need of having such structures analysed and practised with our students in economics, during their language classes. The already well known and quite widely used Moodle platform is, as we have shown in previous studies as well, a helpful instrument in teaching and practising languages. It facilitates quick and permanent access to study materials and to rehearsal pages with schematised info designed in an appealing layout. It is also a useful working device for the students' practice, allowing creation of exercises and tests that shall, by provision of appropriate feedback and related explanations for each case in particular, ensure instant "correction" of tests and provision of customised results for all students taking the said assignments. If in previous articles we exemplified our experience with Moodle in vocabulary introduction, in teaching elements of communication or in practising the grammar aspect of Reported speech, this study will put forward examples of tests and assignments concerning Active and Passive Voice. The exercises created by the authors can be used either during classes or set for individual practice at any time the teacher considers. Obviously, the basic condition is the instructors' and students' access to internet and to a Moodle platform - or similar - and to a common course pages within it, so as the examples given here may be of help and good use to other language teachers and learners.

Keywords: Passive Voice; Active Voice; LSP; language learning; Moodle tools.

JEL Classification: Z19

1. Moodle - an extra aid for grammar lesson
Moodle can be more challenging for the educators willing to put to best use the facilities it provides than for their students. The latter not only are more accustomed with technology in general but also will just 'use' some ready-made tools created within the application, while the former will need to put an effort in setting it up, in creating those tools, i.e. 'programming' Moodle to do what they desire. The result shall however be quite rewarding: "On Moodle, the teacher becomes, to a certain extent, an editor: the publication of a course pushes us to

a form of rigor greater than that to which we are accustomed. Courses already written must be rewritten to fit a new format. This recasting according to new standards and categories is beneficial in the sense that it leads us to question our teachings and, sometimes, it must be said, to dust them off. Publication is also the place where a certain pride in a job well done develops." (Walch, 2023)

Among others, Moodle can be made very useful for the reinforcement of grammar knowledge, being quite appealing to render brief theoretical support by means of the facilities provided. Of course, Moodle cannot successfully replace onsite grammar teaching lessons, where teachers' can directly explain situations and contexts, consider various problematic aspects and answer to all learners' questions. It may by be rather difficult for many students to manage grammar issues just by relying on what Moodle lessons offer. (Plomteux, 2018) They might not have previously been sufficiently prepared and do not detain the exact competence level or master the particular degree of knowledge necessary for dealing with a certain grammar aspect or another, so as to only need or do well with that aforementioned reinforcement. As noted in other works as well, several views, helpful and instructive for researchers and language teachers concerned with using Moodle in teaching grammar, can be found on the dedicated platform (Moodle.org), as held by several stakeholders such as James Steerpike, Matt Bury or Mary Cooch. Whether research discussions and opinions restrain to teaching grammar through Moodle (Ahmad et al., 2022) or to tackling hybrid or flipped approaches (Kerr, 2020) it is of interest to consider them all.

2. Active – Passive Voice Usage

There are numerous topics of grammar that witness extensive use in professional communication. From these, one of a fair relevance especially with the students in the first year of studies in economics is the transformation from Active Voice to Passive Voice and vice-versa. Quite often met in the authentic texts on various fields of economics, the Passive constructions are a common place for the reader of a business text. The skills of accurately transforming or transposing an active voice structure into a passive 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 exposing the result or effect of some action rather than its process as performed by the 'doer'.

Sometimes it is useful to indicate various sites where students can find things clearly explained and where comprehension checking is also provided through diverse tests. Such webpages for the case at stake are for instance https://www.wallstreetenglish.com/exercises/the-passive-form or https://www.businessenglish.com/grammar/passive.html?lang=eng, for English, and https://la-conjugaison.nouvelobs.com/regles/grammaire/les-voix-active-ou-passive-65.php or https://www.francaisfacile.com/exercices/exercice-francais-2/exercice-francais-15951.php, for French, but these are ancillary to the classes and the materials directly provided, as any other bibliography. Resources like these can also be added on Moodle as links to the webpages of interest. However, we shall hereafter refer strictly to the straightforward materials that can be created on the platform by the teachers themselves, on the page of the discipline, material of their own design, that will remain there available to the students as long as the access on their accounts is granted, being direct Moodle facilities and applications especially created for the pages administered by the said teachers, for the use of their students.

3. Theoretical support made available on the platform

Permanent resources providing basic grammar rules in the form of a schematised material

can be created by means of some appealing Moodle devices, namely Label, Book or Page. Such 'grammar info points' can instantly remind students the most important aspects of the grammar topic at stake, for instance of the passivization, as in the case of the current presentation.

3.1. Grammar info point on Active – Passive Voice for Business English

The following examples of grammar info posts (Grammar material on Passivization), Figures 1a-b, 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.

As seen in Figure 1a, a resource webpage was introduced within the page of the discipline, introduced at a certain week when the grammar structures at stake are more relevant for the texts in the study material. A suggestive label, of 'info point', was created, in order to more appealingly introduce this grammar theoretical reminder and reinforcement step.
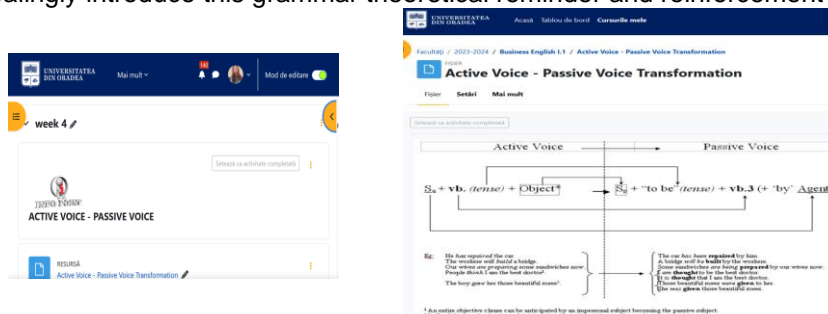
Figure 1a. Layout of grammar point   **Figure 1b.** Grammar info resource webpage

Source: own production on https://e.uoradea.ro/course/view.php?id=65852

By accessing the link under the label, the web page opens and the grammar info is displayed as seen in Figures 1b. However, as already mentioned, this grammar info point is not some elaborate theory if not a short revision, rendered in a graphical form and hence mostly visual, of the said grammar aspect that obviously must have previously been learnt in highschool and before. Thus, the page that opens is merely a schematised display of the rules of passivization, backed up by several examples of Active Voice sentences transformed into Passive Voice, with English grammar specificities also mentioned at the endnotes down the page.

3.2. Theoretical material on Active – Passive Voice for French Language for Business

The 'book' type resource of the Moodle application was used on the page of the discipline of French Language for Business, so as to provide students with a brief review of the grammar aspect of Active Voice and Passive Voice. The information was structured into two 'chapters', namely the subtitles seen in Figure 2a.
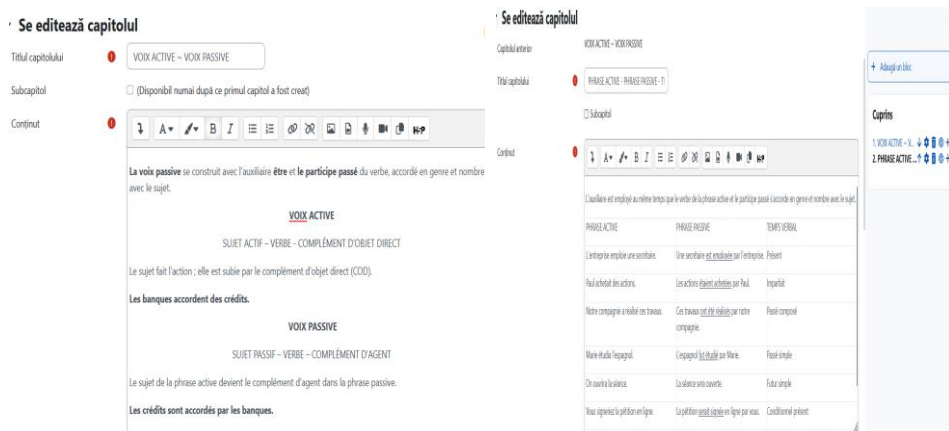
Figure 2a. Creation of content in subtitles 1 and 2
Source: own production on https://e.uoradea.ro/course/view.php?id=59400

The result is a brief and concise online presentation of the grammar aspect at stake. The format permits, by using the 'previous' and 'next' arrows, to easily move back and forth between the two subtitles. The material will be accessed from a link – an access button with the book icon - that is positioned where desired on the page of discipline. The two pages, with quite attractive layout, that are displayed to the students when accessing the link are exemplified in Figure 2b.
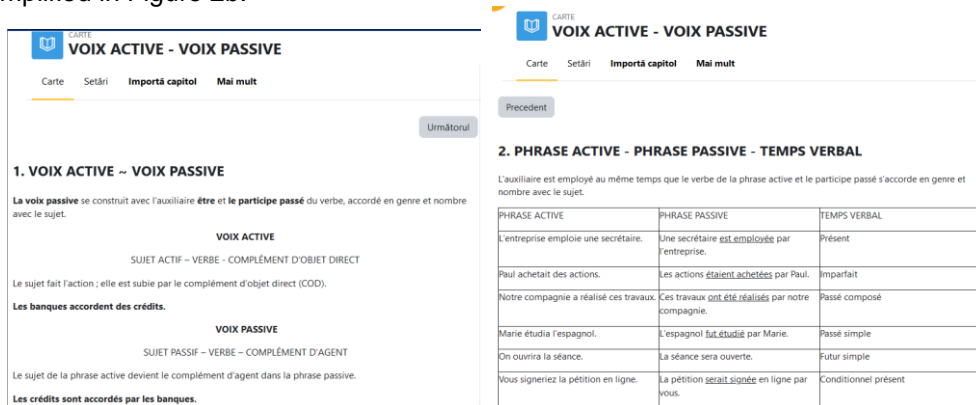
Figure 2b. Students' view of the 'book' pages 1 and 2
Source: own production on https://e.uoradea.ro/course/view.php?id=59400

4. Use of the activity type 'Test'

The Moodle activity of the type 'Test' is the most common instrument that can be used for the creation of exercises, bound for direct online solving, allowing multiple trials, more possibilities of self assessing and of learning through the feedback the application provides. It is this type the one that we used for our assignments regarding passivization and hence it is the test type that comes in the exemplifications presented here further.

4.1. Exercises of Active - Passive Voice transformation for Business English

The following examples of exercises are from the page of the discipline of a course of Business English I.1 taught to first year economic students in the Faculty of Economic Sciences, 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. A caption of one example of variants as they appear in the exercise when clicking the selection arrow button can be seen in Figure 3b. The elements in this section appear as a result of text inclusion in the body of the question, inserting multiple variants, to be chosen from a drop-down selection arrow button, and only one of these variants representing the correct answer in each sentence. This device is produced by means of the coding instruction "MULTICHOICE", used as seen in Figure 3c, 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. For a better view of the encoding, the image shows a large caption presenting exclusively the content of the 'text of question' field of the exercise designing page.
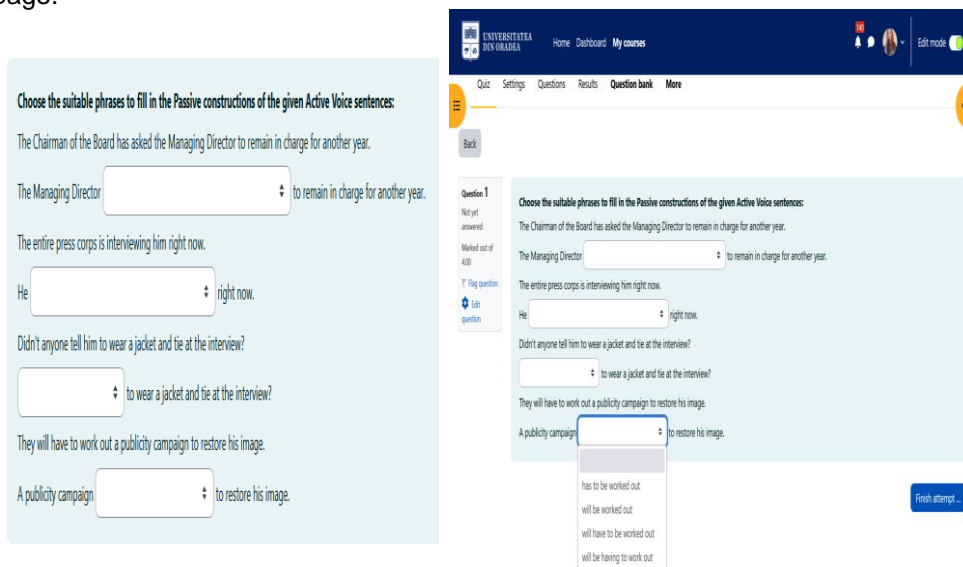
Figure 3a. Layout of exercise page   **Figure 3b.** Exercise page – variants caption
Source: own production on https://e.uoradea.ro/course/view.php?id=65852
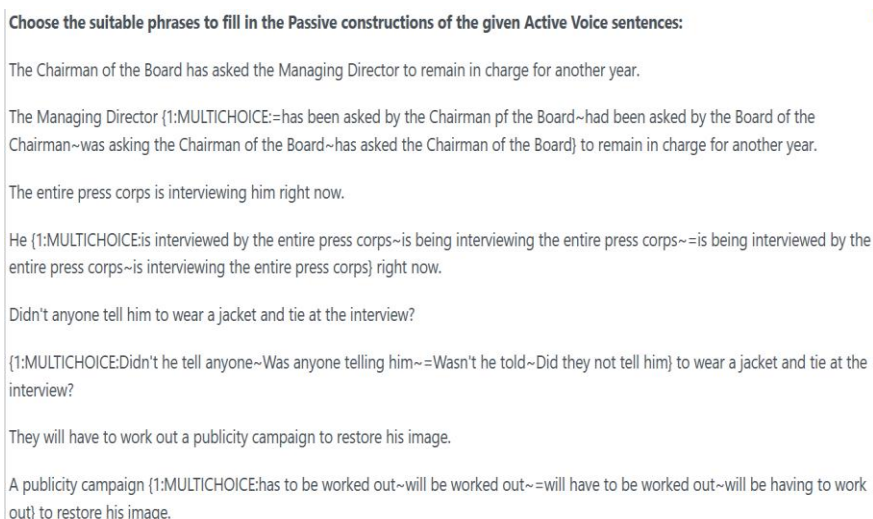
Figure 3c. Encoding process page – use of instruction 'MULTICHOICE'
Source: own production on https://e.uoradea.ro/course/view.php?id=65852

As well as in the example of the exercise presented above, the image seen in Figure 3d is

another snapshot of the field 'text of the question' in an exercise production page, this time of the 'drag and drop' type of exercise.

Figure 3d. Encoding process - use of drag and drop question type
Source: own production on https://e.uoradea.ro/course/view.php?id=65852

This drag and drop type of exercise is built on answers that are to be shown next in the caption of the Choices, introduced as seen in Figures 3e, arranged according to the numbers inserted in the double square brackets in the text of the question when encoding.

Figure 3e. Grouped choices for the drag and drop exercise
Source: own production on https://e.uoradea.ro/course/view.php?id=65852

The fragments are set to belong to different groups (A, B or C in this example) to thus distinguish between the sets of sentences, create a certain order and ultimately render a better looking final result in the exercise page, seen here later.

The result will be an exercise as seen in Figure 3f, and the fact that the choices were grouped distinctly enables a certain categorisation of answers, by colour and shape, as belonging to the diverse sets of sentences.
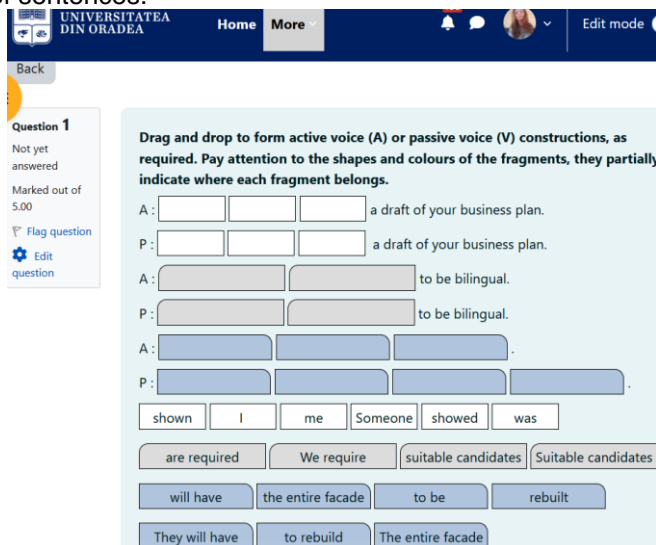
Figure 3f. Drag and drop exercise page
Source: own production on https://e.uoradea.ro/course/view.php?id=65852

To solve this type of exercise, the students will have to position the mouse above one fragment at a time, click on the mouse to grab the respective fragment and then, with mouse button kept pressed, to drag the fragment to the place up in the sentence they consider proper for it and drop it there.

Obviously, responses are automatically corrected by the application, according to the choices such introduced by teachers, numerous students being thus able to practice and self evaluate themselves at the same time either at a certain established date during practical classes or as tests, or whenever the exercise is set available by the teachers.

4.2. Exercises of Active - Passive Voice transformation in French Language for Business

A first example of an exercise is one in which the students have to chose the proper endings of sentences to combine with the beginnings so as to get the correct passive voice constructions. This exercise was produced using the matching exercise type. The following operations were performed on the exercise creation page:

- the instruction for students (indication so as what to do) was introduced in the field 'text of question',

- the choice of 'shuffled' was selected so as the choices for selection of endings shall be returned by the applications randomly,

- 5 points were introduced as default score for the exercise, in accordance to the number of sentences it contains and

- the right combination of fragments were introduced in the 'answer fields', as seen in Figure 4a.
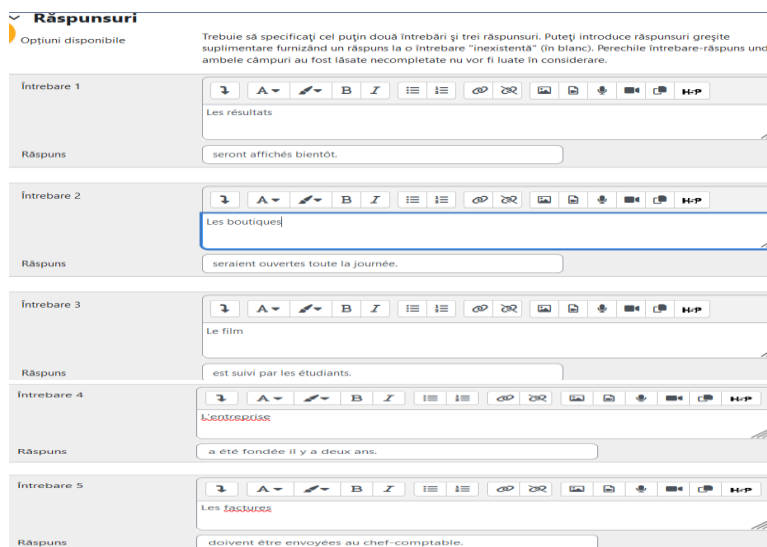
Figure 4a. Creating the 'matching' type exercise
Source: own production on https://e.uoradea.ro/course/view.php?id=59400

The resulting page, i.e. the online exercise page that will appear to the students will contain the five beginnings and drop-down selection arrow buttons next to each, where the endings of the sentences to be matched will pop up when the arrow button is pressed. The layout of the exercise as when accessed by the students is shown in Figure 4b, while the layout of exercise with the first arrow button pressed to see the choices for matching can be seen in Figure 4c.

Figure 4b. Matching exercise page   **Figure 4c.** Matching variants visible
Source: own production on https://e.uoradea.ro/course/view.php?id=59400
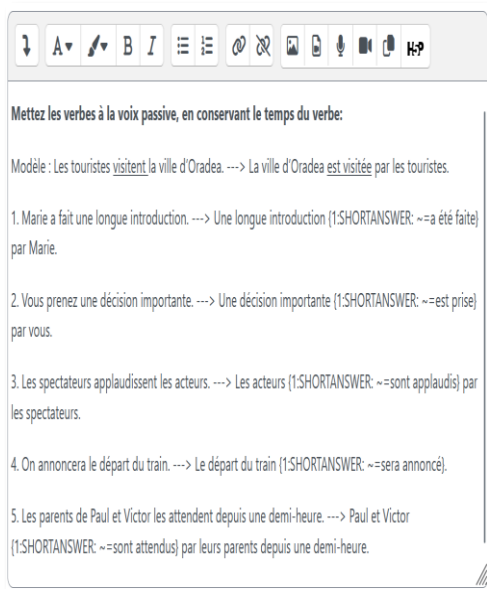
Another exercise requires the students to fill in the gaps with the correct structures of passive voice, starting from the sentence given in active voice. Such an exercise can be created using the 'shortanswer' instruction within the embedded answer cloze type of question. The encoding procedure as seen in Figure 4d, where the text introduced in the field 'text of question' is seen containing the 'shortanswer' coding instruction. This exercise type require that the students introduce their answers from the keyboard and thus they will need to be very accurate even in terms of spelling and punctuation as the computer, unlike a human corrector, allows no interpretations or small oversights.

The resulting page is a gapped text exercise in which the students will introduce from the keyboard the structures they consider right. Figure 4e provides the screenshot of the final layout of the exercise, showing the empty field which have to be filled in by the students.

Figure 4d. 'Shortanswer' encoding   **Figure 4e.** Layout 'fill in the text' exercise
Source: own production on https://e.uoradea.ro/course/view.php?id=59400

5. Conclusion

Permitting scheduled practise, self-evaluation, testing, learning through discovery and through practise, by availability of more trials, Moodle is obviously an invaluable tool that can be made useful for innumerable types of language learning areas, from vocabulary to grammar aspects. The tests and other practising tools once formatted into the application render then forth accurate, timely, useful response to innumerable students to come.

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Pages on the institutional e-learning platform:
https://e.uoradea.ro/course/view.php?id=65852 - page of the discipline for English
https://e.uoradea.ro/course/view.php?id=59400 - page of the discipline for French

SUCCES FACTORS AND OBSTACLES IN IMPLEMENTING INTERCOMMUNITY DEVELOPMENT PROJECT

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Abstract: *The present paper aims to determine the success factors and obstacles in implementing intercommunity development projects through associations of public authorities. Intercommunity cooperation institutionalizes the cooperation between two or more local public authorities, allowing them to jointly administer certain important services, and in recent years this type of cooperation has been on an upward trend in Europe as well as in Romania. The study is empirical and the research is quantitative, the results reflecting the responses to a questionnaire applied to public authorities members of an intercommunity development association. The first part of the study focuses on literature review, most relevant researches in the field being presented as well as the differences between the existing studies and the present one. The study continues with the analysis of the main success factors and barriers in implementing intercommunity development projects based on the results obtained from the questionnaire applied. The results of the questionnaire were interpreted using the Excel analysis tool. In the end, the main conclusions are drawn, as well as possible future research directions that can complement the present study. The results of the research are useful for improving intercommunity development projects on all levels: preparation, management, communication, implementation, results and final beneficiaries, and to overcome obstacles that have been identified.*

Keywords: *project management; success factors; obstacles; intercommunity development projects.*

JEL Classification: *R58.*

1. Introduction

Intercommunity cooperation institutionalizes the cooperation between two or more local public authorities, allowing them to jointly administer certain important services. In recent years, it has been observed that this type of cooperation is on an upward trend both at the European level and at the level of Romania, the motivations that lead public authorities to cooperate being related to administrative and financial factors. Due to the limited financial autonomy and the lack of administrative capacity, many administrative-territorial units are unable to satisfy the needs of citizens at optimal costs, and one of the most convenient solutions is the association structures. However, intercommunity cooperation offers public authorities a solution to create economies of scale and at the same time allows preserving local autonomy (Allers and van Ommeren, 2016).

Depending on the purpose and objectives established, cooperation can take many forms: from informal networks that have the strict role of facilitating the exchange of information, to extremely well-structured and institutionalized cooperations. Despite the obstacles that prevent cooperation between public authorities, and which most often relate to the lack of trust, the lack of financial resources and the fear of losing autonomy, intercommunity cooperation offers numerous benefits: from better services/products for citizens and facilitating access to grants, to eliminating the risk of duplication of efforts and promote a

culture of cooperation and consultation between public authorities (Council of Europe, 2008).

The role of this research is to determine the success factors and obstacles in the implementation of projects through intercommunity development associations, and the research question was formulated as follows: What are the success factors and obstacles in implementing intercommunity development projects through associations?

To answer the research question, a study was conducted on the implementation of intercommunity development projects through an intercommunity association based in Satu Mare County, Romania. The research focused on the analysis of success factors and obstacles starting from three projects implemented through the Association. A questionnaire was developed, focusing on the one hand on the success factors and on the other hand on the obstacles, and applied to the members of the Association. The research methodology was quantitative, the developed questionnaire being applied to a number of 22 members of the association, administrative-territorial units from Satu Mare County.

2. Literature review

Intercommunity development projects are public project implemented by associations formed out of public authorities. According to Wirick (2009), public projects are those projects that are implemented, administered or supervised by one or more public institutions, while Gasik (2006) prefers a more comprehensive definition according to which public projects are projects implemented for the benefit of the public.

In the context of this paper, we will consider intercommunity development projects as public projects implemented through intercommunity development associations. Intercommunity development projects are much more complex compared to public projects, due to the number of public authorities involved and the delegation of implementation to an external public law body. Despite this complexity, intercommunity development projects can bring about individual and collective outcomes that local communities would not have been able to achieve acting alone. More than that, the numerous partners mean different experiences, knowledge, resources that each involved community can bring as a contribution to the success of a project.

Research on success factors in the implementation of intercommunity development projects reveals that aspects such as formal and informal governance are of crucial importance. While formal governance refers to the specific framework and procedures used in implementing intercommunity projects, informal governance concerns trust. The creation of a coordination structure in the form of intercommunity development associations ensures that the interests of all parties involved are taken into account when writing and implementing projects, but also a greater degree of involvement from the participants (Kujala et al., 2020). Such a coordination structure ensures that each of the parties involved will know what is expected of them and what their role is, provided there is good communication between the coordination structure and the parties involved.

The importance of the management structure for intercommunity development projects is also confirmed by a study carried out in 2017 on collaboration in the field of waste management, according to which the institutional arrangements for the implementation of the projects proved to have an essential role in the case of all the projects analyzed, regardless of the size of the public authorities involved. Other important elements are considered to be the involvement of representatives of the parties involved in project management and the existence of professional managers (Soukopová and Vaceková, 2017).

In a similar analysis regarding the success factors in the implementation of public projects, it is shown that these are: project management actions (communication systems, planning, appropriate organizational structures, quality measurement, etc.), project procedures

(procurement methods and strategies), the human factor (experience, involvement, etc.), project factors (type, size, nature and complexity of the project), and external factors (social, economic, legal, political, physical and technological) (Chan et al., 2004).

In a study carried out in 2021 on the success factors and barriers in the implementation of intermunicipal cooperation projects for the development of social infrastructure, in the absence of the existence of a coordination structure such as the intercommunity development association, Eikeland and Maeland concluded that the success factors and barriers can be grouped into the following categories: end users, employees, management, results, organization and collaboration (Eikeland and Maeland, 2021). Some of these categories will also be used in this case study, adding an element that makes the implementation of intercommunity development projects even more complex, namely the existence of an intercommunity development association responsible for preparing and implementing projects that target several administrative units.

Regarding the barriers in the implementation of intercommunity development projects, an analysis carried out in 2019 regarding the barriers in the implementation of integrated projects, reveals the fact that there are many such obstacles, which can be classified into 3 large groups, as follows: capital factors (financial barriers); organizational factors (managerial barriers), contractual barriers, educational barriers, communication barriers and technological barriers, environmental or external factors (cultural, legal and political) (Kahvandi et. al, 2019).

Other elements that could affect the success of a project is the neglection of partners by the coordination structure, in this case the intercommunity development association. The coordination structure must be careful in achieving a good balance between the freedom granted to the parties involved and their control/coordination. Time pressure can also be a barrier to project implementation, as most intercommunity development projects are implemented within a limited period of time. We should also not omit factors such as communication and cooperation, which can crucially affect the implementation of such a project.

3. Success factors and obstacles in implementing intercommunity development projects

In order to determine the main success factors and obstacles in the implementation of intercommunity development projects through associative structures, a questionnaire containing a number of 41 questions was developed. The questions were grouped according to the main categories of success factors/obstacles in the implementation of intercommunity development projects, namely: project preparation (with questions focusing on drafting/preparing the project), project management (with questions focusing on project management), communication (focusing on communication between the management team from the Association and the managers from the partners), project implementation (questions regarding the project implementation phase), project results (referring to the results obtained as a result of project implementation), and final beneficiaries/target group (looking at the relationship and benefits of the project to the target group).

The questionnaire was applied online to a sample of 22 representatives of the members an intercommunity association based in Satu Mare County. The results of the questionnaire were interpreted using the Excel analysis tool. Respondents were asked to check answers from 1 to 5, where 1 meant that they did not agree at all with that statement and 5 that they strongly agreed with that statement. In what follows, we will analyze the answers on the main categories of success factors considered.

With regard to the project preparation phase, questions were asked regarding the project development phase, which is considered essential for the success of any project. The results of the questionnaire show that the clear establishment of the project's objectives is

considered one of the success factors, along with the particularities of each partner involved in the project.

The lowest median score was obtained for the question regarding the involvement of partners in project planning. This results implies that it is not considered as an important factor as the other two factors related to the preparation of the project, probably also due to the fact that the partners expect the Association to prepare the project, without the direct involvement of the partners, but taking into account the particularities of each one.

Figure 1: Success factors related to project preparation
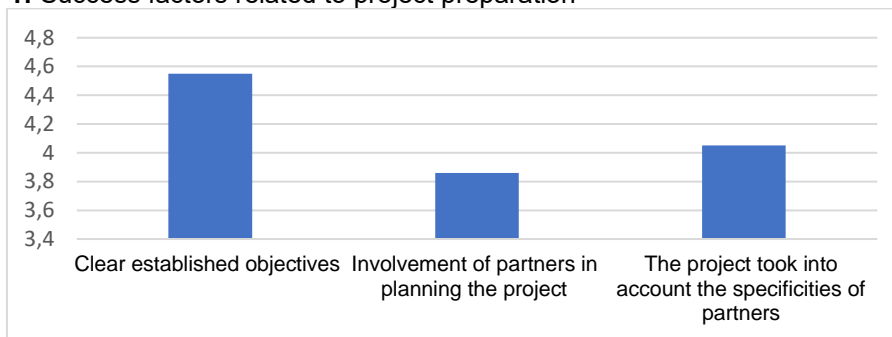
Source: Own processing of the questionnaire results.

The second category of success factors concerned the project management in general. Figure 2 shows that the best scores were obtained for the questions that concerned the management of the project through the intercommunity development association and the cooperation between the management team and the member partners, while the number of co-opted partners did not receive an equally good score, with the result that this aspect is not considered to be as important as the other two in terms of project management.

Figure 2: Success factors related to project management
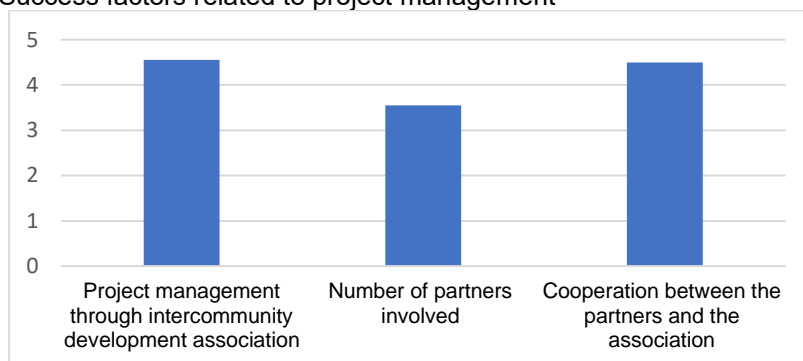
Source: Own processing of the questionnaire results.

The third category of success factors taken into account were those related to the communication between the Association's team and the partners as well as the final beneficiaries. All success factors in the implementation of intercommunity development projects related to communication achieved very good and very close scores. The partners appreciated that for the successful implementation of intercommunity development projects, good communication is needed between the management team of the Association and the partners involved, informing the partners about their responsibilities in the implementation of the projects, but also communication between the Association and final beneficiaries/target group through partners.

Figure 3: Success factors related to communication
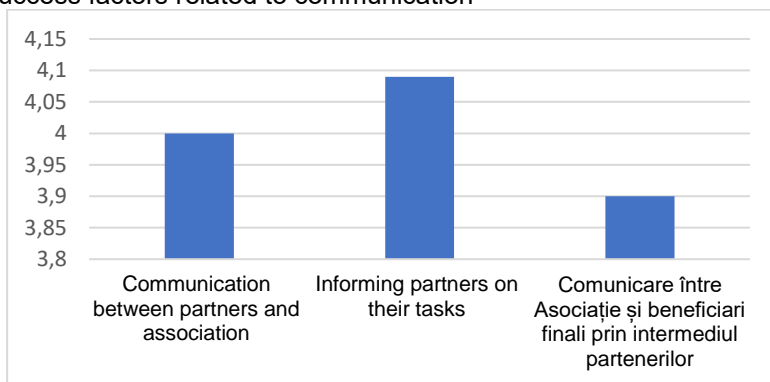
Source: Own processing of the questionnaire results.

The fourth category of success factors concerned the implementation phase of the project. The respondents appreciated that the professionalism and involvement of the association team, and the absence of external factors that cause changes/delays during the implementation period are major contributors to the success of intercommunity development projects, while the implementation of the project according to the initial planning in terms of resources and time obtained a slightly lower score in compared to the first two factors.

Figure 4: Succes factors related to the project implementation
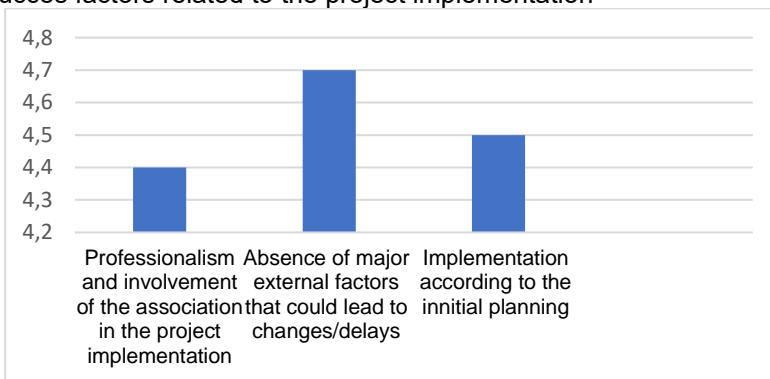
Source: Own processing of the questionnaire results.

The penultimate category of success factors concerned the results of the project. It is interesting to note that although the majority of respondents consider that one of the success factors of intercommunity development projects is the correspondence between the results obtained as a result of project implementation and those anticipated, and that it is important that these results are useful for the partner, a much lower score was obtained for the question that concerned the transposition of the project results at the level of the administrative unit.

Figure 5: Success factors related to the project results
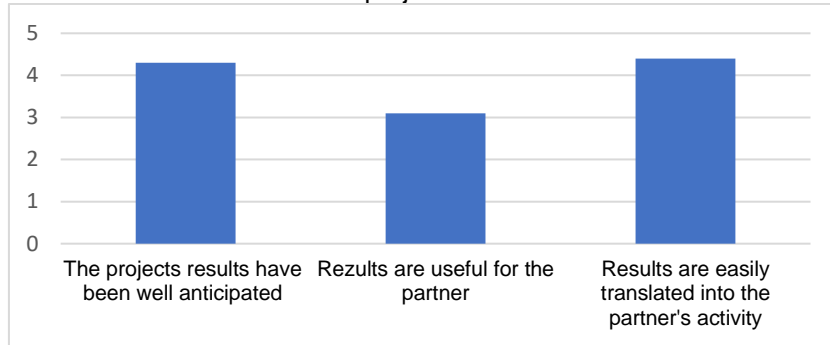
Source: Own processing of the questionnaire results.

The last category of success factors considered the communication with the final beneficiaries and their perception of the project. The respondents appreciated that the success of a project largely depends on the ease with which the target group is mobilized to participate in the project activities, while the constant information of the target group about the activities and their degree of satisfaction is not so important in the implementation of intercommunity development projects.

Figure 6: Success factors related to communication with final beneficiaries
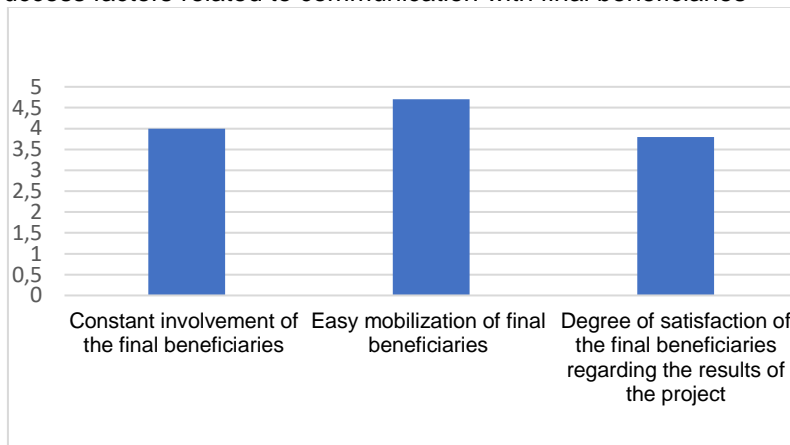
Source: Own processing of the questionnaire results.

The results of the questionnaire revealed that the most common obstacles in the implementation of intercommunity development projects are considered to be:
- the lack of clarity in establishing the objectives of the project during the drafting period;
- not taking into account the particularities of each partner in the project preparation stage;
- the high number of partners targeted by the intercommunity development project, a fact that made the implementation of the project difficult;
- failure to inform the employees from the partners about their responsibilities;
- reluctance shown by the employees of the partners during the implementation of the project;
- transposition of the project results into the partner's activity;
- the occurrence of changes/delays in project implementation due to the COVID-19 pandemic;

- difficult mobilization of the target group/final beneficiaries to participate in the project activities, the latter being probably one of the biggest shortcomings/obstacles in the implementation of inter-community development projects.

The highest scores were obtained for the obstacles focusing on: the number of partners targeted by the project; the reluctance shown by the employees of the partners during the implementation of the project, the changes/delays caused by the COVID 19 pandemic and the difficult mobilization of the target group/final beneficiaries to participate in the activities of the intercommunity development project.

4. Conclusions

The purpose of this research was to determine what are the success factors and obstacles in the implementation of intercommunity development projects through intercommunity development associations.

The results of the research seem to confirm that the success of projects is no longer measured strictly in terms of compliance with the budget, time period and indicators (Albert et al., 2017), but rather success is a combination of these hard factors and factors related to the implementation of the project, results obtained but also effects on the target group or the final beneficiaries.

The research revealed that from the perspective of the members of the associative structures, the success factors in the implementation of intercommunity development projects are found in all the 6 listed categories equally, but of greater importance are: establishing clear project objectives, project management through the structures associations, the collaboration between the association team and partners, informing the partners about their responsibilities, transposing the project results into the partners' activity, but also obtaining project results according to the initial planning.

The results of the questionnaire revealed that the most common obstacles in the implementation of intercommunity development projects are considered to be: the lack of clarity in establishing the project objectives during the drafting period, the failure to take into account the particularities of each partner in the project preparation stage, the large number of partners targeted by the intercommunity development project, which made it difficult to implement the project, reluctance shown by the partners' employees during the implementation of the project, the transposition of the project's results into the partner's activity, the occurrence of changes/delays in the project implementation due to the COVID-19 pandemic, the difficult mobilization of the target group/final beneficiaries to participate in the project activities, the latter being probably one of the biggest shortcomings/obstacles in the implementation of intercommunity development projects.

It must be recognized, however, that although the research is useful, it is limited compared to the vast field on which it focuses. This research only considered the perception of members of one association regarding the success factors and obstacles in the implementation of intercommunity development projects, and due to this limitation, the quantitative research could be expanded in the future to study the perception of members of other associative structures. Moreover, the qualitative research carried out in this study should also be complemented with a qualitative view that would allow respondents to add to the equation other success factors or obstacles that may have been omitted in this research. Despite these shortcomings and limitations of the research carried out, the obtained results have practical utility. First of all, the perception of success factors in the implementation of intercommunity development projects through collaborative structures was identified, studies of this kind being limited in number. Secondly, the study identified the main obstacles in the implementation of this type of projects. The identification of success factors and obstacles in the implementation of intercommunity development projects allows an improvement of this type of projects on all levels: preparation, management, communication, implementation, results and final beneficiaries.

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ECONOMIC CONSEQUENCES OF WAR IN UKRAINE: A COMPREHENSIVE ANALYSIS

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Abstract: *The armed conflict that erupted in Ukraine has had profound economic ramifications, not only for the country itself but also for the wider region. This paper aims to provide a comprehensive analysis of the economic consequences of the war in Ukraine, exploring its impact on various sectors and long-term development prospects. Drawing upon a range of primary and secondary data sources, the study presents a multifaceted assessment of the economic effects, considering both immediate and long-term implications. The paper examines the direct costs of the conflict, including the destruction of infrastructure, loss of human capital, and disruption of production and trade. It investigates the impact on key sectors such as agriculture, manufacturing, energy, and finance, highlighting the challenges faced by businesses and the labor market. It examines the role of external financial assistance and the effectiveness of economic policies implemented during the crisis. Finally, the study concludes by synthesizing the key findings on the economic consequences of the war in Ukraine. These recommendations encompass both short-term measures to address immediate challenges and long-term strategies to foster sustainable economic development and reconciliation. This comprehensive analysis of the economic consequences of the war in Ukraine contributes to the existing literature by providing a nuanced understanding of the multifaceted impacts of the conflict. It offers valuable insights for policymakers, international organizations, and researchers seeking to comprehend and address the economic challenges arising from war-affected regions.*

Keywords: war; Ukraine; economy; consequences.

JEL Classification: F00; F19; F50; F60.

Introduction

Ukraine has a broad, lower-middle-income economy that is located in Eastern Europe. It expanded substantially between the years 2000 and 2008, until the global Great Recession that affected the whole world hit Ukraine. Beginning with 2010, the Ukrainian economy recovered until 2013. After that, the economic situation was affected by the conflict with Russia that began in 2014. The conflict is having significant economic consequences for Ukraine, including: GDP contraction. As a result of the conflict, Ukraine's GDP contracted as industries were disrupted, commerce was hampered, and investor confidence was eroded. Trade disruptions: the war interrupted trade routes and economic relations with Russia, a key trading partner, and caused commerce to shift to other markets. Currency depreciation: the Ukrainian hryvnia suffered severe devaluation as a result of monetary instability and geopolitical disputes. Energy dependence: historically, Ukraine has depended on Russia for a significant percentage of its energy sources, especially natural gas. The dispute highlighted the importance of energy independence in order to lessen reliance on Russian supplies. Destruction of infrastructure: active military operations and fighting in specific parts of Ukraine have resulted in infrastructure destruction, including transportation systems and manufacturing enterprises. Population Displacement: the violence caused internal displacement, affecting the local economy and putting a burden on social assistance.

Foreign Direct Investment and Financial Flow: The crisis and attendant uncertainties reduced foreign direct investment as well as financial flow from Ukraine.

The armed conflict that erupted in Ukraine has had profound economic ramifications, not only for the country itself but also for the wider region. According to Ukraine's President, "nearly 12 million Ukrainians have become internally displaced. Over 5 million people went abroad" ("Speech by the President of Ukraine in the Chamber of Deputies of Luxembourg", 2022). The economic consequence of the conflict is evident. Nevertheless, war costs include not just direct casualties but additionally lost revenue and prospects, as well as a reduction in growth potential. This paper aims to provide a comprehensive analysis of the economic consequences of the war in Ukraine, exploring its impact on various sectors and long-term development prospects. The Russian invasion of Ukraine stunned worldwide politics and economies. Despite the fact that it is unclear how the conflict will unfold, it is evident that its consequences will be persistent and significant for societies all across the globe. While Russia may have anticipated an immediate and simple success, the conflict has now entered an increased attritional stage. Russia is unable to enforce its rules on Ukraine, and Ukraine is unable to remove russian soldiers from its territories. Amid ambiguity about how the conflict will unfold, the Ukrainian people are solidly unified (a mid-March poll done by Ukraine's Rating Group found that 93% of the people surveyed felt Ukraine would prevail, and 98% considered Russia a hostile state ("The fifth national poll: Ukraine during the war", 2022). The Russian invasion of Ukraine, empowered by Russian President Vladimir Putin, brought to the fore certain challenges that Russia's economy has been experiencing for some time (particularly its reliance on carbon and minerals, as well as a continuous "brain drain"). As an outcome of the invasion, many (though not all) nations and organizations are refraining from engaging in trade with Russia.

Numerous research studies, dating back to Keynes, indicate that conflict has long-term negative implications for the welfare of the communities engaged (Keynes, 1919). The repercussions of economic activity on long-term sustainability have been widely studied in recent years (Waiganjo, Godinic, Obrenovic 2021). Following Russia's invasion of Ukraine in February 2022, the United States, Europe, and a number of other nations implemented economic sanctions. Following the Cold War's closure, the measures that were enforced on Russia were considered the hardest and most costly imposed on a major economy.

Bluszcz and Valente investigated the economic penalties implemented by the EU on Russia following the annexation of Crimea in 2014 and the Donbas war. They observed that the penalties had negative consequences for both Russia and the EU given the indirect impact and interdependence of trading and cooperative political relations (Bluszcz, Valente 2019). The currently in effect charges against Russia seem to be unparalleled in terms of speed, depth, and worldwide cooperation, and the consequences for the economy have already become visible. The opportunity cost of military expenditure, the humanitarian impact on the economy, and the expense of repairing post-war damage are all crucial elements to consider before the start of the battle. Ukraine's costs are expressed in the growth of public debt, the devaluation of the national currency, the erosion of gold and currency reserves, and the outflow of foreign direct investments, in addition to the drop in GDP. The damages done to international relations may be added to the economic costs. Uncertainty in the national economy (induced by the conflict) decreases confidence among investors and consumers (Rother, Gaelle, Lombardo, Risto, Toffano, Roos, Auclair, Manasseh, 2016) breaks trade networks, and has a detrimental impact on a country's long-term productivity (Jong-A-Pin, 2009), investment attraction, tourism, and tax income.

Ukraine's costs from armed aggression are difficult to quantify because not all of them are monetary in essence. Nonetheless, the purpose of this paper is to estimate Ukraine's actual (direct) and probable damages, as well as the economic consequences of the conflict, and evaluate the likely effects of the Russia-Ukraine conflict on the local and global economies. The issue of handling the economy becomes more pertinent as the war continues.

Materials and methods

For this article, I resorted to researching specialized literature regarding the economic consequences and challenges that Ukraine and the whole world are facing following the aggression of the Russian Federation in 2022. The collection of information was carried out from articles in the international literature that have as their main object to research the situation of Ukraine and the states that suffer as a result of this conflict. Thus, a series of articles referring to the research theme were studied and analyzed, with the respective studies being carried out in the vast majority in Ukraine and Russia. The main objective of this article is to identify the challenges and economic consequences that the crisis triggered in the neighboring country will have. A collection of information was made from several articles that studied the economic situation in Ukraine and possible future scenarios. This research relies on information from the Foreign Monetary Fund, World Bank, and United Nations entities, as well as official information from Ukraine and predictions from Ukrainian and foreign specialists and study groups. But some of the 2022-2023 data utilized in this research remains speculative. This is particularly relevant to the GDP estimate.

Wars constitute a tremendous shock to the economies of the countries involved. Despite some benefits from short-term stimulation and long-term rehabilitation, conflict typically impedes economic progress and degrades prosperity (Goldstein, Mokyr, 2003). A group of economists, political scientists, sociologists, and political researchers examined why wars start, how wars are fought, what occurs after the war ends, and possible alternatives to war. The research focused on wars and revolutions, the trafficking of weaponry in diverse economic and political systems, and post-conflict rehabilitation (Coyne, Mathers, 2011). Researchers studying the economic implications of war all agree that war has a negative influence on the level of GDP produced. They have shown that coups and killings reduce per capita GDP expansion (Barro, 1991). According to Thies and Baum, the overall cost of war contains three components: the opportunity cost of the resources required for participating in war, the loss of life and damage to physical and human capital during the war, and the drop in GDP per capita, assessed during and after the conflict. Each of these studies had one thing in common: they were conducted after the armed conflicts had ended, and the results relied on statistical data analysis.

There is a lot of scientific study going on on the topic of economic security right now. Simply by investigating and assessing the key macroeconomic indicators supplied by the State Statistics Service of Ukraine, the National Bank of Ukraine, the Ministry of Finance of Ukraine, and government officials, the country's level of economic security can be determined. Currently, the issue of economic security is becoming more relevant as a result of several contentious trends and events that update the global crisis circumstances and intensify crisis phenomena within the context of the nation. In relation to this, there is an essential reconsideration of the subject of threat source transformation, with specific emphasis on the topic of enhancing the activity of non-economic variables in the economic arena. The goal of this research essay is to investigate the problems and risks that exist in Ukraine and outside its borders. At this point, the World Economic Crisis has been triggered by non-economic pressures, which raises the question of developing a new notion of economic security that will be designed first and foremost with countermeasures in mind.

Economic impact (COVID-19 pandemic; Russian aggression)

The COVID-19 pandemic, which triggered economic volatility and a worldwide catastrophe in 2020, has become one of the globe's most significant risks. The crisis caused a disruption in the regular and consistent trajectory of development at the macro and local levels. The first round of Russian aggression in 2014–2015 (the incorporation of Crimea and fighting in Donbas), together with additional hostile moves (such as withdrawing a Russia–Ukraine bilateral trade consent on January 1, 2016), dealt a serious blow to the Ukrainian economy

and boosted safety dangers to both business and investment activity. However, the global economy encountered fresh challenges in February 2022. Following that, the threat that precipitated the severe crisis was and continues to be a full-blown war between Russia and Ukraine, which will have far-reaching ramifications for the whole world economy. The conflict and its subsequent escalation became prominent problems and risks to global economic security. Around 1 million individuals, mostly young males, were mobilized in July 2022 for the Ukrainian Armed Forces and other military, paramilitary, civil defense, and security organizations. This amount has most likely not changed significantly. The number above have a considerable influence on the economy's labor market, which is characterized by massive imbalances among the demand for labor and labor availability. The onset of the war in Ukraine has profoundly impacted the migration situation in several Central and Eastern European nations.

The very first consequences of the war is a notable decrease in global economic output and an increase in inflation. The chances of a worldwide economic recession are rising and becoming more severe. According to IMF projections, global growth rates will fall by nearly twice as much in 2021. According to the National Bank of Ukraine's monthly macroeconomic and monetary assessment, inflation will rise to 5.7% in major economies (USA, Eurozone) and up to 8.7% in developing countries (Poland, Georgia) ("Щомісячний макроекономічний та монетарний огляд", 2022). The situation is mostly due to weak demand, high global costs for raw materials and commodities, rising inflation, and supply chain disruptions.

In accordance with the Ministry of Economy of Ukraine's estimations, the integral level of economic security in Ukraine declined by 1.1 percentage points in 2020 compared to the indicator in 2019 ("Economic Situation and Macroeconomic Framework", Ministry of Economy of Ukraine). There was a moderate decrease in Ukraine's economy as a result of several variables, such as: Ukraine's lack of participation in value-added production chains in the global economy; a substantial amount of shadow industries and earnings; an important share of the agricultural sector, adequate to ensure food security; and a substantial amount of large-scale manufacturing that performed despite peak periods. But beginning on February 24, 2022, the Ukrainian economy confronted new hurdles and economic security risks. Military actions dealt a severe blow to the state's economic structure at all levels. Under the circumstances of continuing to deal with the ramifications of the COVID-19 epidemic, one of the most serious risks to the rehabilitation of Ukraine's destroyed economic potential is the Russian Federation's armed aggression. A full-fledged war caused an unparalleled drop in the domestic economy. The ongoing dispute drastically diminishes the economy's potential. A major economic challenge faced by Ukrainian exports of agricultural products in 2022 included denial of access to the Azov Sea and several Black Sea ports, as well as the Russian blockade of Odesa. These items included wheat, barley, maize, sunflower seeds, and oil. Signed on July 22, 2022, by Russia, Ukraine, and Turkey, the Black Sea Grain Initiative proposes to establish shipping routes from seaports Pivdennyi, Odesa, and Chernomorsk in order to partially reopen exports ("How much grain is Ukraine exporting and how is it leaving the country?", 2023). It prevented grain exports from reaching their pre-war level of exportability. The situation in Ukraine has caused quick and major logistical challenges in the oil, food, and fertilizer industries, as well as prompt and strong actions from Western countries in the manner of economic penalties against Russia. These factors have resulted in fast global price increases for energy, food, and fertilizer resources.

In accordance with National Bank of Ukraine estimations, physical capital losses from the destruction of companies, homes, and infrastructure totaled 100 billion dollars at the beginning of May 2022, which is equivalent to 50% of GDP in 2021 ("Financial Stability Report", 2022). Furthermore, the losses of human capital due to migration and citizen losses are considerable. In Ukraine, inflation is going to continue to rise. According to the National Bank of Ukraine's Financial Stability Report, the primary contributing variables to driving up inflation are: occupation of territories; damage to capacities and infrastructure; violations of manufacturing and delivery methods; and the occurrence of local and short-term supplies

(fuel, salt) ("Звіт про фінансову стабільність", 2023). Based on National Bank of Ukraine statistics, the key sectors of state budget spending that ought to receive urgent financing should be: defense, social security, and public order ("Звіт про фінансову стабільність", 2023). Military authorities, amid other duties, gained the authority to exploit the capabilities and human resources of companies, organizations, and other entities of any sort of ownership for defense purposes.

The logical framework of wartime economics resulted in command management and administrative constraints in a variety of policy sectors. On the other hand, unusual situations pushed authority to allow for greater adaptability and economic autonomy, at least for a while.

Supporters of Ukraine

At this point, both internal and external borrowings have been used to support the state budget. Ukraine is in need of financial assistance from its allies. A strong network of allies backs Ukraine. The United States, the United Kingdom, France, and Canada constitute the top states that support Ukraine. Weapons supply, financial and humanitarian assistance, and charges against Russia are the primary support paths. The top countries that help Ukraine provide direct financial assistance, humanitarian assistance, and military assistance. America is the major provider, particularly when it comes to the field of military assistance. The European Union and its member countries come in second, with a strong presence in terms of finance and humanitarian help. International financial and development organizations (including the IMF, World Bank Group, and European Bank for Reconstruction and Development) give significant financial assistance. The British government provided substantial military assistance. Foreign capital fixes Ukraine's balance of payments, NBU net foreign reserves, UAH exchange rate, domestic pricing stages, public budget, and banking sector liquidity. According to S. Marchenko, Minister of Finance, "how quickly we recover after the war depends on how quickly we can get those resources and funds that will allow us to do so. Ukraine isn't going to be capable of making a comeback on its own; we will incur massive losses that would take decades to recoup" ("Інтерв'ю Міністра фінансів Сергія Марченка виданню Mind", 2022). It is important to note that actual assistance flows can vary significantly in magnitude and duration from support agreements. They typically arrive later than the official assistance promises and in lesser quantities than those stated. As an example, as of January 15, 2023, just 48% of Ukraine's announced fiscal contribution has been disbursed (Trebesch, Antezza, Bushnell, Frank, Franz, Kharitonov, Kumar, Rebinskaya, Schramm, 2023).

Russia – the most sanctioned country in the world

Since 2014, Russia has been subject to sanctions. Russia became the most sanctioned country in the world on February 24, 2022. From February 24 to the end of April, the number of sanctions against Russia climbed from 2754 to 7374 units. Regardless of whether the conflict has ended now, such limitations will still significantly disrupt the importation of products from Russia into international markets. As the Euro-Atlantic community comes together and China appears to be aligning more tightly with Russia, this dispute—and the responses it has elicited between governments and industry around the globe—has the capacity to prompt significant reconfigurations in markets to which Russia has traditionally been a major supplier: energy, food, and fertilizers. Therefore, Russia's war against Ukraine creates a new security context not just for the European region's economies, but also for the global economy as a whole. As of now, overcoming the crisis and prejudice of the economy's asymmetry, tracking problems and risks that have an influence on the status of the economy, and supporting the construction of a new global concept of economic security it is important to remember that the new concept will be developed in an environment of considerable

ambiguity and that there will be non-economic hazards. Genuine state sovereignty is realized through the development of an efficient and competitive economy. Securing national economic interests necessitates the adoption of a strategic course aimed at achieving long-term economic development and competitiveness, improving economic stability, and, as a result, minimizing susceptibility to external and internal threats. The combined influence of every measure taken is going to be considerably bigger compared to the total impact of the individual components because, in an elaborate production environment, a broad variety of assessments increases the likelihood of one or more of the supply chain variables failing, with cascading effects throughout the entire manufacturing process.

Currently, it is generally accepted that overcoming any degree of crisis is impossible without the unwavering assistance of the international community. As a result, this activity needs to be completed using a thorough strategy based on one's own practical knowledge and foreign practice. It is clear that Ukraine's interests are best served by long-term national growth. Ukraine's integration into the European economic sphere as well as the establishment of equitable economic cooperation with other states are two of the main aspects followed after this Russian aggression began.

Ukraine's economy

According to the country's economics minister, Yulia Svyrydenko, Ukraine's economy shrank by more than 30% in 2022 as a result of Russia's violent invasion, which wrecked infrastructure, harmed enterprises, and disrupted daily life ("Ukraine's economy shrank by more than 30% in 2022", 2023). Significantly, the financial system of the nation has been preserved, enabling individuals and companies to keep on making payments. The governmental entity can continue to collect taxes and generate funds for its forces. As price hikes attack individuals from multiple perspectives, the situation in Ukraine may exacerbate the cost-of-living problem. Unexpected rising prices for food, fuel, and other essential goods pose a problem for people worldwide, especially at a moment when authorities are considering reducing spending on social safety nets while increasing spending on defense and national security in Europe. People and their families that are unable to bear increased expenditures will be forced to make difficult decisions.

Yet, the Ukrainian people and enterprises quickly recovered from the shock of the full-fledged conflict. Numerous people who left returned. The Ukrainian economy improved after the war. New economic sectors were established in order to assist Ukraine's military forces. Ukrainians have shown an unrivaled capacity to endure the adversary while also adapting to an entirely novel scenario. The Ukrainian economy and banking system are recovering, and as the economy recovers, it is crucial to review the restrictions implemented during the crisis period, such as administrative restrictions on capital flows, to ensure macroeconomic stability.

Prior to Russia's invasion of Ukraine, forecasts predicted that the worldwide economic expansion in 2022 would be approximately 5% ("Consequences of the War in Ukraine: The Economic Fallout", 2023). The conflict had the largest economic effect in Europe. The manner in which the postwar rebuilding process takes place will also be dictated by the outcome of the war, particularly how it concludes. Unless the fighting stops, any actions will only be stopgaps—repairs for reestablishing electricity or water supply, humanitarian aid to provide temporary homes, or medical treatment. If the combat finishes, although a still-dangerous frozen dispute results, private investors will remain hesitant until security assurances or recompense for damages are offered. In certain aspects, restoring Ukraine might be more expensive than fighting the ongoing war itself. The nation has already experienced a degree of destruction not witnessed in Europe since World War II, which took Germany and Britain around 20 to 30 years to recover after the end of the war.

Usage decreases, better efficiency, renewable energy sources, LNG, and other pipelines will substantially decrease Europe's reliance on Russian gas. Europe also looks to have

decided never again to be forced to rely on cheaper Russian energy sources. Its days as Russia's primary consumer are numbered. Though Russia is still going to export energy, some experts feel that its standing as an energy giant may dwindle in the coming years ("Energy Expert Daniel Yergin and Russia Expert Angela Stent on the Ukraine War", 2022). Russian gas exports to Europe are dropping, lowering state income and hurting the monetary flow that underpins Russian political influence. Russia is going to continue to move its exports from Europe to China and India, but at a cheaper cost. Europe will ultimately be proven accurate in the end. Putin seems to have missed that the consumer is always right. Dealing with the impending possibility of Russia cutting down or reducing the flow of gas, which could result in significant economic and internal political ramifications, a variety of European nations chose equivocal, or in some cases, overtly pro-Russian, policy postures. This is the kind of coercive diplomacy that comes with monopolies.

However, Russian influence might also be shown in less obvious ways. According to the Center for the Study of Democracy, Russia's actions in Bulgaria established a clandestine network of economic and political patronage, allowing the Kremlin to exert influence over crucial state institutions ("The Kremlin Playbook", 2016). Local partners of Russia are not ardent fans of a great Russia; they're just in it because of the financial gain. To undermine Russian oligarchic structures and internal politics, European policy pushes for phasing out Russian gas and decoupling energy from Russia ("Countering the Kremlin Playbook in Europe after Russia's invasion of Ukraine", 2022). Russia's principal economic engagement with the West was through the export of oil and gas. Continues to be the world's greatest supplier of wheat and forestry products, as well as an essential provider of strategic minerals such as nickel, cobalt, and platinum. Because of the enormous dangers that are involved, Western corporations are doubtful about moving back to or making investments in Russia, regardless of the result of the ongoing dispute. The end of the war won't prompt Western companies to return to Russia, as the denial of Western technology affects high-tech manufacturing. The scenario may have an influence on Russia's ability to utilize current oil and gas reserves as well as build new ones. Russia's inability to make use of Western financial markets and institutions, such as SWIFT, will have a huge influence on its financial health.

The pandemic has highlighted the risks of just-in-time supply chains, while the Ukraine war has heightened the risks associated with such systems. Globalization remains a viable concept, and the new geopolitical climate will significantly impact business decisions. De-globalization may lead to higher short-term pricing, compounded by inflationary pressures, necessitating a more stringent cost-saving versus risk analysis. The turmoil in Ukraine has increased European defense spending due to fears of China's threat, raising stock prices for major military manufacturers. The present level of risk may be traced back to the instability that followed the collapse of the Soviet Union, the height of the Cold War, and the European scenario in the late 1930s.

As a result of the terrible repercussions of Russian aggression, which worsen the issues of a once communist emerging economy, Ukraine's post-war recovery will be distinct, requiring enormous time, money, and effort. Due to the post-war refugee movement, Ukraine is projected to have labor market shortages and a lasting impact on its investment attraction. Ukraine's officials must be innovative in order to handle these difficulties, but the good news is that the country can come back. The country can use the disadvantages caused by the conflict to raise worker productivity and modernize its economy and state infrastructure. Officials should prioritize low-carbon manufacturing, better energy performance, and the use of information and financial technology to improve government services. The objective is to accomplish structural improvements akin to those seen in other European nations in a very short period of time. The country has effectively weathered the COVID-19 epidemic by deploying high levels of digitization, ensuring that the majority of public services are still available to the population. The Diia site, which covers the vast majority of governmental services, gives over 100 remote access points to papers, processes, and permissions.

Ukraine's potential

The knowledge gained is expected to bolster Ukraine's assets, particularly its strategic location at the crossroads of European-Asian transit links and Scandinavian-Mediterranean commerce connections, allowing it to become a significant participant in global commerce. Regardless of Russian military efforts to eliminate it, the nation has 18 seaports, one of Europe's longest roadways, and the 15th largest railroad system ("Rebuilding Ukraine: how will policy-makers shape the country after the war?", 2023) . Present situation in Ukraine puts the country at risk of being classified as a 'gray zone' in the world's economic picture, with significant infrastructural deterioration, social problems, and poor prospects. This might also be a deterrent to investors, owing to the possibility of additional hostility. Following the conflict, Ukraine has the potential to solve structural flaws that have lasted throughout the country's 31-year independence, resulting in improved security, resilience, and economic progress. Officials should prioritize rehabilitation planning in order to capitalize on the possibility and strengthen Ukraine's resilience and economic development. As an essential element of economic recovery, Ukraine should emphasize boosting efficiency and upgrading manufacturing to drive economic recovery, alleviate shortages in labor, and strengthen its inclusion in the global economic arena. Ukraine's swift digital transformation has considerably increased the effectiveness of administration, facilitated company operations, and decreased corruption, a major concern, utilizing the country's previous strengths.

Conclusions

The attack by Russia has resulted in significant losses in terms of human as well as material resources, causing Ukraine's economic and social development to be set back by a number of years. In the months to come, the overall toll will rise even more because the conflict is still ongoing and there are no signs that it will finish soon. Ukraine was dependent mostly on its own financial and military resources during the initial phases of the war. As long as the war continues, Ukraine will require substantial, consistent, and consistent financial assistance to ensure fundamental macroeconomic equilibrium and long-term viability as well as the supply of important public utilities by Ukrainian authorities. On the other hand, authorities have to further develop and enhance their wartime financial management by avoiding administrative and command strategies whenever feasible, minimizing regulations, tax, and customs procedures, going back to competitive procurement for public goods, and going on reforms to the market and privatization in situations where they do not jeopardize defense attempts. The global donor community needs to get ready not only to fund after-war rebuilding but additionally to give substantial, solid, and reliable visible financial support during the duration of the conflict and for some time after it ends. Ongoing economic support and post-war rebuilding assistance need to be backed with clearly defined reform requirements that are practical to achieve in wartime circumstances. The European Union and its member nations ought to take the initiative in delivering and organizing financial support. The EU's physical closeness to Ukraine, as well as the prospect of Ukraine's accession to the bloc, justify a position like this. It is in the EU's highest interest to prevent Ukraine's macroeconomic destabilization throughout the conflict and to incentivize Ukrainian authorities to accelerate measures as soon as possible.

Considering the situation in Ukraine is unlikely to be resolved in the near future, its influence on worldwide resource markets is expected to increase, with the possibility of extremely significant 'ripple effects' on social and economic systems throughout the entire world. The Russian takeover has resulted in the establishment of a new Iron Curtain dividing Russia and the rest of Europe, along with a heightened sense of danger in cross-security transactions and investments. The expense of international collaboration could be attributed

to the economic costs. Further investigations ought to delve deeper into the subject by statistically examining the war's economic impacts.

According to the paper's empirical results, Russia's invasion of Ukraine and the COVID outbreak caused a considerable surge in global prices. It is advised that politicians make efforts to avoid wars such as the Ukraine-Russia war because of the cascading consequences on neighboring nations. Negotiation should be the preferred method for conflict solving.

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THE MONETARY POLICY AND ITS IMPACT ON CONSUMPTION AND TRADE IN ROMANIA

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Abstract: *The methods that a country's central bank uses to control the total amount of money in circulation and affect trade, consumption, and economic growth are collectively referred to as monetary policy. A monetary expansionary policy entails a reduction in interest rates. As borrowing costs decrease, customers are encouraged to borrow more money and spend more, which boosts consumer spending and promotes economic growth. On the other hand, when interest rates rise during contractionary monetary policy, saving becomes more appealing while borrowing becomes more expensive. As a result, consumers may cut down on spending, which has an impact on aggregate consumption. Businesses are encouraged to invest by lower interest rates brought on by expansionary policies. They may borrow money more cheaply, which boosts imports, company expansion, and capital expenditures. Trade can increase if expansionary measures cause the home currency to weaken and become more appealing to export. In contrast, exports can be hampered by a rising currency. In conclusion, trade dynamics, corporate investment, and consumption patterns should be all greatly impacted by monetary policy measures. In order to find out some evidence about the monetary policy and its impact on consumption and trade in Romania, the paper uses statistical information from the National Bank of Romania between 2003 and 2023 for the monetary policy interest rate. This is going to be assessed base on its impact upon: Final consumption expenditure of general government; Final consumption expenditure of households; Gross capital formation; Exports of goods and services; Imports of goods and services; all of this taken from Eurostat. The results should point out if an increase or decrease of monetary policy interest rate is going to produce an impact upon consumption and trade, or the contrary is going to take place.*

Keywords: monetary policy, interest rate, consumption, imports, exports

JEL Classification: E52, E58, F33

1. The monetary policy and its impact in the economy

Interest rates are influenced by monetary policy, and this has an impact on household borrowing costs. Lower interest rates, or expansionary policy, by central banks stimulate consumer spending by lowering the cost of loans. On the other hand, a rate increase may cause consumer spending to decline. Reduced interest rates have the potential to increase demand for durable items and housing. A rise in interest rates could cause households to borrow less and spend less. By targeting inflation and influencing economic growth, monetary policy has an indirect impact on government spending. An expansionary monetary policy has the ability to boost economic activity, raise tax receipts, and possibly enhance government spending. A restrictive monetary policy may cause the economy to slow down.

2. Literature review

The literature used for this paper includes works by several authors, as well as the European Union Eurostat and the National Bank of Romania databases.

Grouping the authors based on the subject and main results, there can be a correlation between the works of Kumaran and Nedelea (2017), Margarit (2020), Pitorac and Sîrghi (2015), Chenic et all. (2020) where the authors do an assessment of the measures taken by the National bank of Ramina regarding the monetary policy.

Another group of authors like Cocris and Nucu (2013), Amani and Bouyacoub (2022), Azad and Serletis (2019), Dumitrescu (2015), Özcan et all. (2020) try to correlate the impact of the monetary policy with several macroeconomic indicators of Romania, or other emerging economies.

There is also Popescu (2012) which try to assess the effects of the monetary policy in Romania through a logarithmic approach.

3. Methodology and main results

In order to find out some evidence about the monetary policy and its impact on consumption and trade in Romania, the paper uses statistical information from the National Bank of Romania between 2003 and 2023 for the monetary policy interest rate. Its impact is going to be assessed based on the data taken from Eurostat regarding: Final consumption expenditure of general government; Final consumption expenditure of households; Gross capital formation; Exports of goods and services; Imports of goods and services.

The paper also has its objectives set by the following 2 hypothesis:

- H1: The monetary policy interest rate cuts should influences Romania's sectors by encouraging: the final consumption expenditure of general government; final consumption expenditure of households; gross capital formation; imports of goods and services.
- H2: The monetary policy interest rate hikes should influences Romania's sectors by discouraging: the final consumption expenditure of general government; final consumption expenditure of households; gross capital formation; imports of goods and services.

First, the paper will start with the interpretation off the monetary policy interest rate. In order to do this analysis, the statistical data regarding the monetary policy interest rate in percentages from the Romanian National Bank data base has been selected.
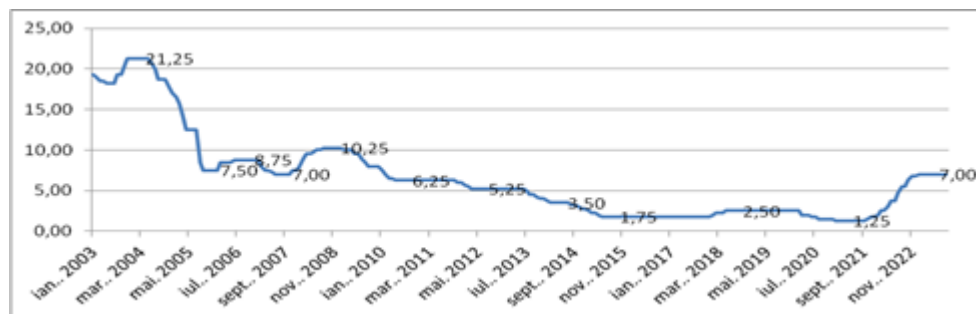
Figure 1: The monetary policy interest rate evolution between 2003 and 2023, expressed in percentages
Source: National Bank of Romania, link https://www.bnr.ro/Baza-de-date-interactiva-604.aspx accessed on 25.04.2024

The figure above shows that there is a huge discrepancy between the monetary policy interest rate beginnings in the year 2003 and its 2023 end results. The monetary policy interest rate, beginning with the year 2003, is at 19.25% and its evolution is a cyclical one. In February 2003 the monetary policy interest rate declines with a quarter percentages point at 19% and the following month with half a percentage point at 18.5 percent and in the

following spring and summer the interest rate set by the National Bank of Romania riches 18.25%. After this evolution, starting in August 2003, the interest rate climbs to 20.25% and then in November 2003 it increases again with a whole percentage point reaching 21.25%. This particular percent will be kept until May 2004, when almost half a year passes until the National Bank of Romania starts its downhill process of reducing the monetary policy interest rate.

From May 2004 until May 2005 the monetary policy interest rate decreases to 12.5%, and from May 2005 until May 2006 it decreases even further to 8.5%. As it is presented in the figure above, the monetary policy interest rate is increasing again, when it reaches its peak in January 2007 with 8.75%.

Starting with 2007 onwards the monetary interest rate has a cyclical movement with ups and downs until April 2009. The National Bank of Romania's interest rate is decreasing from 10.25% in April to below 6.5% in March 2010. This is the steepest decrease off the monetary policy interest rate and this is due to the impact of the financial crisis that has hit the world economy. Because Romania is not an island isolated from the rest of the world, its economy has been hit severely by this crisis. The response of the National Bank of Romania monetary policy was anticyclical, decreasing the interest rate in order to encourage the population and the companies to take again credits.

From 6.5% in 2010 until the start of May 2015 the interest rate dropped at the staggering 1.75%. This particular percentage is kept until January 2018 when the National Bank of Romania starts the process off increasing the monetary policy interest rate. The path of this increase was halted by the Covid19 pandemic which forced the National Bank to take a break and start lowering the interest rate again.

After this unfaithful situation and due to the economic circumstances, the National Bank was forced to rethink its monetary policy and started to increase the interest rate from 1.25% in September 2021 to 7% in January 2023, a level which has been maintained ever since. This increase is one of the biggest spikes in the monetary policy interest rate due to the fear of a spiralling inflation and its harmful effects upon the economy, the people and public and private institutions.

Figure 2: Final consumption expenditure of general government, Final consumption expenditure of households, Gross capital formation evolution between 2000 and 2023 expressed in billions euro
Source: Eurostat, link https://shorturl.at/PtOwx accessed on 25.04.2024

The statistical data for: Final consumption expenditure of general government, Final consumption expenditure of households, Gross capital formation, was taken from the Eurotat database. The data will be broken into 3 periods: 2000-2008; 2009-2019; 2020-2023. There is a clear upward trend for all three indicators starting in 2000 until 2023, but this trend is a cyclical one.

The first period that the paper is going to analyze is the one between 2000 and 2008. During this time the final consumption expenditure of households and gross capital formation have

known an upward trend. The most prominent part is the final consumption expenditure of households, statistical indicator starting from almost 27.5 billion euro in 2000 and reaching almost 92 billion euro in 2008. This is an increase of 235% for the nine years period. Regarding the gross capital formation, an indicator which represents the healthy organic investments done by the private sector, the figures show also an increase starting from almost 8 billion euro in 2000 and reaching almost 48.5 billion euro in 2008. This is an increase of 507% for the nine years period, a huge increase in private investment activity which is extremly positive for the Romanian economy. The final consumption expenditure of general government, wich starts at 6.8 billion euro in 2000 and reaching almost 23 billion euro in 2008, has a 240% increase.

If a correlation with the monetary policy interest rate is beeing made, it can be seen that there is a very strong correlation with the decrease of the interest rate starting in 2003 and the final consumption expenditure of households and gross capital formation between 2004 - 2008. Although the interest rate started to increase again in 2007 the effect is marginal because the value of final consumption expenditure of households and gross capital formation reaches its highest value in 2008. The only effect that the monetary policy interest rate had was to cool down the steep increase that this indicator had between 2004 and 2008. Going further, there is a steep decline for the two indicators starting in 2009 and 2010. Due to the global financial crisis there is a correction to the downward trend for both final consumption expenditure of households and gross capital formation and the increase in of the monetary policiy interest rate. Even though the National Bank of Romania started to decrease the monetary policy interest rate, the figueres cannot see a significant rebound of final consumption expenditure of households and gross capital formation as seen between 2000 and 2008.

In this second period of time between 2009 - 2019, the value final consumption expenditure of households and gross capital formation are badly hit, and their evolution is shoing a delayed recovery. The financial crisis hit the Romanian economy, and the backbone of economic growth which was the final consumption expenditure of households and gross capital formation, are increasing at a slow pace. If in 2008 these two indicators 92 billion euro and respectevly 48.5 billion euro, it takes 7 years fot the final consumption expenditure of households and 10 years for the gross capital formation to overpass these figures.

Correlating the National Bank monetary policy with the value of final consumption expenditure of households and gross capital formation, the paper sees that there is a thimid rebound, even though the interest rate reaches one of its lowest level in 2015, since Romania became a democracy in the 1990s. There is a sort of delay between the national banks monetary policy and the imports of goods and services recovery. If in 2015 the National Bank decreases the monetary policiy interest rate to 1.75% and maintains this level until 2018. This year, 2015, is the same year that the value of final consumption expenditure of households overpasses the value in 2008, reaching 96.7 billion euro. It can be mantioned that the monetary policy measures are beeing achied, incouraging the development of final consumption expenditure of households.

In the third period of 2019-2023, especially during the Covid19 pandemic, after the National Bank started to decrease the interest rate even further, reaching 1.25%, there is an explosion regarding the value of final consumption expenditure of households and gross capital formation in 2021 and 2022. But after a boom of upward inflation, the National Bank had to increase the interest rate at a stagering phace. The corelattion between the monetary policiy interest rate increase and final consumption expenditure of households and gross capital formation, has a split impact. In the previous figure, the value of final consumption expenditure of households is increasing, even though the monetary policy interest rate is increasing, when in theory it should record the oposite effect. The only cooling is recorded in the value of gross capital formation, because if in 2021-2022 the values is increasing with a stagering 20%, from 2022 to 2023 the value is increasing only with 8%.
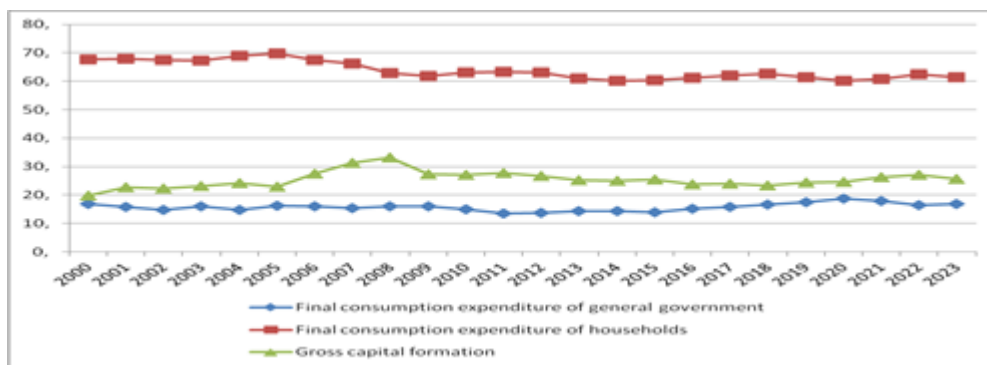
Figure 3: Final consumption expenditure of general government, Final consumption expenditure of households, Gross capital formation evolution between 2000 and 2023 expressed in percentages
Source: Eurostat, link https://shorturl.at/PtOwx accessed on 25.04.2024

From a percentage point of view, the most representative indicator in the GDP formation is final consumption expenditure of households. This indicator is situated between 60% and 70% throughout the analyzed period, but a cyclical evolution is recorded, with periods of increases and decreases. The period in which this indicator registers the highest percentages is found between 2000 and 2005, when it starts from 67.6% and reaches 69.8%. If this period is correlated with the monetary policy of the National Bank of Romania, it can be concluded that there is a correlation between the percentages increases correlated with a decrease in the monetary policy interest rate. After this period, the correlation is maintained, because what happens after 2005 and until 2007 when the monetary policy interest rate increases, the final percentage of consumption expenditure of households records a moderate decrease in the contribution to GDP formation, reaching in 2007 to 66%. An interesting situation is presented by the second indicator, that of gross capital formation, where if between the years 2000 and 2005 there is a moderate increase in investments as a percentage of GDP formation correlated with a reduction in the monetary policy interest rate, however things take an interesting turn starting from the year 2006-2008. From what can be seen in the previous figure, the percentage of gross capital formation registers the highest increase from 27% to 33%, even though in that period there is also an increase in the monetary policy interest rate from 7.5% in 2005 to 8.75% in 2007. Here it can be seen the delink between the monetary policy interest rate and the analyzed indicator, because in theory, with an increase of the interest rate, it should be recorded a decrease in the gross capital formation indicator.
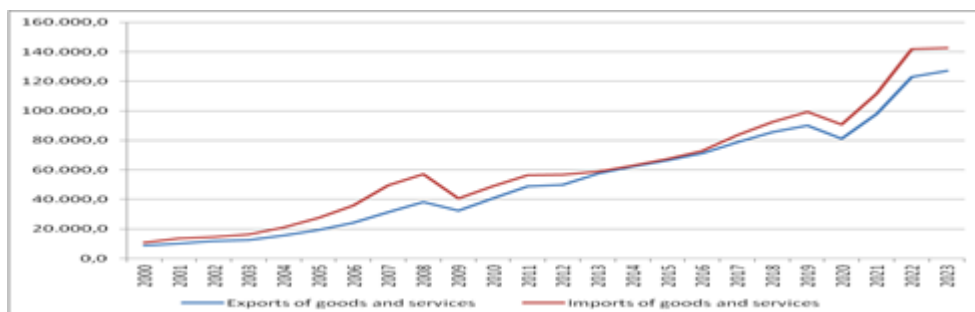
Figure 4: Exports and imports of goods and services evolution between 2000 and 2023 expressed in billions euro
Source: Eurostat, link https://shorturl.at/PtOwx accessed on 25.04.2024

The first period that the paper is going to analyze is the one between 2000 and 2008. During this time the exports of goods and services have known an upward trend reaching almost 39 billion euro in 2008. But in the same time the imports of goods and services have also known a staggering increase from almost 11 billion in 2000 to more than 57 billion in 2008. The balance of trade deficit it's getting bigger and bigger, reaching in 2008 a staggering €20 billion. If a correlation with the monetary policy interest rate is beeing made, it can be seen that there is no correlation with the decrease of the interest rate starting in 2003 and the imports of goods and services starting between 2004 - 2007. Although the interest rate started to increase again in 2007 the effect is marginal because the value of the imports of goods and services reaches its highest value in 2008. The only effect that the monetary policy interest rate had was to cool down the steep increase that this indicator had between 2004 and 2007.

Going further, there is a steep decline for the two indicators starting in 2009 and 2010. Due to the global financial crisis there is a correction to the downward trend for both export and imports of goods and services and the increase in of the monetary policiy interest rate. Even though the National Bank of Romania started to decrease the monetary policy interest rate, the figueres cannot see a significant rebound of the imports of goods and services as seen between 2000 and 2008.

In this second period of time between 2009 - 2019, the value of goods and services both for exports and imports are regaining their phace. If the exports of goods and services exceed the peak volume registered in 2008 only after two years, due to increase foreign demand, the vice-versa cannot be said for the imports of goods and services. Correlating the National Bank monetary policy with the nominal evolution of imports of goods and services, the paper sees that there is a thimid rebound, even though the interest rate reaches one of its lowest level in 2015, since Romania became a democracy in the 1990s. There is a sort of delay between the national banks monetary policy and the imports of goods and services recovery. If in 2015 the National Bank decreases the monetary policiy interest rate to 1.75% and maintains this level until 2018, only in 2017 and 2018 the nominal value of imports start to increase at a more rapid phace. It can be mantioned that the monetary policy measures are beeing achied, but only after twelve months.

In the third period of 2020-2023, especially during the Covid19 pandemic, after the National Bank started to decrease the interest rate even further, reaching 1.25%, there is an explosion of imports in 2021 and 2022. But after a boom of upward inflation, the National Bank had to increase the interest rate at a stagering phace. Again it can be seen a corelattion between the monetary policiy interest rate increase and imports of goods and services, because the value of the imports halts between 2022 and 2023. The 7% monetary policy interest rate has a cooling effect on the imports of goods and services rise.

A somewhat similar evolution seems to be recorded in the figure below for the same indicators, but this time from a percentage point of view as a contribution to GDP formation.
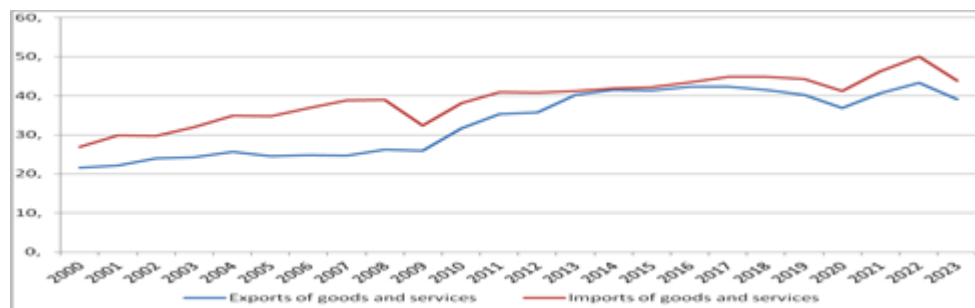
Figure 5: Exports and imports of goods and services evolution between 2000 and 2023 expressed in percentages
Source: Eurostat, link https://shorturl.at/PtOwx accessed on 25.04.2024

The statistical data for the exports and imports of goods and services presents an interesting situation from the point of view of the contribution to GDP formation. If exports of goods and services are closely correlated with foreign market demand, imports of goods and services are correlated with domestic demand, which in turn is correlated with the availability of capital geared toward personal or private consumption.

Analyzing the period 2000 - 2008, it can be seen that the exports of goods and services, as a contribution to the GDP, do not register a spectacular evolution, this being a constant one, starting from approximately 21% in the year 2000 and reaching 26% in the year 2008 On the other hand, imports of goods and services recorded an upward trend, starting from approximately 27% in 2000 and reaching 39% in 2008. In the first period, between 2000 and 2007, this percentage increase can be explained correlating the reduction of monetary policy interest and the proportional increase of imports of goods and services in the formation of GDP. Also, the stagnation recorded by this indicator between 2007 and 2008 can be correlated with an increase in the monetary policy interest rate from 7% in 2007 to 10.25% in 2008.

What follows after 2008 is related to the international economic crisis on the one hand, and to austerity measures and foreign demand on the other. The international economic crisis has the role of correcting the percentage with which the import of goods and services contributes to the formation of GDP, which is reduced from 33% in 2008 to 27% in 2009. Instead, external demand pushes the export of goods and services to increase from 26% in 2008 to 35% in 2011, and from here the trend is only upward. The slow recovery of the imports of goods and services indicator can be correlated with the decrease of the NBR monetary policy interest rate, starting with the increase registered until and after the Covid19 pandemic, until the decrease registered between 2022 and 2023.

The exports and imports of goods and services have a staggering reverberation upon the balance of trade activity. This is going to be analyzed based on the figure below.
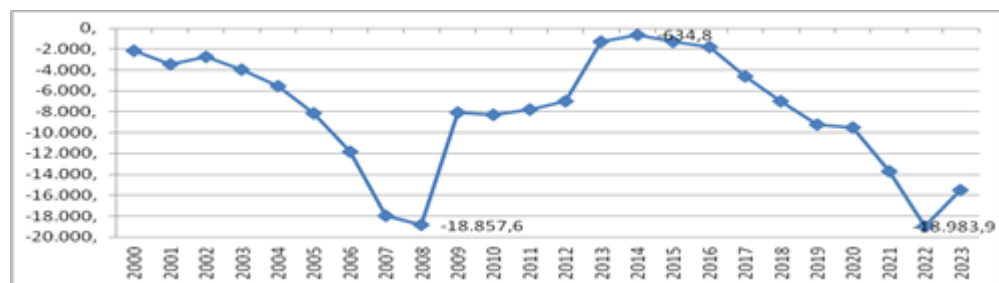
Figure 6: Trade balance evolution between 2000 and 2023 expressed in billions euro
Source: Eurostat, link https://shorturl.at/PtOwx accessed on 25.04.2024

The correlation between the result recorded by Romania's trade balance and the evolution of the monetary policy interest rate is an interesting one to analyze. If the nominal values are strictly analyzed, during the years 2000-2004, the trade balance deficit seems to be kept under control, since it is maintained between 2 and 4 billion euro. However, starting with 2005 and until 2007, the trade balance deficit seems to have gone downhill, registering an alarming evolution, reaching in 2008 the value of approximately 19 billion euro. The correlation between the trade deficit and the evolution of the monetary policy interest rate seems to highlight the fact that there is a correlation between successive cuts in the monetary policy interest rate and the alarming increase in the nominal value of the trade balance deficit. The only time when the deficit appears to be moderated is in 2008, when there is an increase in the monetary policy interest rate from 7% in 2007 to 10.25% in 2008. There are some questions about the monetary policy decisions to cut the interest rate in 2005 and 2007, linked to the trade deficit recorded during that period. It can be stated that

the monetary policy of the National Bank of Romania was procyclical at a time when, from the point of view of the trade balance deficit, an increase and not a reduction of the monetary policy interest rate was required.

However, the year 2009 is a year of correction for the trade balance deficit, which registered a reduction from approximately 19 billion euro to approximately 8 billion euro. The evolution of the trade balance deficit is a positive one, because the trend is a decreasing one, starting from a deficit of 8 billion in 2009, reaching a deficit of only 634 million euro in 2014. This trend is maintained in the next 2 years, 2015 and 2016, where the trade balance deficit remains below 2 billion euro.

Starting from 2017 and culminating in 2022, the trade balance deficit is constantly deteriorating, starting from a value of approximately 4 billion euro in 2017 and reaching approximately 19 billion euro in 2022. The situation seems to be easing in year 2023, because the trade balance deficit registers a setback and reaches a value of 15.5 billion euro.

There is a correlation between the evolution of the trade balance deficit and the evolution of the monetary policy interest rate. Successive reductions in the monetary policy interest rate since 2010 have led to increases in imports of goods and services. Also, increases in the monetary policy interest rate in the period 2019 and 2022-2023 led to a moderation of the trade balance deficit. The most recent increases in the monetary policy interest rate from 1.25% in 2021 to 7% in 2022 can be correlated as a positive impact in tempering Romania's trade balance deficit in 2023 from 19 billion euro in 2022 to 15.5 billion euro in 2023.

4. Conclusions, paper limitations and recommendations

For 90% of the time, the response of the National Bank of Romania monetary policy was anticyclical, the only short lived period was between 2005 and 2007 when the measures taken were procyclical.

The balance of trade deficit it's one of the biggest in 2008 and 2022 reaching a staggering €19 billion.

H1: The monetary policy interest rate cuts should influence Romania's sectors by encouraging all economic activity rebound is 100% accurate. All monetary policy interest rate cuts lead to increas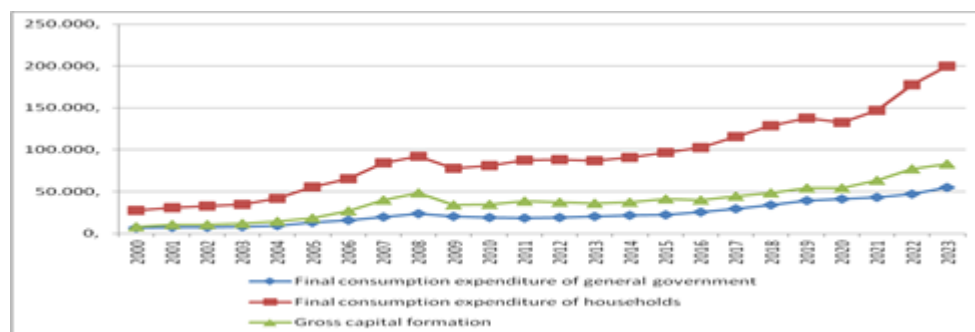e in final consumption expenditure of general government; final consumption expenditure of households; gross capital formation; imports of goods and services.

H2: The monetary policy interest rate hikes should influence Romania's sectors by discouraging economic activity is false. All monetary policy interest rate cuts lead to increase in economic activity. Small corrections are being made but this is discussable due to the fact that other disturbing factors take place. There is only a marginal effect on imports increase and a balance of trade correction.

The paper limitations:
- The impact of the global financial crisis has not been taken into account;
- The impact of the fiscal policy of the Romanian Government has not been taken into account;
- The impact of COVID-19 has not been taken into account;
- The impact of the Russian – Ukranian war has not been taken into account.

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A PERSPECTIVE INTO THE FUTURE OF TEACHING AND LEARNING IN THE CONTEXT OF THE RISING INTEREST IN ARTIFICIAL INTELLIGENCE IN EDUCATION. OPPORTUNITIES AND ETHICAL CHALLENGES

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Abstract: *The paper aims to provide an image of the future of teaching and learning in the context of artificial intelligence transforming various industries, including sports, education, and construction. Its place in education is a frequently discussed topic. While some argue that artificial intelligence will revolutionize education, others worry that it will take over to the harm of educators and students. Though robotics in the classroom is still a ways off, artificial intelligence is finding its way into the classroom. AI has the power to improve teaching and learning methods, solve some of the largest issues facing education today, and hasten the achievement of inclusive and equitable quality education. In addition to delivering artificial intelligence courses, EdTech businesses are increasingly using eLearning solutions to personalize learning experiences, pinpoint knowledge gaps, and give focused feedback. Also, AI-driven education is upending conventional teaching methods and influencing how this field will use technology in the future. With the use of complex algorithms and massive data sets, artificial intelligence solutions for education may provide a lot of advantages, yet as with the use of artificial intelligence in any context, there are significant ethical considerations which are a hot topic of discussion in the technology world and beyond, and the majority of university degree programs are including courses on AI ethics in their curricula. Therefore, the paper presents the benefits of AI in the classroom, such as engagement and assistance for students, assessment and evaluation, and individualized learning but also about the difficulties and worries associated with AI in education, including prejudice and privacy issues, as well as the moral issues raised by AI-powered learning. It also discusses the possible effects on the educational system and how students are trained for the workforce of the future as potential applications of AI in education are explored.*

Keywords: *artificial intelligence; education; advantages; disadvantages; ethics.*

JEL Classification: *Z13*

1. Introduction to Artificial Intelligence

Many individuals became aware of artificial intelligence (AI) for the first time when OpenAI released ChatGPT, a chatbot that uses natural language processing, in the fall of 2022 and which represented a turning point (Constantin et al, 2023). AI tools, however, have long been a part of the computer world. Paying chess against a computer, consulting a virtual assistant like Alexa or Siri or even just browsing through social media feed represent interactions with artificial intelligence. The 1968 film "2001: A Space Odyssey," which features a conversation between astronaut Frank and the "Heuristically-programmed ALgorithmic" computer, or "HAL," is credited with popularizing AI consciousness. As Frank

is unable to control the spacecraft on his own, HAL assists Frank in doing so. But when Frank eventually exits the spacecraft, HAL seizes command, and Frank's story does not turn out well. HAL demonstrates actions, speech, and reasoning that are similar to those of a human. Like many AI applications, HAL has potential benefits for people but also carries some unexpected concerns, particularly given that AI has limits and thinks differently than humans do.

A generation of scientists, mathematicians, and philosophers had grown up with the idea of artificial intelligence (AI) deeply ingrained in their culture by the 1950s. Alan Turing, a young British polymath who investigated the mathematical potential of artificial intelligence, was one such individual. Turing argued that if people use accessible data in addition to reason to solve issues and reach choices, why can't machines be able to do the same? His 1950 study, *Computing Machinery and Intelligence*, which covered the construction of intelligent machines and methods for assessing their intelligence, was organized along these logical lines.

In a broad sense, artificial intelligence (AI) refers to any method that makes it possible for computers to replicate human behavior, outperform human decision-making, and do complicated tasks either autonomously or with little assistance from humans (Russell & Norvig, 2021). As such, it refers to a range of tools and methods (e.g., case-based reasoning, rule-based systems, genetic algorithms, fuzzy models, multi-agent systems) and is concerned with a number of central problems, including knowledge representation, reasoning, learning, planning, perception, and communication (Chen et al. 2008). The main focus of early AI research was on formal languages with hardcoded propositions that a computer could automatically reason about using principles of logical inference. The knowledge base approach is another name for this (Goodfellow et al., 2016). Nevertheless, the paradigm has a number of drawbacks because it is typically difficult for people to articulate all of their implicit knowledge, which is necessary to carry out difficult tasks (Brynjolfsson & McAfee, 2017).

According to Friedman et al. (2021), AI is "[a]ny computational method that is made to act independently towards a goal based on inferences from theory or patterns in data." The emphasis of this definition is on how AI tools and systems spot patterns and decide what to do next to accomplish a specific objective. The automated recommendations and pattern identification features will be put to use in ways that influence student learning and instructional decision-making by teachers. Modern personalized learning systems, for instance, have the ability to identify indicators of a student's difficulties and suggest a different course of study. Pattern recognition and automatic recommendation systems will become more widespread.

2. Literature review

The rapid development of artificial intelligence (AI) in recent years has had profound effects on civilization, both culturally and economically. This quickly developing technology is changing many parts of daily life, including how we, the educators, teach and how, they, the students, learn. It is destined to become as ubiquitous as email.

In the sphere of education, artificial intelligence has become a revolutionary force that is changing the approach to teaching and learning. The 20th century saw the first attempts at intelligent tutoring systems, which laid the groundwork for the investigation of AI in education. The area has advanced significantly over the years, going from rule-based systems to more complex machine learning and neural network techniques. Early AI education applications centered on Intelligent Tutoring Systems (ITS), which offered individualized guidance and evaluation. The foundation for the creation and assessment of ITS was established by seminal publications by Anderson & Corbett (1989), which emphasized the adaptable nature of AI in meeting the demands of specific learners. More recent literature emphasizes AI's function in adaptive learning systems. By analyzing student performance data using machine learning algorithms, these systems provide

customized interventions and content. Corbalan et al. (2008) and Baker et al. (2019) talk about how adaptable learning environments can help students achieve better results. Developments in Natural Language Processing (NLP) have prompted the development of dialogue systems for education. Scholars like Graesser et al. (2005) and Di Eugenio et al. (2018) investigate how AI-powered conversational agents improve language learning by offering interactive learning experiences and real-time feedback. AI is changing not just how students learn but also how educators develop professionally. Artificial intelligence can help teachers customize their lesson plans and adjust to a range of student needs. From the early innovations of intelligent tutoring systems to the present era of adaptive learning platforms and educational dialogue systems, research highlights the diverse effects of AI on education. The use of AI in education brings up moral questions about prejudice, data privacy, and the socioeconomic effects of technology-driven learning. In their paper *Recommendation on the Ethics of Artificial Intelligence (2022)* UNESCO highlights how critical it is to address these ethical issues in educational environments that use AI, and look for creative methods to use AI to improve teaching and learning experiences as the area develops.

3. The Beginnings of AI in Education

With roots in the later half of the 20th century, artificial intelligence (AI) integration in education has been gradually developing throughout time. The work of psychologists Sidney Pressey, who taught at Ohio State University in the 1920s, and B. F. Skinner, who taught at Harvard University from 1948 until his retirement in 1974 and is regarded as the father of behaviorism, contains the first indications of the use of AI in education. Pressey faced the difficult task of utilizing multiple-choice examinations to both assess and consolidate pupil learning. Later, Skinner expanded on Pressey's methodology by suggesting that human training could benefit from the innovations he made in the operant conditioning of rats and pigeons—which are now known as Skinner Boxes. In 1958, Skinner created his teaching apparatus, a wooden box with a windowed lid. One window displayed questions on paper disks, and the student responded on a roll of paper that was visible through a second glass and would be marked by a teacher later. The mechanism's advancement automatically covered the student's response, making it unchangeable, and simultaneously disclosed the right response. Skinner's teaching device offered automatic, instantaneous reinforcement in this way. As opposed to selecting from a predetermined list of options (as in Pressey's multiple-choice questions), students were compelled to write their own responses because, according to Skinner, learning is reinforced more successfully when students can recall the correct answer than when they can only recognize it. This method also offered the student the chance to contrast their response with the provided model response, which, if thoughtfully created by the instructor and enthusiastically pursued by the student, might potentially enhance learning (Holmes et al.:94).

Intelligent Tutoring Systems (ITS) - In the 1970s, ITS—one of the first applications of AI in education—came into existence. The goal of these systems was to give each student individualized education that would adjust to their unique learning style and speed. The University of Illinois's PLATO system, created in the 1960s, is regarded as one of the first instances of ITS (Nwana:264).

Expert Systems - The use of expert systems in education started in the 1980s. These systems imitated human experts' decision-making processes across a range of fields by using AI approaches. Expert systems have been utilized in education to give pupils expert-level direction and assistance in disciplines like science and math.

Learning analytics and data mining - As digital learning platforms and tools became more widely available in the late 20th and early 21st centuries, educational institutions began to

gather vast volumes of data on the behavior and performance of their students. AI tools like data mining and machine learning were used to examine this information and extract knowledge that would enhance instruction and student performance.

Adaptive Learning Systems - In the late 20th and early 21st centuries, adaptive learning systems advanced beyond the idea of ITS. Based on each student's performance and response, these systems use AI algorithms to dynamically modify the material, tempo, and educational tactics. Platforms for adaptive learning, such as EdApp, Adaptemy, or Knewton have grown in popularity recently.

Chatbots and Natural Language Processing (NLP): Applications for education that can comprehend and produce human language have been created using AI technologies like natural language processing (NLP). For instance, chatbots are used in online tutoring programs to give students immediate feedback, respond to their inquiries, and include them in interactive learning.

Personalized Learning Platforms - An important development in education is the rise of AI-powered individualized learning platforms like Khan Academy or Duolingo. These platforms make recommendations for personalized learning materials and activities based on an analysis of students' learning preferences, skills, and shortcomings using AI algorithms.

Although not specifically AI, **virtual reality (VR)** and **augmented reality (AR)** technologies are frequently combined with AI to produce engaging and dynamic learning environments. With the use of these tools, students can now perform experiments, explore virtual worlds, and participate in simulations that would be challenging or impossible in a typical classroom.

All things considered, research and development into the use of AI in education are still in progress, with the goal of utilizing this technology to improve instruction and learning for students of all ages and backgrounds.

4. Opportunities: How AI is Reshaping the Classroom

The concept of "human-like", mentioned earlier, is useful because it can be used to condense the idea that modern computers are far more capable than the edtech applications of the past. Applications for education will be able to interact with teachers and students, co-pilot lesson plans, and take actions that have a wider effect on teachers and students.

The AI education industry is expected to reach $20 billion by 2027 because AI trends accelerate the expansion of EdTech by enhancing student engagement through personalized courses, interactive lectures, gamified classrooms for skill acquisition, etc. Additionally, it is anticipated that by 2023, the worldwide e-learning market would generate $166.60 billion in sales.

The following graph shows how companies are jointly spending billions of dollars on a variety of AI applications, ranging from computer vision and machine learning in education to robots, virtual help, natural language, and education app development.

Figure 1. Revenue in the Global Online Education Market – 2017-2027
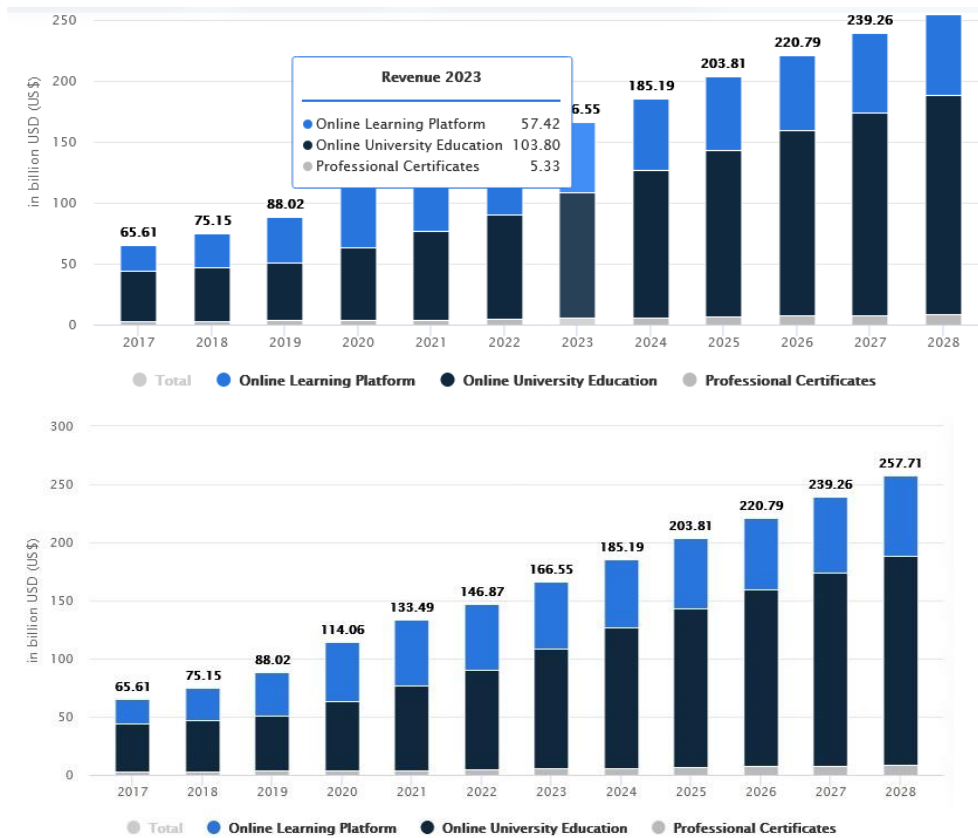
Source: www.statista.com

It is fascinating, but also a little scary, to think about how artificial intelligence might improve education, help instructors, and support more successful tailored learning. Yet, in order to engage in a meaningful discourse regarding artificial intelligence (AI) in education, it is necessary to go past fantastical science fiction narratives in which computers and robots instruct students, taking the place of instructors, and eliminating the human element from an activity that is essentially human.

Similar to chatbots and virtual tutors, conversational AI in education provides prompt support, encouraging self-directed learning. The way students study is being revolutionized by AI chatbots for education. These chatbots, which use machine learning and natural language processing, offer students immediate, individualized help by responding to their inquiries and assisting them with their studies. Developing interactive and captivating educational experiences facilitates students' comprehension of concepts and improves their retention of knowledge. With its ability to create assignments, lesson plans, presentations, study materials, examples, evaluation rubrics, and more, AI may be a great help when developing curricula. For instance, you can request that ChatGPT design a lesson plan based on the learning objectives you specify or provide a ton of examples huge help students understand the ideas they are studying. Moreover, a number of AI tools can assist in producing or modifying multimedia study content, including papers, videos, and photographs.

Another area where AI has shown to be quite beneficial is assessment. AI may assist with a variety of assessment tasks, including case study situations, quiz questions, and course rubric creation. Also, when designing a course, teachers can save a ton of time by having AI come up with early concepts or the first draft of a syllabus or lesson plan, all the while

investigating new pedagogical approaches. In general, educators can increase their productivity, efficiency, and creativity by utilizing AI solutions for idea generation and content creation.

Institutions have come to some crucial realizations as a result of the sudden shift to online learning during the last years. The most important of these is the requirement to provide an accessible and inclusive learning environment that takes into account the varied needs of students and removes obstacles to learning. In order to attain high-quality education, diversity, equality, and inclusion (DEI) have been regarded as one of the main goals at many schools. Faculty members must thus make sure that students with various learning styles, needs, and histories have fair access to opportunities for meaningful learning as well as prompt assistance and support. With a large student body and learners coming from different parts of the country, teachers have a lot of work ahead of them. They have to spend a lot of time marking tests, providing feedback, and putting students in groups for group projects. This leaves them with little time to customize the learning experiences.

The ability of AI technologies to handle these tiresome duties, freeing up faculty members to interact with students and concentrate on more difficult pedagogical responsibilities including developing real-world skills, data analysis, and student evaluation bring up a lot of challenges.

Addressing these action items is clearly difficult, though. Startups, academic organizations, and large technological businesses are all actively involved in these advancements. A few instances of businesses using AI in education are Google, Microsoft, IBM, Amazon, and other edtech firms.

5. Ethical Challenges

Writing in "My Vision for the Future of Artificial Intelligence in Education," https://www.theedadvocate.org/vision-future-artificial-intelligence-education/ one of the top experts on the advantages of artificial intelligence in education, Matthew Lynch, considers both the advantages and potential drawbacks, noting that "the use of AI in education is valuable in some ways, but we must be hyper-vigilant in monitoring its development and its applications." Therefore, it is important to consider ethical concerns, data privacy, and the need for a balanced approach that combines technology with effective teaching practices.

The year 2023 has been characterized by a boom in generative artificial intelligence, like ChatGPT. This has generated both optimism over its potential and apprehension regarding its limitations, particularly in the context of global education systems.

Billionaire Elon Musk claimed that, despite the ongoing feud between him and the other tech titan, Facebook CEO Mark Zuckerberg, the latter has a "limited understanding" of artificial intelligence (AI) in the future.

"I have exposure to the very cutting-edge AI, and I think people should be really concerned about it. ... AI is a rare case where we need to be proactive about regulation instead of reactive. Because I think by the time we are reactive in AI regulation, it's too late." (Elon Musk)

"I think people who are naysayers and try to drum up these doomsday scenarios ... I just, I don't understand it. It's really negative and, in some ways, I actually think it is pretty irresponsible." (Mark Zuckerberg)

As evidenced by the conversation between Elon Musk (SpaceX, Tesla) and Mark Zuckerberg (Facebook), the implications of AI in the future are actually still somewhat uncertain. However, investments and advancements keep rising at an exponential rate, making artificial intelligence a necessary, ubiquitous, and unavoidable—albeit frequently unseen—part of our everyday life. There is a growing trend in schools and colleges to use so-called intelligent, adaptive, or personalized learning systems, whether or not students, instructors, parents, and policymakers approve of it. However, there are many unanswered problems about using AI in education. "We should ask what happens when we remove care from education.... What happens to thinking and writing when... the whole educational

process is offloaded to the machines—to "intelligent tutoring systems," "adaptive learning systems," or whatever the latest description may be? What sorts of signals are we sending students?" (http://hackeducation.com/2015/08/10/digpedlab)

One of the challenges of using AI in the educational process is the absence of infrastructure and access. It is possible that many educational institutions, particularly those in developing nations, lack the resources and infrastructure needed to successfully integrate AI technologies. There may be restrictions on contemporary electronics, high-speed internet access, and other technological needs.

Another problem concerns the security of data and privacy aspects. AI in education frequently entails gathering and processing vast volumes of student data. In China, one school "has installed facial recognition technology to monitor how attentive students are in class. Every movement of pupils ... is watched by three cameras positioned above the blackboard.... Some students are already changing their behaviour due to the increased monitoring.... "I don't dare be distracted after the cameras were installed in the classrooms. It's like a pair of mystery eyes are constantly watching me." The system works by identifying different facial expressions from the students, and that information is then fed into a computer which assesses if they are enjoying lessons or if their minds are wandering.... The computer will pick up seven different emotions, including neutral, happy, sad, disappointed, angry, scared and surprised. If it concludes that the student is distracted with other thoughts during the class, it will send a notification to the teacher to take action." (https://www.telegraph.co.uk/news/2018/05/17/chinese-school-uses-facial-recognition-monitor-student-attention/) This is not to argue that analyzing classroom video streams using artificial intelligence is inherently immoral. In order to improve teaching strategies, there are researchers using AI and classroom recordings to gain a deeper understanding of how student involvement, classroom talk quality, and lively discussion contribute to effective learning. (Kelly et al, 2018) It is essential to guarantee the security and privacy of sensitive data. Strict policies and regulations are required to safeguard private data and stop illegal access.

Moreover, in order to guarantee that students feel at ease utilizing AI-driven educational systems, training programs are required for both teachers and students. Therefore, to be able to use AI in education, teachers and students must be conversant with the technology. Another issue regarding the integration of AI in higher education raises ethical questions about the effects on the academic staff since it may cause job displacement for institutions. Academic staff members who are displaced may encounter difficulties securing alternative work prospects, especially if they lack the requisite skills or resources to adjust to new positions or industries.

In its report, *Ethics of Artificial Intelligence* (2024) UNESCO claims that in the absence of moral guidelines, AI runs the risk of replicating prejudice and discrimination found in the real world, escalating conflicts and endangering basic human rights and liberties. In order to empower individuals to think critically and make informed decisions when clicking, UNESCO promotes the growth of media and information literacy for all. Through its Media and Information Literacy (MIL) program, in particular, it aims to provide training and resources to educators so they can support students in the digital environment.

Stakeholders, including academic staff, administrators, legislators, and technology developers, must have an honest and open discussion about the implications of AI integration in higher education in order to resolve these ethical concerns. To ensure that AI is used in ways that preserve ethical principles and values and benefit academic staff as well as students, collaboration is essential.

6. Conclusions

Machines may now perform jobs that have historically required human cognition thanks to artificial intelligence. AI has the ability to understand and mimic conversational language, solve problems, make decisions, and learn from unstructured data. There will be hazards

that need to be recognized and managed in addition to chances to do things far better than we do now. However, because AI analyzes information differently than people do, the "human-like" shorthand is not always helpful. If we ignore the distinctions between humans and computers, we risk creating AI policy for education that is not quite right.

It is crucial to remember that, even if AI might alter some job positions, it is unlikely to completely replace the need for human instructors. AI is unable to replace the human element, emotional intelligence, or the capacity to encourage and inspire students. Furthermore, rather than completely replacing educators, ethical AI adoption should seek to improve educational outcomes and provide support for them. To guarantee a seamless transition, steps should be taken, such as offering programs for educators impacted by these changes to retrain and upskill.

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LE VOYAGE D'AFFAIRES – ENJEUX ACTUELS ET FUTURS DANS UNE PERSPECTIVE DIDACTIQUE (BUSINESS TRAVEL – CURRENT AND FUTURE STAKES FROM A DIDACTIC PERSPECTIVE)

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Abstract: *In the context of the changes caused by scientific and technical progress, taking into account the demands of speed, promptness, immediate response, attention to details, efficiency, creativity and performance that international business entails, the health crisis of 2020 but also the possible occurrences of other crises of any kind, in recent years there have been changes in the organization and running of the gainful activity and professional travel, which has led to the evolution of the tourist discourse and its themes, to technological and linguistic innovations. In terms of business travel, new internet-connected workspaces have emerged that allow today's business people to track business, intervene in real-time and continuously participate in transactions from the very first moment of the trip. Also, organizing and planning a trip involves accessing online booking platforms and selecting an extensive range of suitable accommodations or restaurants. In this paper, we will show that, in foreign language courses for business, the use of authentic print and online media documents that present the new realities, in addition to the units dedicated to business trips in textbooks published in the last 20 years, can contribute to updating and expanding the horizons and skills of the students from the Faculty of Economic Sciences, diversifying the contents, means and methods of learning, enriching the vocabulary, to a better understanding of the current economic context.*

Keywords: *business tourism, mobility, remote work, lexical innovation, written press, online press*

JEL classification: *Z19*

1. Introduction

L'apprentissage d'une langue étrangère est une activité complexe et pluridisciplinaire, qui ouvre de nouvelles perspectives dans de nombreux domaines et qui, en même temps, a une application pratique immédiate. Parmi les motivations des apprenants, on évoque le besoin de s'exprimer couramment, de mieux comprendre la société, la culture et les traditions des autres pays, de créer et d'entretenir des liens interpersonnels, de construire et d'enrichir la communication avec les locuteurs natifs.
L'un des sujets privilégiés abordés lors des cours de langues étrangères est le voyage, qu'il s'agisse de tourisme, d'études ou d'affaires. L'anthropologue Franck Michel disait que le voyage est « une école de vie, une ouverture au monde, un apprentissage de la diversité ». (Michel, in Jakubowski, 2015 : XIV)
Les voyages d'affaires constituent une partie importante du secteur touristique. En général, ils ont des objectifs clairs : visiter des entreprises, participer à des réunions, des congrès, des conférences, des séjours de team building. Ils ont plusieurs caractéristiques communes, que nous citons à titre d'exemple sans prétendre à l'exhaustivité :
- ils représentent une activité stratégique, un investissement ;
- leur but est de mener à bien une « mission » ;

- ils ont comme traits dominants : la rapidité, l'efficacité, la rentabilité ;
- ils supposent l'immersion dans un espace-temps différent ;
- il s'agit de la traversée rapide de plusieurs pays, sans avoir le temps de découvrir la culture ou la présence de l'autre;
- les participants recherchent le confort et le luxe dans le peu de temps libre qui reste entre deux vols.

La grande majorité des manuels de langues étrangères et des méthodes de langues étrangères à usage professionnel contiennent un chapitre dédié aux voyages à l'étranger et/ou aux voyages d'affaires, dans lequel on retrouve des conversations téléphoniques concernant l'organisation du voyage, plus précisément la réservation de billets d'avion et de chambres d'hôtel, la location de voitures, la prise de commande dans un restaurant, des cartes, des descriptions d'itinéraires, des offres d'excursions et de circuits, des textes publicitaires pour certaines destinations, des descriptions de quelques métiers du tourisme, de la correspondance commerciale.

Dans cet article, nous montrerons que pour avoir du succès lors des voyages professionnels et dans l'interaction avec les partenaires commerciaux étrangers, en plus des compétences linguistiques les étudiants doivent avoir des compétences culturelles et pragmatiques. Comme l'affirme Michel, « le voyage, d'affaires ou non, est ce moment privilégié qui devrait unir les êtres humains pour les pousser à mieux se connaître, à s'entendre et à coopérer ensemble, au-delà des différences sociales, économiques, politiques, linguistiques, religieuses, etc. ». (Michel, in Jakubowski, 2015 : XIV)

Une approche plus large et actualisée du domaine du tourisme est également nécessaire, étant donné l'évolution de la société, les politiques des entreprises, la tendance à réduire les dépenses, respectivement les budgets alloués aux voyages, les innovations dans divers domaines d'activité, que nous détaillerons ci-dessous. Ainsi, nous considérons qu'un voyage d'affaires réussi suppose l'acquisition et la maîtrise d'excellentes compétences linguistiques et de communication pour faire face à différentes situations de la vie quotidienne, la connaissance du lexique spécifique de nombreux domaines, pas seulement de celui du tourisme (de l'histoire, de la culture, des traditions, du marketing, de la gestion, de l'administration à la sociologie et à la psychologie, à l'informatique), ainsi que la capacité d'adaptation aux changements et aux circonstances imprévues.

Dans un premier temps, nous présentons brièvement l'évolution du domaine du tourisme d'affaires et du discours touristique, ensuite nous décrivons les approches du voyage d'affaires dans une série de méthodes de FOS et quelques opinions des didacticiens à propos des auxiliaires d'enseignement, puis nous présentons plus en détail les possibilités d'exploitation de ceux-ci et les avantages qu'ils présentent pour les étudiants en économie.

2. Développements et innovations dans le discours touristique

L'évolution récente de la société et le progrès technologique ont déterminé des changements majeurs dans les domaines de l'informatique, de l'économie, des relations internationales, du tourisme, des transports, de l'environnement, de la santé publique, de l'administration, etc., ce qui a conduit à des modifications significatives dans la vie quotidienne et professionnelle, dans le contexte de phénomènes tels que :

- l'importance particulière accordée à la protection de l'environnement ;
- l'introduction des objectifs de durabilité ;
- de fortes fluctuations dans les perspectives de croissance économique ;
- la diversification et la multiplication des besoins des individus ;
- la modification des habitudes quotidiennes (comportement, organisation, transports, etc.) ;
- l'émergence de nouveaux médias et modes d'information (des médias écrits aux médias en ligne et aux réseaux sociaux) ;

- des innovations rapides dans la production de nouveaux dispositifs de communication, pour répondre aux exigences de qualité, de rapidité et de performance spécifiques au secteur d'activité (tablettes, ordinateurs portables, téléphones intelligents) ;
- la crise sanitaire du Covid-19, la reprise progressive de l'activité lucrative après la période de confinement, le retour plus lent de certains secteurs d'activité, la redynamisation du secteur des entreprises au second semestre 2023 ;
- la modification du type, du temps et de l'espace de travail (ce qui a conduit à la création de nouveaux concepts : *coworking, tiers-lieu, flexoffice*) ;
- l'évolution de la demande, l'augmentation des prix, la sélection d'autres types d'unités d'hébergement pour les déplacements professionnels.

Pendant la pandémie de coronavirus, le tourisme d'affaires a connu des baisses significatives, mais, selon des études récentes, il a rebondi de manière spectaculaire, avec des augmentations en 2023 et de nouvelles perspectives de croissance en 2024. Même si les grandes entreprises n'ont pas encore atteint des niveaux supérieurs par rapport aux chiffres d'avant la pandémie, les PME ont enregistré une fréquence plus élevée des déplacements professionnels. (Deltenre, 2024)

Tout cela a eu pour conséquence l'apparition de changements dans la manière de construire le discours :

- *de nature thématique* : la focalisation de nouveaux sujets de discours : technologie et innovation, marketing en ligne, durabilité, mobilité durable, travail à distance, crise sanitaire, conflits internationaux ;
- *de dispositif* : la préférence accordée à l'information et à l'interaction en ligne au détriment de la communication téléphonique ou de la communication en face à face (par exemple, l'utilisation de plateformes de réservation en ligne, la possibilité d'acheter en ligne des billets aux concerts, aux spectacles, aux musées, l'effectuation de visites guidées virtuelles sur les sites Internet des musées les plus célèbres) ; on est passé de la correspondance commerciale classique et de l'utilisation des services postaux à l'adoption du courrier électronique et à la vidéoconférence, qui permettent aux gens d'être connectés à tout moment) ;
- *de construction générique* : la diversification et l'hybridation des genres discursifs;
- *d'ordre stylistique et textuel* : le degré d'implication de l'instance énonciative, la construction du point de vue du journaliste, l'organisation textuelle (séquences textuelles, cohérence, cohésion) ; les innovations lexicales : la création de néologismes pour dénommer les nouvelles réalités et l'élargissement du sens des notions anciennes (par exemple, nouveaux moyens et manières de se déplacer, nouveaux métiers du tourisme, nouvelles organisations) ; l'apparition constante d'abréviations et de logos ; l'entrée dans le vocabulaire général d'un nombre important de termes techniques ; la multiplication des emprunts à l'anglais et aux langues scandinaves.

3. État de l'art et méthodologie

3.1. On s'accorde à affirmer avec Monteiro et Lisboa (2003 : 309) que le français n'est pas seulement une langue de culture, mais aussi « une langue de contact et d'échange économique ». Les étudiants en économie et gestion doivent être capables d'utiliser le français dans un contexte professionnel, dans des entreprises multinationales ou francophones ayant leur siège en Roumanie ou à l'étranger, d'interagir avec des collègues, des clients et des partenaires commerciaux sur un marché du travail caractérisé par la mobilité et le multiculturalisme. Il s'agit d'étudiants ayant atteint les niveaux A2, B1, B2 et C1 du *Cadre européen commun de référence pour l'apprentissage, l'enseignement et*

l'évaluation des langues et qui souhaitent parfaire leur connaissance du français des affaires afin de travailler dans un environnement international compétitif.

3.2. Nous avons analysé des manuels de français des affaires, de français de la diplomatie et des relations internationales et de français du tourisme publiés après l'an 2000, pour voir quels types de contenus, sujets, domaines lexicaux, objectifs de communication et documents professionnels ils proposent comme support d'apprentissage dans les chapitres consacrés au voyage d'affaires.

La plupart de ces méthodes de FOS abordent les thématiques indiquées dans la partie introductive de notre communication, plus précisément la réservation d'un billet d'avion ou de train, d'une chambre d'hôtel et d'une table au restaurant, la description des services et des structures d'un hôtel, les types de restaurants, les menus, la planification d'un rendez-vous ou d'une réunion d'affaires. Dans certains manuels on retrouve également la présentation de l'agenda d'un événement international, la liste de l'équipement nécessaire dans les salles de réunion ou de congrès, la description des tâches de travail, l'illustration de quelques aspects de la culture organisationnelle des pays francophones.

Parmi les documents professionnels sélectionnés par les auteurs de ces manuels, nous mentionnons les brochures touristiques, les dépliants, les affiches, les horaires et les tarifs, les programmes culturels et de loisirs, les extraits de guides touristiques ou de guides de restaurants, les plans de ville, les fiches d'information, les questionnaires à remplir à la réception de l'hôtel, etc. Un nombre restreint de manuels proposent des textes extraits de la presse écrite (quotidiens d'information générale et revues spécialisées). La plupart des documents sont au format papier ; cependant, les manuels récents contiennent également des documents audio et vidéo (CD-Rom, DVD), généralement constitués d'enregistrements de conversations téléphoniques ou d'annonces sonores diffusées dans les gares et les aéroports. Actuellement, les méthodes de FOS proposent également des éditions numériques, permettant aux étudiants d'apprendre dans un contexte multimédia.

Quant aux fonctions communicatives, les réservations sous forme de dialogue ou de lettre/mail, la localisation d'objets dans le temps et dans l'espace, la description d'itinéraires, la fixation de rendez-vous prédominent. Il y a des exercices pour réutiliser et fixer le lexique et les structures grammaticales, des activités connexes, des tests d'autoévaluation.

Les méthodes actuelles s'appuient sur l'approche actionnelle et contiennent de nombreux exercices de vocabulaire, de grammaire et de phonétique dans le but de développer les quatre compétences linguistiques (compréhension orale, compréhension écrite, expression orale, expression écrite) ; elles sont centrées sur l'accomplissement de tâches, impliquant la mise en œuvre de plusieurs compétences, une attention accrue et une plus grande motivation pour l'exécution des tâches.

3.3. Nous allons montrer qu'afin d'actualiser et d'enrichir le contenu des unités liées aux déplacements professionnels et afin de varier les types des documents exploités, il est utile d'introduire dans les cours de FOS des matériaux complémentaires tels que des articles de presse écrite et en ligne, des documents audio et vidéo que l'on peut trouver sur les sites Internet des quotidiens d'informations générales et des magazines spécialisés, des matériaux publiés sur les sites Internet d'agences de voyages, sur les blogs et les forums de discussion. Ces auxiliaires d'enseignement couvrent des thématiques plus larges, permettant l'exploitation dans les cours de langue étrangère pour les affaires, la familiarisation des étudiants avec des sujets d'actualité, un vocabulaire diversifié, des innovations linguistiques, une multitude d'énonciateurs, une syntaxe actuelle, ainsi que l'augmentation de l'intérêt pour l'étude des langues et l'accroissement du degré d'implication des étudiants dans les activités. Binon et Verlinde (2004 : 272) plaidaient en faveur de l'approche thématique du FOS, car elle « permet de faire bénéficier l'apprenant de la redondance qu'offre l'intertextualité, tout en réactivant le vocabulaire ».

À partir des années 1970, les didacticiens ont démontré l'intérêt de l'introduction des documents authentiques dans les cours de langues étrangères, surtout dans les cours de FOS : des conversations, des interviews, des supports publicitaires, de la correspondance (Gavris, 2020, Dufour & Parpette, 2018, Cuq & Gruca, 2017, Facques & Sanders, 2004). Dufour et Parpette ont insisté sur la nécessité de modifier la notion d'authentique, ont proposé le terme de « données » authentiques et ont attiré l'attention sur l'importance du contexte : « Initialement rattachée aux seuls "documents" présents dans les situations naturelles, elle s'élargit explicitement, dans la démarche FOS, via les discours sollicités, aux contextes d'ancrage des discours collectés dans les milieux ciblés ». (Dufour & Parpette, 2018 : 128)

De nombreux travaux ont abordé la question de l'exploitation des articles de presse écrite (Catarig & Bogdan, 2006, Traian, 1980) et de presse en ligne (Rodríguez Pedreira, 2013, Mangenot, 2013, Catroux, 1999) dans la classe de langue. Du point de vue du contenu, la presse couvre un large éventail de sujets, étant un excellent « outil/vecteur d'information » (Catroux, 1999 : 21) et surprend les évolutions de la société. Albert (2004 : 7), spécialiste de l'histoire de la presse, remarquait qu'« elle est le reflet des péripéties de l'actualité ; elle est sensible à toutes les évolutions politiques et économiques de la conjoncture comme à toutes les variations de la mode et de l'esprit du temps ». La presse numérique offre l'avantage d'un accès facile, se prêtant à une « exploitation rapide et efficace », pour reprendre les termes de Rodríguez Pedreira (2013 : 223). D'ailleurs, « le numérique constitue une occasion, si ce n'est un prétexte, pour transformer le fonctionnement d'un secteur d'activité ». (Abdelnour, 2019 : 5) La lecture de la presse écrite et numérique peut contribuer au développement des compétences générales des étudiants, car « la presse constitue un bon moyen de se tenir au courant de l'actualité politique, économique, sociale et culturelle en France et dans le monde. » (Rodríguez Pedreira, 2013 : 224)

Catarig et Bogdan (2006 : 797) énumèrent quelques possibilités d'exploitation de la presse écrite et des médias en ligne dans les cours de FOS, en soulignant les avantages de l'utilisation de la presse comme auxiliaire d'enseignement : la diversité linguistique (différents registres de langues, innovations linguistiques), la diversité générique et stylistique (des articles courts ayant une fonction essentiellement informative aux articles complexes tels que les reportages, les interviews), la complexité des nouveaux modes d'organisation textuelle (l'hyperstructure), les articles de commentaire (éditoriaux, chroniques, critiques), tous contribuent au développement des compétences linguistiques et culturelles des étudiants en économie et, en même temps, les familiarisent avec un autre système économique et d'autres pratiques culturelles. Nous considérons qu'il y a d'énormes possibilités d'ouverture à la dimension culturelle, à la collaboration et à l'interaction. Il faut cependant préciser que les dimensions des documents et les activités à réaliser doivent être adaptées au niveau des élèves.

3.4. Avec le développement du réseau Internet et de la technologie mobile, les médias en ligne, les blogs, les forums de discussion et les applications mobiles ont suscité l'intérêt des didacticiens et des professeurs de langues (Catroux, 1999, Pouchol, 2001, 2004, Rodríguez Pedreira, 2013, Mangenot 2013, Sim & Pop 2017). On a mis en évidence les avantages de l'Approche Globale de la lecture (Rodríguez Pedreira, 2013) et de l'intégration des technologies de l'information et de la communication (TICE) dans l'enseignement. Pouchol (2001 : 173) soulignait que « l'utilisation de la presse sur Internet peut s'avérer une des activités linguistiques les plus adaptées au développement de la compréhension orale et écrite en classe de langue et pouvant déboucher sur une production orale et écrite. » Nous adhérons à la conception de Rodríguez Pedreira (2013 : 223), selon laquelle « le réseau Internet constitue de nos jours une excellente source d'information dans laquelle puiser des textes électroniques en ligne, sans limites de temps ni d'espace ».

Mangenot (2013 : 36) décrit trois approches d'Internet et propose une série de cybertâches qui intègrent les étudiants dans le « véritable espace de communication » du réseau, en

passant de la simulation et du jeu de rôle à une interaction réelle en tant que véritables participants à la communication et à la réalisation de projets télécollaboratifs complexes. Par exemple, les étudiants participent à des forums de discussion sur des sujets qui les intéressent, ou bien, à partir de documents accessibles sur Internet, ils sont chargés d'organiser un véritable voyage dans un pays francophone.

Ce sont des « ressources variées à portée de main, toujours actualisées, libres d'accès et foisonnant de potentialités didactiques » (Rodríguez Pedreira, 2013 : 223), interculturelles et interactionnelles. Le réseau est plus qu'une source de documentation, c'est un canal de communication. Enfin, la navigation sur Internet et l'exploitation des documents numériques peuvent contribuer à accroître la motivation, le degré d'autonomie et de satisfaction, ainsi que l'intérêt des étudiants pour l'apprentissage des langues étrangères.

3.5. En ce qui concerne le thème du voyage d'affaires, nous avons proposé aux étudiants en économie des activités complémentaires, à réaliser individuellement ou en groupe, à partir d'articles de presse écrite (*Le Monde, Le Figaro, Management*) et numérique (*lemonde.fr, lefigaro.fr, lesechos.fr, lepetitjournal.com*), d'applications, de blogs, d'infographies, de films, de documentaires. Nous avons constaté que les étudiants sont attirés par la possibilité d'explorer l'« inégalable banque de données actualisées » (Pouchol, 2001 : 173), de sélectionner de nouveaux sujets d'intérêt, adaptés aux réalités auxquelles ils sont confrontés au quotidien et qui les incitent à réfléchir sur des aspects de la vie moderne : travail à distance, mobilité durable, transports alternatifs, économies d'énergie, écologie. Nous avons également remarqué une augmentation de l'attention, de l'intérêt et de la motivation pour l'apprentissage du français des affaires et une préférence pour les projets de groupe.

4. Le voyage d'affaires – pistes d'exploitation des documents authentiques et des nouvelles technologies

Nous allons montrer que dans l'approche du voyage d'affaires, tous les supports d'apprentissage évoqués ci-dessus sont complémentaires. Les documents de presse, les forums, les blogs, les applications mobiles se complètent les uns les autres, ayant à la fois une fonction informative et un rôle d'orientation dans l'apprentissage. Vu les dimensions limitées de cet article, nous exemplifierons seulement quelques pistes d'exploitation de ces supports dans l'enseignement du voyage d'affaires aux étudiants de première année de la Faculté de Sciences Économiques.

4.1. Transport et espace de travail
Nous avons proposé aux étudiants de lire un filet (un article court qui présente l'essentiel d'une information) extrait de la revue *Management* (février-mars 2022/N°301) portant sur les nouveaux espaces de travail que les hommes d'affaires peuvent utiliser lors des déplacements professionnels. Ce texte a été le point de départ de plusieurs activités :

> **« Wojo Annemasse**
> **Prochain arrêt : station coworking**
> Après avoir ouvert des espaces de coworking au sein des hôtels Accor, Wojo s'implante... dans les gares !
> Un premier espace vient ainsi de voir le jour dans celle d'Annemasse, en partenariat avec Relay et SNCF Gare & Connexions. Ce lieu de travail est destiné aux voyageurs réguliers (4 millions de voyageurs transitent ici chaque année), notamment les travailleurs transfrontaliers qui pourront ainsi télétravailler ou organiser des réunions dans la gare plutôt que d'aller tous les jours en Suisse. L'endroit dispose d'un Wi-Fi très haut débit sécurisé, d'une salle de réunion pour

quatre personnes, de tables de travail individuelles et d'une „phone box" pour passer des appels en toute confidentialité. Plus un espace détente télé, avec canapé. » (Management, 2022 : 34)

Le texte fait partie d'une section dédiée aux nouveaux espaces de Business, permettant l'effectuation de plusieurs tâches, par exemple :

a) Pour les étudiants débutants, le texte est avant tout un élément d'information et un support pour des exercices de vocabulaire et de grammaire. Ils peuvent réaliser des activités telles que :

- repérer le texte à l'intérieur de la rubrique/section « Espaces de Business » (lecture écrémage) ;
- effectuer une lecture globale, identifier les mots-clés présents dans le nom de la section, le titre, le sous-titre, le corps de l'article, observer les photos, identifier l'idée principale du texte (lecture balayage) ;
- répondre à des questionnaires à réponses fermées ou ouvertes ;
- identifier les termes spécialisés du secteur des déplacements professionnels : *voyageur régulier, travailleur transfrontalier, transiter* ;
- identifier et expliquer les emprunts à l'anglais (*coworking, phone box*) ; trouver des équivalents en français;
- identifier certaines caractéristiques et avantages des espaces de *coworking* ;
- réemployer le lexique (exercices lacunaires) ;
- effectuer des exercices de reconstitution du texte ;
- exploiter le texte d'un point de vue grammatical (le passé récent, l'infinitif passé, le futur) ;
- exprimer un point de vue sous la forme d'un texte cohérent (exercice de production écrite) : *Vous avez voyagé en train à des fins professionnelles. Vous avez fait une escale et dans la station intermédiaire vous êtes entré dans un espace de coworking où vous avez finalisé et révisé votre présentation pour une réunion. Partagez vos impressions de voyage sur votre blog. Écrivez un texte de 80 à 100 mots.*

b) Les étudiants avancés peuvent effectuer une analyse détaillée du contenu (lecture intensive), suivie d'activités de recherche documentaire sur Internet et de production orale ou écrite :

- définir des concepts : *télétravail, espace de travail, espace de coworking* ;
- examiner les avantages et les limites de ces notions ;
- rechercher sur Internet des informations sur l'aménagement des espaces de travail et les nouvelles applications de réservation (consultation du site Internet d'un réseau d'espaces de travail : https://www.wojo.com/fr-FR) ;
- identifier d'autres espaces de travail (par exemple les salons VIP lounge à l'aéroport) et faire des comparaisons entre ceux-ci (critères d'accès, par exemple un programme de fidélité d'une compagnie aérienne, une carte bancaire délivrée par une banque ayant conclu des accords avec cette entreprise, un abonnement annuel de type *Priority Pass*, le paiement d'un tarif), présenter leurs avantages (de l'espace, du confort, peu de bruit), l'offre de services payants ou gratuits (buffet et boissons en libre accès, fauteuils sur lesquels s'allonger, journaux, bar, douche, wifi, prises pour recharger ses batteries) ;
- réaliser des recherches sur Internet pour identifier les nouveaux changements dans l'organisation des espaces de travail (bureaux, salles de réunion, cafés et restaurants), en accédant également à d'autres types de documents authentiques (blogs, forums de discussion) ;
- planifier un voyage d'affaires en France, décrire l'itinéraire, réserver des billets d'avion/train et réserver des espaces de travail via les plateformes de réservation ; estimer un budget pour le voyage ;

- organiser des débats sur les concepts de *bien-être au travail, l'esprit de communauté, la collaboration, la durabilité* – caractéristiques des nouveaux espaces de travail ;
- élaborer des rapports liés à l'organisation des espaces de travail pour les hommes d'affaires en Roumanie ;
- débattre sur l'opportunité d'ouvrir une entreprise ayant comme objet d'activité la création d'espaces de travail pour les voyageurs d'affaires, participer à des forums de discussion, utiliser leurs compétences linguistiques en direct et communiquer avec des personnes du monde entier, des locuteurs natifs ou des personnes apprenant la langue étrangère concernée ;
- organiser un espace de *coworking* au sein de la faculté ;
- rédiger des essais sur les nouveaux espaces de travail : 1. Les étudiants sont invités à nommer quelques caractéristiques et valeurs des espaces de coworking, d'en choisir une qu'ils vont exemplifier dans un court texte commençant par une citation : « L'espace n'est pas seulement vu par les yeux. C'est un milieu chargé de valeurs qui ne doivent rien à l'évocation des formes et des couleurs ». (Șuta, 2018 : 202) 2. Les espaces de coworking sont considérés des « espaces ouverts d'innovation ». (Capdevila, 2016) Qu'en pensez-vous ?

Le texte de départ illustre de nouvelles réalités de la vie des gens d'affaires, offre l'opportunité d'identifier, de comprendre et d'expliquer des termes de spécialité et des néologismes, de remarquer l'utilisation des anglicismes dans des textes authentiques destinés aux entrepreneurs. Les auxiliaires d'enseignement aident les étudiants à approfondir ce sujet, à le présenter à des collègues, à agir en organisant un voyage ou en aménageant un espace de travail. La lecture des articles de presse permet aux étudiants de s'informer, d'exprimer une opinion, d'interagir et de prendre contact avec des aspects psychosociaux et interculturels, en focalisant des valeurs telles que la collaboration, la durabilité, la communauté.

Dans le contexte du développement rapide des nouvelles technologies et des activités de services, de nombreux autres aspects thématiques intéressent le domaine des voyages :

- la protection de l'environnement ;
- les nouvelles tendances du tourisme (tourisme durable ou responsable) ;
- l'évolution de la technologie et les modes de transport durable (électromobilité, mobilité durable, comodalité, intermodalité, multimodalité) ;
- le désir de combiner travail, plaisir et bien-être ;
- les exigences de sécurité.

En ce qui concerne les voyages professionnels, les étudiants ont montré le plus grand intérêt pour :

- de nouvelles formes de travail: *télétravail* (travail à distance, un concept développé après les années 2000, largement adopté durant la crise sanitaire ; *coworking* ou *cotravail,* qui suppose « l'utilisation d'un même espace par des professionnels indépendants, afin de partager les expériences et de favoriser la créativité » (larousse.fr); *workation* (dérivé de l'anglais „*work*" et „*vacation*") ou *tracances* (mot-valise, contraction de „*travail*" et „*vacances*"), un concept japonais qui allie travail et vacances ; il s'agit du travail à distance, depuis un endroit autre que le domicile, voire depuis une destination de vacances, avec une bonne connexion wifi et un ordinateur ; la notion implique l'idée d'une meilleure qualité de vie, de la réduction du stress et de la création de nouveaux liens sociaux ;
- de nouveaux espaces de travail mobiles et ouverts, qui impliquent une hybridation entre l'espace de travail et l'espace de détente: *flexoffice* (poste de travail flexible), *deskshare* (partage de bureau), *coworking* (bureau délocalisé) ;
- de nouvelles désignations pour les personnes adoptant le travail à distance: *nomades digitaux*, à savoir des personnes qui peuvent travailler de n'importe où, en tant qu'employés d'une entreprise, entrepreneurs ou travailleurs

indépendants/freelances, en bénéficiant de visas de long séjour et d'un régime fiscal avantageux;
- de nouveaux métiers : consultant en mobilité durable en entreprise ;
- l'évolution de la dynamique du tourisme d'affaires;
- la diminution de la pollution due aux transports ;
- de nouveaux concepts créés suite à la volonté des gens de protéger l'environnement: *démobilité, flygskam, train-bragging ;*
- la protection des populations locales ;
- la volonté de promouvoir un tourisme durable et respectueux.

4.2. Hébergement

En ce qui concerne l'hébergement, outre les dialogues et la correspondance traditionnelle ou le courrier électronique pour la réservation d'une chambre d'hôtel, les étudiants débutants peuvent être impliqués dans des activités variées : grâce à l'accès aux sites Internet des hôtels 4 et 5 étoiles des pays francophones et aux plateformes de services et de réservation en ligne (Booking, Airbnb, Tripadvisor), ils peuvent trouver des informations sur les chaînes hôtelières destinées aux voyageurs d'affaires, effectuer des simulations de réservation, décrire les services hôteliers et étudier les avis des clients.

Les étudiants avancés peuvent identifier le changement des registres de langue, car les commentaires ou avis des clients (évaluations positives ou négatives) sont un type de texte différent de ceux que l'on retrouve dans les méthodes de FOS. De plus, la communication avec les utilisateurs des plateformes, par exemple la plateforme Airbnb, présente des particularités, à savoir « Airbnb permettrait […] d'échanger davantage avec un hôte que cela n'est possible avec le personnel d'un hôtel ». (Rodet, 2019 : 25)

Nous avons également proposé aux étudiants avancés de décrire des unités d'hébergement particulières, situées dans des pays francophones ou dans d'autres pays, d'estimer des budgets de dépenses pour des déplacements professionnels dans de telles unités d'hébergement et de les comparer avec les budgets nécessaires à l'hébergement dans des hôtels classiques destinés aux gens d'affaires.

Comme la plupart des informations sur les logements particuliers situés dans les pays nordiques sont en langue locale et en anglais, nous avons demandé aux étudiants des programmes universitaires Commerce International (en anglais) (acronyme AIE) et Gestion des Affaires (en anglais) (acronyme AAE) de présenter et d'expliquer en français les nouveaux concepts, que nous allons présenter ci-dessous, de simuler des réservations sur les sites Internet de ces unités d'hébergement et de créer des documents promotionnels pour de telles unités d'hébergement.

En Norvège, il existe de petites unités d'hébergement pour ceux qui recherchent l'isolement, la paix, la simplicité, la communion avec la nature, une vie sans stress et un mode de vie durable et créatif :
- *tretopphytter* (*treetop hut* / cabane dans un arbre) – des chalets rustiques, charmants, confortables ;
- *carbon-neutral cabins* – de petites unités d'hébergement durables sans empreinte carbone, situées dans l'archipel de Fleinvær sur une île isolée, accessibles uniquement par la mer, par ferry ;
- *StarLodge, GrandLodge, SkyLodge* – cabines de luxe, modernes, élégantes et sophistiquées, avec de hauts plafonds et fenêtres panoramiques, 22-40 m², situées à côté du célèbre Lysefjord. (https://www.thebolder.no/lodges) SkyLodge est célèbre pour avoir obtenu le prix « best cabin project of the year 2020 ».

En Finlande et en Suède aussi, il existe des cabanes durables et modernes qui utilisent des sources d'énergie renouvelables. La plupart des informations sur ces logements sont en anglais :

„The Nolla cabin: cabin life without a trace

Nolla illustrates how self-sufficiency and the use of renewable energy sources with minimal CO2 emissions can be achieved by modern solutions. […] It's an experiment to explore how we could live on less, whilst spending more time enjoying the nature around us. (https://www.neste.com/news-and-insights/nolla-cabin-cabin-life-without-trace)

D'autres activités d'expression orale et écrite peuvent avoir pour thème : les effets positifs/négatifs du tourisme d'affaires pour les lieux où sont implantées les unités d'hébergement ; l'importance de la durabilité dans le tourisme d'affaires ; la politique de voyages d'une entreprise, la mise en place de plans de mobilité en tenant compte des exigences de protection de l'environnement ; des aspects de la culture d'entreprise ; des comparaisons entre les deux pays (la France et la Roumanie) sur des sujets tels que l'adaptation au travail à distance, les différences culturelles relatives à la manière dont s'exerce le contrôle sur le travail effectué.

4.3. Motivation, autonomie, responsabilité, créativité

La démarche proposée comporte plusieurs étapes : sélectionner des informations, les assimiler et les traiter, les hiérarchiser, les retransmettre, donner un avis personnel, faire des simulations, voire organiser un véritable voyage, dans le but de pratiquer la langue à des fins concrètes et réelles. Les étudiants peuvent mettre en pratique différentes qualités, à savoir la curiosité, l'indépendance et la créativité, alors que l'enseignant a plutôt un rôle de médiateur. Nous avons donc affaire à une évolution de la dynamique de la relation enseignant-étudiant. Proposer une recherche documentaire aux étudiants, c'est les initier à l'usage des versions numériques des quotidiens et des magazines spécialisés, leur faire découvrir diverses ressources qui les rapprochent d'un usage réel de la langue et leur ouvrent d'immenses perspectives. Comme l'affirme Pouchol (2001 : 175), il s'agit d'un « véritable travail linguistique en autonomie sur l'ordinateur, débouchant sur un échange d'idées authentique ».

5. Conclusion

Dans cet article, nous avons cherché à montrer qu'il existe de multiples possibilités d'exploitation des documents authentiques, sur support papier et numérique. Entre les manuels et ces dispositifs de communication il y a des relations de complémentarité. Les tâches confiées aux étudiants, depuis les simples activités de compréhension orale ou écrite jusqu'aux tâches complexes d'analyse, de synthèse, de réactivation du vocabulaire et de la grammaire dans d'autres contextes, voire en situations réelles, des tâches adaptées à leur niveau de langue, les incitent à découvrir une multitude de documents de divers genres, à faire des opérations de sélection et de hiérarchisation des informations, à les traiter, à exprimer leurs propres idées et arguments, à faire des présentations orales ou des exercices d'expression écrite. Comme le disait Mangenot (2013 : 39), « Internet contribue à contextualiser fortement la tâche, insérant la production langagière attendue dans tout un ensemble de discours ». L'objectif est d'aider les étudiants à devenir autonomes dans le processus d'apprentissage et dans leur vie professionnelle.

Parmi les nombreux avantages de l'introduction de ces matériels supplémentaires, non seulement dans les cours concernant le voyage d'affaires, nous mentionnons :
- documents authentiques, dont le contenu est enrichissant,
- grande diversité et accessibilité des documents,
- contact direct avec l'utilisation réelle de la langue,
- mise en situation, communication plus authentique,
- amélioration des stratégies de compréhension et production,
- enrichissement du vocabulaire général et du lexique de spécialité,

- intégration de la dimension culturelle,
- conscientisation du rapport avec les autres,
- ouverture vers d'autres domaines interreliés: soutenabilité, développement durable, protection de l'environnement,
- échanges interdisciplinaires,
- travail différent, interactif,
- collaboration entre les apprenants,
- dynamique différente apprenants/professeur de langues,
- accroissement de la motivation des apprenants,
- autonomisation des apprenants,
- formation de l'esprit critique des apprenants.

Le voyage d'affaires est un sujet extrêmement complexe, impliquant des contenus très divers et des interconnexions avec de nombreux domaines qui ont beaucoup évolué ces dernières années.

Enfin, nous pensons que les cours de langues étrangères peuvent préparer les futurs gens d'affaires à une communication efficace et à une interaction réussie avec les partenaires commerciaux, leur offrant une ouverture sur le monde. N'oublions pas que la langue est « un moyen pour opérer culturellement, pour comprendre et produire du sens, avec les outils et dans l'univers de l'Autre ». (Galisson et Puren, 1999 : 96)

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THE NEW ECONOMIC SECURITY OF THE EUROPEAN UNION

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Abstract: *Geopolitical changes have shown that current threats are not only directed at the state's security but also at the individual's. Besides the traditional concept of security, a new concept has emerged: economic security. The liberal conception was based on the hypothesis that economic interdependence would lead not only to prosperity but also to greater security. Traditional analyses do not sufficiently capture the real connections between the economy and security. In traditional approaches to security, the key concept was state security; in neo-traditional ones, new actors such as international organizations and non-governmental organizations also intervene alongside the state. Transformations in the international system demonstrate the need for a geostrategic renegotiation of relations at the regional level to ensure states of regional economic cooperation based on principles promoted by the European Union. Our analysis is a qualitative one, examining documents relevant to our topic, as well as a series of theories that underpin our analysis. Our research methods include content analysis of important documents and a SWOT analysis of the current crisis generated by the conflict in Ukraine. The central issue is given by these major changes that challenge the European project. In the face of these geopolitical changes, the following question arises: "Can economic interdependence be used to create stable bilateral relations between EU member states and between the EU and third countries to ensure European economic security?" The research starts from the following hypothesis: "As long as there is cooperation between the countries neighbouring the EU, there will be no risk of conflicts." Since the EU acts not only in its own interest but also to create a business environment conducive to the development of enterprises in member countries, the risks the EU is exposed to as a global actor will also impact various industrial sectors and the internal market. Our objective is to demonstrate that the European Union, as a regional actor, can ensure the economic security of member states in the face of new hybrid threats. Our analysis focus on examining the economic relations between the European Union and its Eastern neighbours in the context of rapid changes in the international arena.*

Keywords: *economic security; neo-traditional security; hybrid threats; regional economic interests*.

JEL Classification: *F02; F50; F52; F60.*

1. Introduction

The transformation of the international system from unipolar to multipolar has brought with it certain changes, the most representative being the division into economic interest blocs.

In this context, the EU must adapt its economic policies to face new economic and security challenges. Creating a strong European economic bloc represents a true challenge for the European Union. Although the EU has signed a series of free trade agreements, China's rise in Asia has become a significant competitor in the international market. Regionally, Russia, through the conflict it generated in Ukraine, is a factor destabilizing the south-eastern region of Europe and threatening European energy security.

2. Methodology

Our research methods will include content analysis of important documents and a SWOT analysis of the current crisis generated by the conflict in Ukraine. The central issue is given by these major changes that challenge the European project. In the face of these geopolitical changes, the following question arises: "Can economic interdependence be used to create stable bilateral relations between EU member states and between the EU and third countries to ensure European economic security?" The research starts from the following hypothesis: "As long as there is cooperation between the countries neighbouring the EU, there will be no risk of conflicts." Since the EU acts not only in its own interest but also to create a business environment conducive to the development of enterprises in member countries, the risks the EU is exposed to as a global actor will also impact various industrial sectors and the internal market.

3. Theoretical Context

In our attempt to illustrate the demonstration of the hypothesis, we will present a series of theories that underpin our analysis. Generally, security threats target the international community or part of it (Rousseau & Garcia-Retamero 2007, 745). The freedom of capital movement within the EU has led to the creation of economic interdependence not only at the level of different sectors of activity but also in relations between individuals and regions of different states. Alongside the freedom of capital movement, the causes of economic interdependence are also given by other factors such as:
- Industrialization – the engine of economic advancement;
- Economic growth;
- Regional production – depends on both geographical positioning and soil resources;
- Labour specialization – producing certain components needed by other states.
Another characteristic of capitalist liberalism is uncertainty and risk (Cable, 1995, p. 306). Alongside economic liberalism, institutional liberalism or neoliberalism posits that international cooperation between states is feasible and sustainable. This way, it is considered that the chances of conflict or competition can be reduced. International cooperation can be supported through continuous and repeated interactions that facilitate:
- Reduction of transaction costs
- Provision of information
- Increased credibility of external commitments
- Establishment of clear points for better coordination
- Facilitation of reciprocity principles
- Allowing for interconnection problems that increase the costs of not respecting international commitments

In developing a security strategy, a democratic state will always prioritize the security of its citizens, the related strategies, and the national interests that arise from them. In this context, the EU, through its common security policy, tries to ensure not only the safety of the citizens of member states but also the maintenance of democracy. Whether we are talking about a

state or another actor in the international system (a supranational organization), it cannot be fully secure and will continuously seek to maximize its power to survive (Mearsheimer 2003, 21). According to the security dilemma, the more a state tries to increase its security to obtain safety guarantees in case of facing an aggressor state, the more this inevitably reduces the security of other actors. This stems from the uncertainty regarding the intentions of other state actors in international relations (Nye, 2004).

Generally, security threats target the international community or part of it (Rousseau & Garcia-Retamero 2007, 745). In practice, we encounter three types of threats:

- Military threats;
- Economic threats;
- Cultural threats.

Through the theory of security complexes, authors have distanced themselves from the concept where the dynamics of security were investigated starting from the economic, cultural, or historical sources of a region (Buzan & Wæver, 2003, p. 43). Barry Buzan and Ole Weaver's theory of regional security complexes states that they are defined as distinct and stable patterns of security between actors. Regional security complexes represent a conceptually specific defined region that functionally may or may not coincide with a broader understanding of that region (Buzan & Wæver, 2003, p. 48). In the case of Europe, since most EU member states are also NATO members, we can view part of Europe as a regional security complex. Thus, economic security will be subordinated to the general security of states and not as a dynamic factor of it.

In the specialized literature (Cable, 1995, pp. 306-307), economic security has several meanings:

1. Economic security clearly refers to the commercial and investment aspects that can affect the country's defense capacity.
2. A second way to define economic security is in terms of economic policy tools used in response to aggressions: trade boycotts and investment restrictions or energy resource restrictions. From this perspective, security is seen as "supply security."
3. A third point of view is much more indirectly defined: "relative military capacity can be undermined by poor performance, and thus an economic policy response is necessary."
4. Lastly, there is a more veiled acceptance of security that captures the fear of global instability in economic, social, and ecological terms.

EU institutions are trying to develop a framework with member states for assessing risks that have direct implications for the EU's economic security, including a list of critical technologies for economic security, which will allow risk management in terms of economic security. Creating a continuous structured dialogue with the EU's private sector aims to achieve stronger resilience in economic security. A new revision of the Regulation on the screening of foreign direct investments in member states will also generate better regulation of economic security conditions within the EU. The main directions targeted are:

- Supporting research and development of dual-use technologies
- Using CFSP tools to strengthen the EU's economic security, including the necessary toolkits for hybrid and cyber diplomacy, as well as the toolkit for foreign information manipulation and interference actions (FIMI) (European Commission, 2023)

4. SWOT Analysis of the EU's Energy Security

To conduct a comprehensive analysis, we will use a SWOT analysis of the current energy security of the European Union (see *Table 1*), with three points for each category, which we will subsequently develop briefly.

Our SWOT analysis identified the following strengths:

In the shadow of Russia's invasion of Ukraine, the EU made the historic decision to stop gas supplies through the North Stream 1 and 2 pipelines and reorient itself.

The cessation of gas supply through the North Stream 1 and 2 pipelines and the shift towards the global market to find new fossil energy sources marked a historic decision by the European Union (EU) to decouple energetically from the Russian Federation. This launched the EU into a race against time to find alternative sources. As we have seen, the reorientation was immediate and effective, accelerating the EU's transition to green energy and its own clean energy production by several years.

In light of the events of February 2022, the need to strengthen the EU's energy security became increasingly apparent. This involved adopting new alternative energies, abandoning fossil fuel heating, and consolidating European energy policies. The only way these changes were necessary was through strong cohesion among member states on energy security. Since spring 2022, the EU has successfully established a viable energy security policy for its member states, ensuring there are no supply chain disruptions.

Among energy products, gas represents the highest share of imports within the EU. To balance dependency, energy hubs such as the one in Turkey have been created, ensuring a continuous flow of energy to consumers.

Table 1: SWOT

STRENGTHS	WEAKNESSES
- Decoupling the EU's energy from the Russian Federation - Strengthening the EU's energy security - Achieving strong cohesion between member states regarding energy security	- The significant share of energy products imported from Russia in the EU's total imports - Lack of experience of member states in collaborating on common trade policy in crisis situations, and the imposition of sanctions on Russia produced a trade deficit that peaked in 2022 - Dependency on Russia facilitated its blackmail in the hybrid war it is waging with the EU
OPPORTUNITIES	THREATS
- Achieving stronger cohesion of European policies, not just those on energy security - Strengthening the green energy sector and making necessary changes now - Bringing the EU closer to other external gas and oil markets	- Failing to meet commitments made by member states in a timely manner - Increasing pressure exerted by Russia on states within its sphere of influence could lead to higher demands on the EU and member states, making them unable to meet external demands - Changing the war in Ukraine

Source: own contribution

Our SWOT analysis highlighted the following weaknesses:
Due to the high share of gas imports from Russia (about 4.1% of the total gross energy product in 2020), achieving total independence from Russia is progressing quite slowly. (*Figure 1*)

Individual preferences of member states regarding direct cooperation with Russia made balancing the trade deficit difficult. This was reflected in how they approached the necessary updates for a common European energy security without Russia. Until 2022, each EU member state was responsible for its own energy, usually secured through individual contracts with the main supplier, typically Russia. Since then, there has been a struggle between states that quickly achieved energy independence (e.g., Romania) and those still linked to the Russian Federation (e.g., Austria, Hungary).

Throughout this period, Russia systematically blackmailed the EU and its member states through gas and oil, demonstrating once again how hybrid warfare can be waged in states

not involved in conventional war. The conflict in Ukraine also created certain opportunities. For better economic security, the EU sought closer ties with other external gas and oil markets, such as the United States and others. The share of Russian gas imports in total EU gas imports decreased from 39% in 2021 to 12% in 2023. (*Figure 2*)
Negotiations with the U.S. have already been resolved and are producing effects.
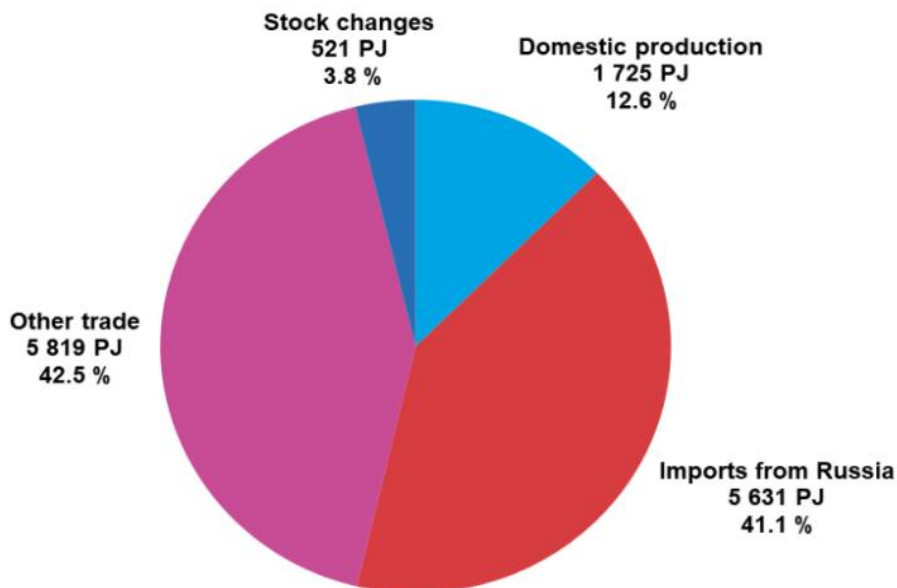
Figure 1: Natural gas. EU production, trade and imports, 2020 (in % and petajoules, PJ)
Source: EUROSTAT (a) (including estimates for non-reported data)
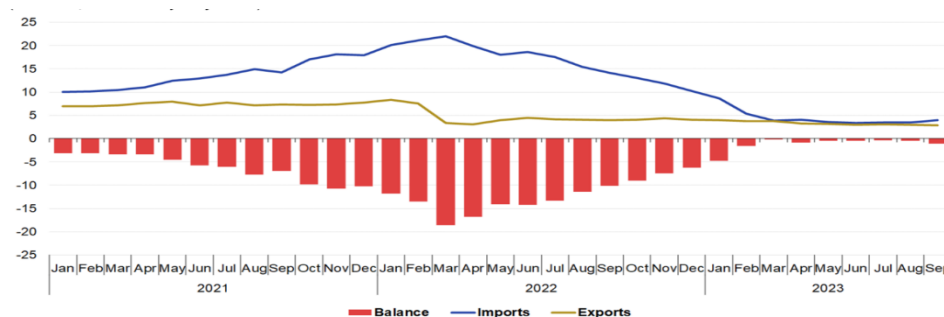
Figure 2: EU trade in goods with Russia, January 2021 to September 2023 (Euro billion, seasonally adjusted)
Source: EUROSTAT (b) (online data code: ext_st_eu27_2020sitc)

Within the internal EU market, energy producers have mobilized, ensuring that most member states have the necessary energy reserves for the current winter. Stronger cohesion of European policies, not just those related to energy security, yields better results in a relatively short time. Now, the effects will certainly be seen, but global policies have been adopted in light of climate change. The EU adapted by promoting a "green" energy sector. These new policies bring a series of changes. Although these changes were normally planned for a longer period, the current crisis has generated a restructuring and mobilization to create a union that not only meets environmental standards but is also more secure in the face of crises like the current one caused by the conflict in Ukraine.

Moreover, blocking trade with Russia created an EU-Russia trade deficit, which peaked at EUR 18.6 billion in March 2022, as shown by EUROSTAT statistics. (*Figure 3*)

Q3 2021
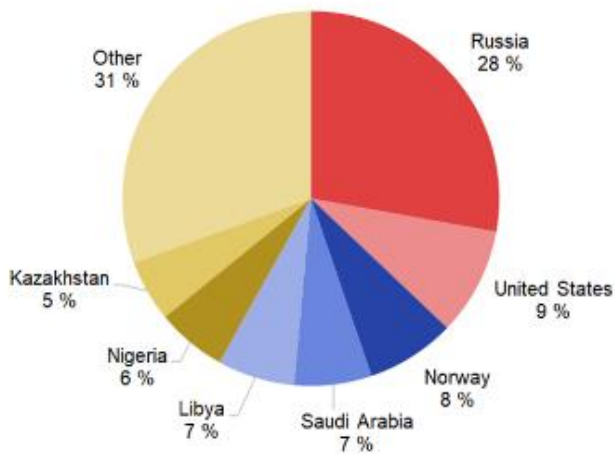
Q3 2022
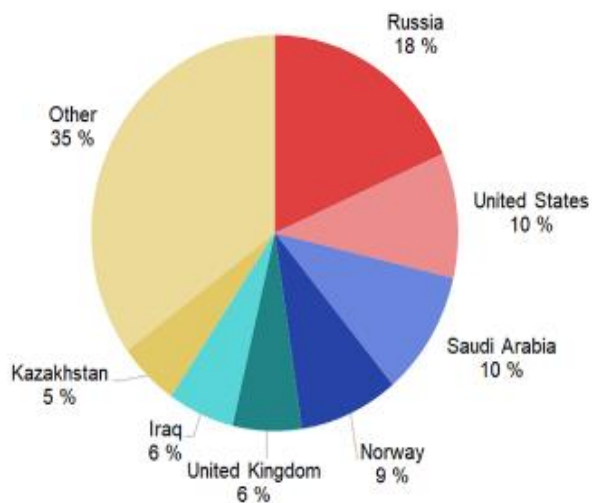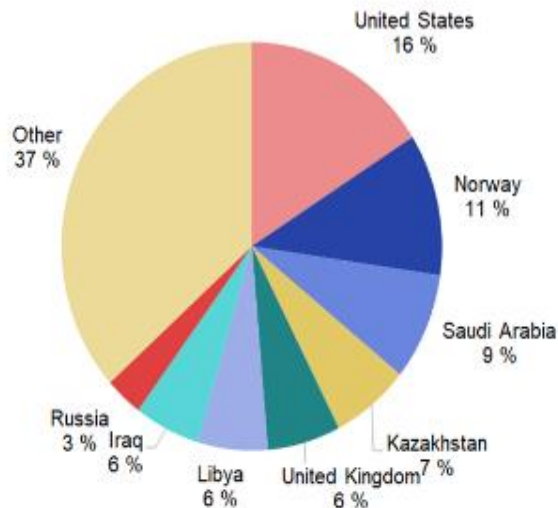
Figure 3: Main partners for extra-EU imports of petroleum oil
Source: EUROSTAT (c) (online data code: ds-059322)

The pressure generated by this crisis can also create some "threats" due to the potential failure to meet member states' commitments in a timely manner. Limited resources for energy products pose the risk of failing to meet the market demand. In this case, the EU would resort to its reserve stock to ensure its energy security. Another potential threat is a possible change in the Ukraine war, which could have negative consequences for the entire EU.

5. Conclusions

To strengthen the EU's economic security, it is necessary to (European Commission, 2023):
- Have a resilient economy.
- Provide incentives to ensure the economic security of member states.
- Analyse the impact of intervention policies or the socio-economic impact caused by failures of economic security measures.
The importance of global supply chains has fundamentally increased, following the exit from the COVID-19 pandemic and the onset of international tensions (Schneider-Petsinger, 2021; European Parliament, 2021). The EU cannot ensure its economic security independently but only within an interconnected international environment through direct cooperation with other actors in the international system. Economic security in general, and energy security in particular, can only be achieved if we consider the current geopolitical realities. As demonstrated, this crisis represents not only a possible threat to economic security (and especially energy security) but also an opportunity to recalibrate the energy resources of EU member states.
The vulnerabilities of the EU regarding critical dependencies in strategic sectors are similar to those of other actors in the system, proving once again that each state is potentially vulnerable to different forms of economic coercion. Neighbouring states to the EU, such as

Moldova and Ukraine, are also vulnerable in terms of energy security. The increased pressure from Russia on states within its sphere of influence is noteworthy, exerting pressure on the EU's borders. Although these aggressive policies are reminiscent of the 19th century, the EU, in its role as a regional actor trying to maintain regional stability, must act in the spirit of international law. Achieving economic security at the EU level requires multilateral cooperation within a framework that defines common norms for the EU's global action within the international community.

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THE REPRESENTATION OF CORPORATE SOCIAL RESPONSIBILITY (CSR) IN AMERICAN BANK SLOGANS

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Abstract: *This paper presents an analysis of a sizable collection of American bank slogans in light of Dahlsrud's five dimensions of Corporate Social Responsibility (CSR), aiming to assess the degree to which these slogans align with the CSR model. The study is motivated by the observation that while banks frequently emphasize their CSR initiatives on their websites, many customers' interactions with financial institutions are confined to basic transactions, often leaving them unaware of these corporate responsibilities. Given that slogans serve as a primary means of communication between banks and the public, conveying positive messages about their operations, we investigate their potential to reflect CSR dimensions. The focus of this analysis is on the United States of America, leveraging an online index encompassing nearly five thousand banks, from which a database of about sixteen hundred slogans was compiled. The methodology, detailed in the initial section of the study, employs empirical research and content analysis. The findings indicate that the nature of banks' core activities, which primarily occur behind the scenes, restricts the portrayal of CSR dimensions in slogans to primarily economic, social, and stakeholder concerns. Conversely, environmental and voluntariness dimensions are notably underrepresented in these communications.*

Keywords: *slogan; American banks; Corporate Social Responsibility (CSR)*.

JEL classification: *G3; G21; M37; Y80*.

1. General Introduction and Methodology

Although scholars acknowledge the absence of a universally accepted definition of CSR, there exists "an abundance of definitions" (Dahlsrud, 2006: 1) due to the concept's lack of well-defined boundaries (Djalilov, 2015; Paulík, Kombo & Ključnikov, 2015) which, for some, even makes it questionable. Nevertheless, there is a consensus that business entities bear responsibility for public goods as users of society's resources, given their activities' profound impact on societal well-being. The definitions examined in this study exemplify this perspective:

a). "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (European Union, 2011).

b). "Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives ("Triple-Bottom-Line Approach"), while at the same time addressing the expectations of shareholders and stakeholders" (United Nations Industrial Development Organization, 2024).

The concept of Corporate Social Responsibility (CSR) has become pervasive across all sectors of business, including the banking industry, particularly in light of previous financial crises that underscored the significance of banks and the wide-ranging consequences of their irresponsible and risky behavior. Through the integration of CSR principles into their operations, banks seek to repair their tarnished reputations and regain trust in the aftermath of crises, attract new customers, and cultivate loyalty among existing customers and employees alike.

In the realm of finance, the perception of Corporate Social Responsibility (CSR) faces significant challenges. This is primarily due to the intangible and predominantly invisible nature of financial activities, where banks serve chiefly as intermediaries managing funds and financial risks, and monitoring borrowers. Additionally, the sporadic, necessity-driven, and increasingly dematerialized customer interactions via online services further obscure the extent to which the CSR model is adopted and implemented.

Despite banks often having dedicated and well-developed sections on their websites showcasing their socially responsible practices and involvement, these efforts often go unnoticed, contributing little to increasing awareness (cf. Paulík et al., 2015: 123).

Because customers' interactions with their banks are often limited and seldom conducive to learning about the bank's Corporate Social Responsibility (CSR) engagement – despite it being considered an economically beneficial long-term strategy – it is pertinent to examine the extent to which this engagement is conveyed through slogans. This investigation is based on the premise that slogans are typically the initial message received by both potential and existing clientele.

Due to their concise nature, slogans are inherently limited in their ability to directly portray actual Corporate Social Responsibility (CSR) practices within the banking sector. However, they can serve as indicators of the banks' commitment to the CSR model by incorporating words or ideas that reflect the institutions' values in their interactions with customers, who are the primary sources of their assets. These slogans often employ simple and direct language to compensate for the intangible nature of banking products and services.

Given the susceptibility of deposits to fluctuations in the globalized market, unforeseen events such as the COVID-19 pandemic, or irresponsible and risky behavior, financial slogans must convey messages of professionalism, stability, carefulness, and long-term commitment to providing trustworthy services to society. Expressive slogans typically use more content words (such as nouns, adjectives, and verbs) and fewer function words (prepositions, conjunctions, and pronouns). The former serve as evaluative lexical units, more likely to evoke positive associations.

The list of slogans used for the present analysis was created several years ago using the Bank Branch Locator – Online U.S. Banks & Branches Locator, a database documenting the current existence of "4798 local and national banks offering banking services in the United States with nearly 75000 branches in 9845 cities" (Bank Branch Locator, 2024). The database provides access to the banks' websites and their associated logos, which may also feature slogans. The number of banks has declined in recent years; for instance, in 2021, the database contained 5,275 banks. Maintaining an up-to-date database is labor-intensive due to the dynamic nature of the U.S. financial institutions, requiring individual access to each website. However, as demonstrated in a previous study, there exists limited lexical diversity among bank slogans: "the sampled slogans rely on the clever use of only a limited number of words with a significant number of occurrences" (Veche, 2021 : 343). This enabled the compilation of a list of 1,586 bank slogans from both local banks (with branches in no more than three, and often neighboring, states) and national banks. Many of these slogans are shared among multiple banks, indicating a tendency to convey a particular message. Consequently, duplicates were retained for analysis. Frequently, some banks' logos feature short phrases such as "Est. / Established…", "Since…", and "Founded…" followed by a year or number of years. We consider these phrases as slogans,

as they are intended to convey the banks' experience and reliability to customers in a highly competitive market.

2. Analysis and Results

Dahlsrud's model (Table 1) is the background against which we conduct our analysis.

Table 1: Dahlsrud's five CSR dimensions (adapted).

Dimensions	Slogan content refers to
Environmental	Aspects related to the natural environment (concerns, protection, etc.)
Social	The relationship between banks and society (social concerns, contribution to the betterment of communities, etc.)
Economic	Economic and/or financial aspects (development, profitability, general business operations)
Stakeholder	The interaction with the stakeholders (customers, communities, employees, etc.)
Voluntariness	Actions that exceed legal prescriptions (ethical values, willingness to transcend legal obligations, etc.)

As previously mentioned, due to their brevity, slogans are unable to fully encompass the complexity of the various aspects associated with each of the five dimensions of Corporate Social Responsibility (CSR). Additionally, the arcane management of funds largely occurs behind the scenes and is not observable by customers, who typically do not delve into the intricacies of banking beyond basic transactions such as taking out loans, making deposits or withdrawals, and opening or closing accounts. Given that banking is a regulated sector with highly standardized activities, attracting customers requires more than simply claiming to provide a familiar service in a competitive market. Furthermore, considering the significant impact of financial activities on individuals' lives, people are particularly discerning about how their money is managed. Consequently, financial slogans face the challenge of resonating with their target audience in a creative manner while maintaining the pragmatic nature inherent to the financial world.

In light of these considerations, the general distribution of slogans in our database is as follows, with the CSR dimensions represented from the most to the least prominent (see Figure 1).
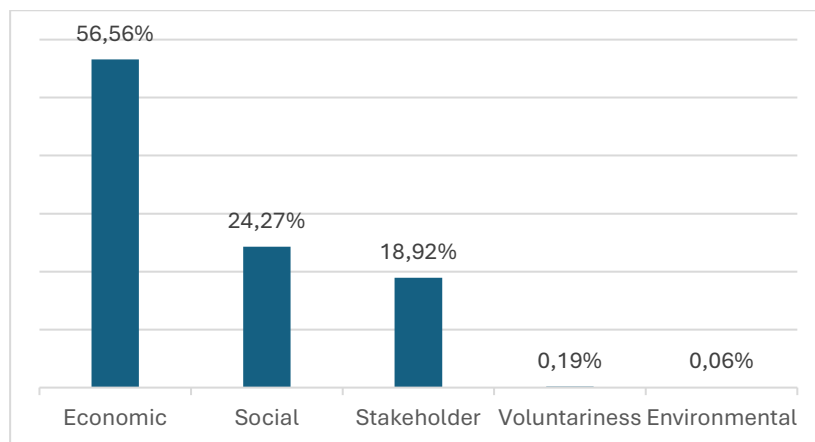
Figure 1. CSR Dimensions as represented in U.S. bank slogans.

As expected, the CSR dimension most prominently represented (economic) aligns closely with the financial sector. About fifty-seven percent of the slogans illustrate this dimension, reflecting the primary objective of financial institutions to deftly manage depositors' funds even during challenging circumstances. "Very often they play on audiences' aspirations [as the] psychological component is crucial, since it is in human nature to have desires for success, recognition, independence, as well as the need for physical, emotional and financial security" (Lazović, 2014: 92). Consequently, banks strive to present themselves as dependable, efficient, accessible, unique, capable of withstanding the test of time, and continuously abreast of the latest innovations or changes in their field of expertise, as indicated in Table 2.

Table 2. Aspects illustrating the economic dimension of CSR.

Appeal	Slogans
Accessibility	*BANKING MADE EASY | Banking Simplified | All kinds of easier | The Home of Hassle-Free Banking*
Difference Uniqueness	*A bank of a different color | A FRESH WAY TO BANK | Banking unusual | Completely Unlike Your Bank | The Uncommon Bank*
Durability	*Here Today… Here Tomorrow | Banking for your generation… and the next! | A Strong Heritage. A Strong Future | Here for good.*
Efficiency	*If you ran a bank, you'd run it like this. | Experienced. Innovative. Sound. | Providing Direction. Producing Results. | Set a Steady Course | WE MAKE IT HAPPEN*
Excellence Superiority	*Above & Beyond | ALWAYS OUR BEST | beyond expectations | Better banking. By design. | Experience Banking in HyperDrive | Extreme Banking | Banking evolved | Get more BANK for your buck | Bank your best*
Innovation	Still Pioneering | Redefining Banking | *New ways. New answers.* | WELCOME TO MODERNCRAFT BANKING | A TRADITION OF INNOVATION
Partnership	*Strength in Partnership | The Power of WE | TOGETHER WE CAN | Let's work together*
Prosperity	*Chart Your Success With Us! | Join and prosper | IGNITE PROSPERITY | Know your money will grow | Profit Wherever You Go | See You at the Top | Money for Life | Opportunity Banks Here*

Appeal	Slogans
Reliability	*Everyone needs an anchor	Every step of the way	ROCK SOLID	We Practice What We Pledge	Strong. Stable. Here	There when it counts	We've got this	Your financial bridge*
Service	*Nice People with Money	Service Beyond Expectations	Service That Soars!	choose friendly service	You'll love our Brand of Banking	YOU HAVE TO EXPERIENCE IT	That's my Bank*
Trustworthiness	*Building Trust for Generations	Find your harbor	FOLKS YOU CAN COUNT ON	good as gold	Traditions In Trust	Doing what we promise*

Due to the vast size of the country and the population density, the majority of banks listed in our database operate locally, typically within one, two, or three neighboring states. Only a few of the largest banks maintain a nationwide presence. Consequently, their activities are deeply intertwined with the communities they serve, which is why the social dimension of the CSR model is the second most represented in the slogan database (see Table 3). Banks emphasize the benefits of proximity, authenticity, familiarity, dedication to the community, and the promotion of social improvement. While other already mentioned appeals may also be present in some slogans, they are always framed within the context of community banking.

Table 3. Aspects illustrating the social dimension of CSR.

Appeal	Slogans
Local commitment	*From here. For here.	Core Neighborhood Banking	Hometown Commitment	It's all about home	Live Local, Bank Local	Of the land, lake and people	nearby & neighborly	TEXANS HELPING TEXANS	The Home Folks	The power of local banking	United We Stand!	Your Home Bank*
Social betterment	*BUILDING BETTER LIVES	Helping build a better Janesville	Humanizing Money. Creating Local Impact.	MAKING A DIFFERENCE, SHARING THE BENEFITS	We share	We succeed only when we help our neighbors fulfill their dreams*
Authenticity	*A Real Community Bank	Genuine Hometown Banking*
Availability	*In town. In touch	In Your Corner*
Excellence	*Community Banking at its Best	Superior Community Banking	We set the standard for community banking*
Familiarity	*Banking on a First Name Basis	HOMETOWN BANKING FAMILIAR FACES	COMMUNITY PEOPLE YOU KNOW*

The stakeholder dimension of the CSR model ranks third, depicted in almost 19% of all slogans (see Table 4). The activity of banks is only made possible by the interaction with their customers, who serve as depositors or borrowers, whether through in-person interactions or online services. Slogans emphasize this aspect by highlighting that bank activity is primarily client-driven and relationship-oriented, with a focus on providing high-quality services to promote prosperity and enhance the quality of life in a reliable manner.

Table 4. Aspects illustrating the stakeholder dimension of CSR.

Appeal	Slogans
Client-oriented	*Bankers Who Work For You	banking YOUR way	Because people are more valuable than money	Beyond Banking… This is Personal	Centered around you	Everybody is Somebody to Us	It's all about you	We promise to walk in your shoes	Welcome to Me Banking	You above all	WE WANT WHAT YOU WANT*
Prosperity	*We stand For Your Success!	Your success is our bottom line	helping you get where you want to be	live work grow	What's Your Dream?	We're Growing to Meet Your Needs*
Relationship	*Relationships beyond Banking	The Bank with a Heart	The Strength of Relationship	We're big on customer relationships… Yours!	Where business and friendships meet*
Service	*Tailored Solutions with a Human Touch	serving the people who serve the world	Serving you is our life's work	Taking Care of You	The treatment you deserve	We love to help*

As expected, the environmental and voluntariness dimensions of the CSR model are the least represented. In fact, we identified only one slogan for each dimension: "For A Greener Future" and "IN GOD WE TRUST" – the latter being adopted by three different banks, hence the discrepancy in percentage in Figure 1. However, upon closer examination, one might question whether there is more to these slogans than meets the eye.

The slogan "For A Greener Future" indeed conveys an image of a cleaner environment, dominated by flora. However, the same appeal could also imply a prosperous future overall, stemming from sound financial management. Considering that green is the color chosen for the bank's logo and name, this interpretation seems more plausible. Nevertheless, the appeal's originality lies precisely in this ambiguity.

The slogan "IN GOD WE TRUST" reuses the motto that began to appear on some U.S. coins in 1864 and was declared mandatory in 1956, subsequently adopted as the national motto of the United States. It is not unusual for banks to adopt this motto as a slogan, as the word "trust" should not solely be interpreted as a synonym for "faith". While the latter represents an abstract belief, the former implies tangible applications, as it influences actions or behavior. The appeal should be understood as a commitment to a set of solid ethical principles, making the bank dependable.

Although these two dimensions are scarcely depicted in slogans, it should not be assumed that they are deliberately overlooked. On the contrary, on their websites, banks consistently mention their support for industries involved in environmental conservation and emphasize grounding their activities in a sound moral code.

3. Conclusion

The analysis of American bank slogans reveals their ability to illustrate CSR dimensions despite certain limitations. The specific activities of these financial institutions significantly influence the content of the slogans. Given that banks are primarily responsible for managing private funds, the slogans must convey a message of trust in their ability to do so efficiently while prioritizing their clients' best interests. For most banks, which operate locally, their clients are part of the same community, resulting in a more personal impact on both them and society. Consequently, the economic, social, and stakeholder dimensions are the best represented CSR dimensions.

However, the environmental and voluntariness dimensions are largely underrepresented. This is not due to banks' indifference to these dimensions but primarily because the results of their adoption are not readily visible through typical interactions between banks and their

clients. The brevity of slogans limits the choice of appeals to those that most directly illustrate how the core activities of financial institutions influence the lives of their clientele.

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MANAGEMENT, MARKETING, ECONOMIC INFORMATICS AND CYBERNETICS

SUBSTANTIAL VERSUS FUNCTIONAL PRINCIPAL AND THEIR INFLUENCE ON THE SUCCESS OF THE IMPLEMENTATION PROCESS OF ALTERNATIVE LEARNING TEACHING AND ASSESSMENT IN HIGH SCHOOLS IN ISRAEL

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Abstract: *The article deals with two main types of school principals, a substantial principal and a functional principal, which were discovered during research, conveying the influence of principals' different management styles on alternative learning, teaching and assessment processes in high schools in Israel. The full research was a two-phase research, a quantitative phase and a qualitative phase, carried out in 30 schools throughout Israel and included 30 principals, 340 teachers and 337 students. The main findings of the research indicated that a principal of an substantial type prominently and significantly promotes alternative learning and evaluation processes, while a functional principal does not bring a significant contribution, and even hinders this process. This can be clearly seen by examining the relationships between the different variables of the research, when, for example, strong, significant and positive relationships were found between a variable such as an substantial management style and variables such as teaching and learning using alternative methods or assessment using alternative methods, as opposed to strong, significant, but negative relationships between those last two variables, and a variable of functional management style of the school principal. The article also includes conclusions as well as recommendations for exposing school principals to their strengths, which must be preserved, and also indirectly to their weaknesses, which make it difficult to implement alternative assessment processes, in order to additionally train themselves in diverse management habits.*

Keywords: Substantial manager; functional manager; alternative assessment;

JEL Classification: I21, J53

1. Introduction

The current research combines quantitative research methods with qualitative research methods, in two phases. The integrative method is defined as the collection or analysis of data, simultaneously or sequentially, in a qualitative and quantitative research method (Creswell, J. W. 2014).
The purpose of combining the methods in this research is to enrich the explanations of the findings that will be obtained in the quantitative part of the research and to obtain a broad and deep picture of the application of the alternative assessment in the classroom and the factors influencing this application. According to Johnson (2019), the combination of

methods may provide a comprehensive and useful answer to the research questions, more than using one method.

The first phase of the research was only the quantitative part(pilot). In this part of the research, school principals, teachers and students of different age groups, from high schools throughout Israel, were sampled (23 school principals, 281 teachers and 279 students).

From the first phase of the research, it was found that there are several mixes of different management styles of the high school principals, where each style that makes up the mix, has a different weight (prominence). The management style mixes found according to Yitzhak Calderon Adiges' "Management Styles" model were actually divided, according to the nature of the respondents' answers to the questions/statements, into two main categories, where in each category there are minor changes between the prominence of the management styles (P, A , I, E).

The registration of the management styles was carried out from left to right, this is in accordance with the dominance of a certain style, for example, the registration of the PAEI management style for a certain school principal indicates that this school principal has a main style prominence of type P, less style prominence than the previous type A, less style prominence than the previous type E and less style prominence than all the previous ones Type I.

The first category includes the following management style mixes: PAEI, APIE, PAIE,And the second category includes the following management style mixes: EIPA, EIAP, IEPA.

The second phase of the research was an expansion of the previous quantitative research to 30 schools (30 school principals, 340 teachers and 337 student, total), and in addition, qualitative research which included interviews with 5 school principals and 10 parents of students.

2. **Research hypotheses**, **variables**, **research model**

My research is partially based on the model described above and examines the relationship between management style and the implementation of alternative assessment in high schools in Israel.

2.1. Research hypothesis

H1. There is a correlation between the variable "school management" and the variable 'teaching and learning using alternative methods".

H2. There is a correlation between the variable "school management" and the variable "assessment using alternative methods".

H3. There is a correlation between the variable "school principal management style" and the variable "teaching and learning using alternative methods".

H3.1. There is a correlation between the variable "functional/technical management styles" and the variable "teaching and learning using alternative methods".

H3.2. There is a correlation between the variable "substantial/essential management styles" and the variable "teaching and learning using alternative methods".

H4. There is a correlation between the variable "school principal management style" and the variable "assessment using alternative methods".

H4.1. There is a correlation between the variable "functional/technical management styles" and the variable "assessment using alternative methods".

H4.2. There is a correlation between the variable "substantial/essential management styles" and the variable "assessment using alternative methods".

H5. There is a correlation between the variable "school management" and the variable 'school principal management style".

H5.1. There is a correlation between the variable "functional/technical management styles" and the variable "school management".

H5.2. There is a correlation between the variable "substantial/essential management styles" and the variable "school management".

H6. There is a correlation between the variable "teaching and learning using alternative methods" and the variable "academic results of students".

H7. There is a correlation between the variable "assessment using alternative methods" and the variable "academic results of students"

H8. There is a correlation between the variable "support from parents" and the variable "school management".

H9. There is a correlation between the variable "municipal and school inspectors' support" and the variable "school management".

2.2. The research model and variables

Independent variable: School principal management style

Independent variable: School management

Independent variable: Parents' support

Independent variable: Municipal and school inspector support

Dependent variables: Teaching and learning with alternative methods

Dependent variables: Assessment of performance using alternative methods

Dependent variables: Academic results of students
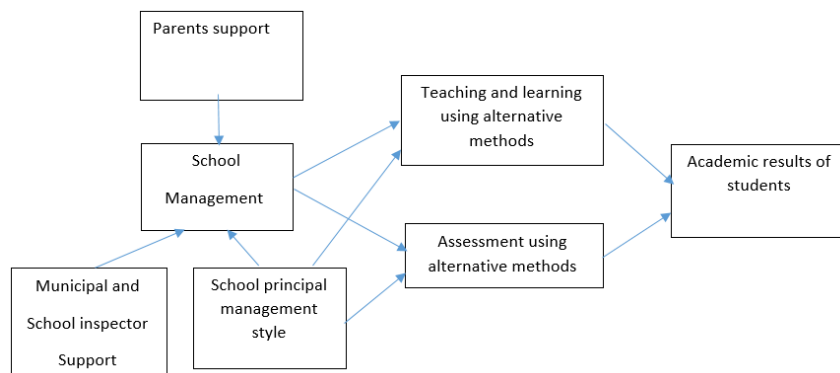
Figure 1: The research model

3. The tools for analyzing the research findings

3.1. The Pearson tool

The Pearson tool is a statistical method for examining the relationship between two quantitative variables. The origin of the name is from the measuring tool of Carl Pearson, an English statistician who developed the method at the end of the 19th century (Mukaka, M. M. ,2022). The tool calculates Pearson's correlation coefficient, usually denoted r (r), which ranges from -1 to 1. Values close to 1 or -1 indicate a strong relationship (positive or negative, respectively) between the variables, while a value close to zero indicates the absence of a linear relationship between them (Schober, P., Boer, C., & Schwarte, L. A. ,2018).

3.2. Linear Regression

Linear regression is a simple and common statistical method for analyzing the relationship between two variables. It is used to predict the value of one variable, called a dependent variable, based on the value of another variable, called an independent variable(James, G., Witten, D., Hastie, T., & Tibshirani, R. ,2021).

Linear regression tries to find the best straight line that describes the relationship between the two variables. This line allows us to predict future values of the dependent variable given new values of the independent variable (Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. ,2020).

4. The results of the quantitative part

4.1. The results of the quantitative part (Pearson tool)

- There is a correlation between the variable "school management" and the variable "teaching and learning using alternative methods". The relationship was found to be strong, positive and significant, meaning that the higher the "school management" variables, the higher the "teaching and learning using alternative methods" variables.
- There is a correlation between the variable "school management" and the variable "assessment using alternative methods". The relationship was found to be strong, positive, and significant, meaning that the higher the "school management" variables, the higher the "alternative method assessment" variables.
- As shown in tables 1 and 2 below, there is a correlation between the variable "functional/technical management styles" and the variable "teaching and learning using alternative methods". There is a correlation between the variable "substantive/essential management styles" and the variable "teaching and learning using alternative methods". The findings are consistent with the research hypotheses. The management styles "producer" and "administrator" are strongly associated, pronounced and negative with the variable "teaching using alternative methods" (according to the principal, also teachers and students). That is, the higher the variable "teaching using alternative methods", the less functional/technical the manager's management style. In contrast, the management styles "integrator" and "entrepreneur" are associated with the variable "teaching through alternative methods" (according to the principal, also the teachers and students). That is, the higher the variable "teaching using alternative methods", the more substantive/essential the manager's management style.

Table 1: H3 and sub-hypotheses(school principals-teachers)

Teachers-Principals	S.P: management style (Producer)	S.P: management style (Administrator)	S.P: management style (Entrepreneur)	S.P: management style (Integrator)	Teacher: Teaching and learning with alternative methods
Teacher: Teaching and learning with alternative methods	-.717**	-.575**	.639**	.677**	
S.P: Teaching and learning with	-.907**	-.796**	.837**	.889**	.699**

alternative methods					

Table 2: H3 and sub-hypotheses(school principals-students)

Students-Principals	S.P: management style (Producer)	S.P: management style (Administrator)	S.P: management style (Entrepreneur)	S.P: management style (Integrator)	S.P: Teaching and learning with alternative methods
S.P: Teaching and learning with alternative methods	-.909**	-.794**	.838**	.894**	
Students: Teaching and learning with alternative methods	-.879**	-.712**	.806**	.812**	.863**

- As shown in tables 3 and 4 below, there is a correlation between the variable "functional/technical management styles" and the variable " assessment using alternative methods". There is a correlation between the variable "substantive/essential management styles" and the variable " assessment using alternative methods." There is a correlation between the variable "substantive/essential management styles" and the variable " assessment using alternative methods." That is, the higher the variable " assessment by alternative methods", the less functional/technical the manager's management style. In contrast, the management styles "integrator" and "entrepreneur" are associated with the variable "assessment using alternative methods". That is, the higher the variable "assessment using alternative methods", the more substantive/essential the manager's management style.

Table 3: H4 and sub-hypotheses (school principals-teachers)

Teachers-Principals	S.P: management style (Producer)	S.P: management style (Administrator)	S.P: management style (Entrepreneur)	S.P: management style (Integrator)	Teacher: Assessment of performance using alternative methods
Teacher: Assessment of performance using alternative methods	-.860**	-.701**	.785**	.800**	
S.P: Assessment of	-.815**	-.734**	.794**	.760**	.794**

performance using alternative methods					

Table 4: H4 and sub-hypotheses (school principals-students)

Students-Principals	S.P: management style (Producer)	S.P: management style (Administrator)	S.P: management style (Entrepreneur)	S.P: management style (Integrator)	S.P: Academic results of students
S.P: Academic results of students	-.807**	-.719**	.790**	.745**	
Students: Assessment of performance using alternative methods	-.900**	-.736**	.839**	.820**	.791**

- There is a correlation between the variable "functional/technical management styles" and the variable "school management". There is a correlation between the variable "substantive/essential management styles" and the variable "school management." The management styles "producer" and "administrator" are strongly related, significant and negative with the variable "school management".). In contrast, the management styles "integrator" and "entrepreneur" are associated with the variable "school management".
- There is a correlation between the variable "teaching and learning using alternative methods" and the variable "academic results of students". The relationship was found to be strong, positive and significant, meaning that the higher the "teaching using alternative methods" variables, the higher the "academic results of students" variable.
- There is a correlation between the variable "assessment using alternative methods" and the variable "academic results of students". The relationship was found to be strong, positive, and significant, meaning that the higher the "assessment using alternative methods" variables, the higher the "academic results of students" variables.
- There is a correlation between the variable "support from parents" and the variable "school management". the relationships between "parental support" and "school management", both in each group separately and between the groups, are positive, strong, and significant.
- There is a correlation between the variable "support for municipal inspectors and schools" and the variable "school management." there is a positive and significant, albeit relatively weak, relationship between school management and "support of municipal and school inspectors" according to the teachers' opinion. However, this relationship, according to the managers' opinion, does not exist. The relationship is very weak and insignificant.

4.2. The results of the quantitative part (Linear Regressions)

The regressions presented are intended to predict the main dependent variable, the student's success in his studies, using all the variables – management style, school management, parental and municipal support, use of alternative teaching and assessment

using alternative tools. The regressions were performed on each population of respondents individually.

The result of the first regression, based on principals' data, shows that the general model predicts very strongly (0.80) and significantly (F=169.55, p <0.000) the predictive variable that is student success.

The result of the second regression, based on teachers' data, also shows that the general model is a very strong and significant predictor of the predicted variable – which is student success (F=413.8, p <0.000).

The result of the third and final regression, based on student data, also shows that the general model is a very strong and significant predictor of the predicted variable - student success (F=585.29, p <0.000).

5. The results of the research in the qualitative part

5.1. Results of the analysis of interviews of the school principals

The findings of the interviews support the findings of the quantitative research in a large number of points

A school principal who is more substantial, holds joint team meetings on alternative learning and assessment, makes sure to train the staff and hold meaningful and relevant trainings, further training and seminars, this in order to provide the tools and knowledge needed to implement alternative assessment in the school, for the benefit of the students' success. In addition, this school principal supports the students' participation in the assessment and learning processes using the alternative assessment method, which significantly increases their motivation for learning and their desire to succeed.

There are also assessment and control processes regarding learning and assessment in the alternative method, the purpose of which is to draw lessons and build and promote programs to improve processes, together with the professional staff that includes professional teachers, subject coordinators, an assessment and measurement coordinator, a pedagogical consultant, and vice school principals in the high school during the school year. The findings of the interviews with the school principals reinforce the findings from the quantitative research, which indicates that learning and assessment using the alternative assessment method has a distinctly positive effect on the students' achievements and their motivation to succeed. A vast majority of the school principals, who also according to the results of the quantitative research were found to be substantial school principals, claim that there has been a considerable improvement in student achievement over the past few years, since the alternative assessment method was implemented in their school.

Another point - from the findings of the qualitative research, we can summarize and say that a school principal who is considered substantial, who regularly shares the students' parents in the learning and evaluation processes that take place in the school and takes their opinion into account, helps raise the students' achievements during the school year.

5.2. Results of the analysis of interviews of the students' parents

According to the results of the quantitative research, the parents in schools whose school principals are substantial, indicate that they prefer the alternative assessment method over traditional assessment, because according to them an alternative assessment method is more significant for their children, increases their motivation for learning, is more intriguing, in-depth and answers Realize the natural diversity that exists between the students so that they can reach the maximum of the ability that lies in each and every one of them. A school principal who is more substantial allows the professional staff a wider choice of alternative assessment tools and alternative teaching and learning methods adapted to the needs of the students.

We can summarize and say that in the schools whose management style is more fundamental, there is a wider use of the alternative learning and assessment method, the

participation of the parents' management in the different types of activities that take place in the school, allows the teaching staff to choose different and varied tools for learning and assessment, which increases the students' achievements and the motivation and desire to achieve high achievements.

6. Conclusions from the research

- In the first category of schools, there are infrequent meetings regarding alternative assessment, while the second category has frequent meetings on this subject.
- The first category prioritizes high achievements even at the cost of educational processes, whereas the second category strives for high achievements without compromising education.
- Competition among teachers for student results is significantly higher in the first category.
- Principals in both categories claim their schools address field-specific issues effectively, but teachers' responses suggest otherwise for the first category.
- Flexibility in teaching subjects is limited in the first category, but allowed in the second category.
- While both claim to support teacher initiatives and innovations, teacher responses indicate issues in the first category.
- Teachers' opinions on management's efforts to build a team are divided in the first category.
- Teachers' input in decision-making and conflict resolution is less considered in the first category.
- Incentives for teachers are primarily non-material in the second category, while in the first category, material incentives are minimal.
- Academic results in the second category show improvement attributed to innovative teaching methods, while the first category's results remain inconsistent.
- Planning and control of alternative assessment processes are more decentralized in the second category.
- Teachers in the second category have more autonomy in choosing assessment tools.
- Alternative assessment tools are used more extensively in the second category compared to the first category.
- Students in the second category feel like partners in the learning process, while this feeling is limited in the first category.
- Learning with alternative assessment methods is more engaging and motivating in the second category.
- Both students and teachers prefer alternative assessment over traditional tests.
- Teachers in the second category are better equipped and trained for alternative assessment implementation.
- Resources for alternative assessment are more accessible to teachers in the second category.
- Students in the second category have more freedom to choose evaluation tools and topics compared to the first category.

7. Recommendations

- Conduct frequent meetings between school management and teachers to discuss alternative assessment.
- Foster an ongoing dialogue between teachers and students for feedback, enhancing student participation, interest, motivation, and success.
- Find a balance between educational achievement and maintaining effective educational processes.

- Strengthen the relationship between school administration and teaching staff to address field-specific issues and streamline decision-making and development plans.
- Collaboratively construct and control the annual work plan for alternative assessment involving the entire teaching staff.
- Grant teachers more autonomy in choosing assessment tools and subjects, considering student input, to improve academic results.
- Enhance support for teachers' innovative initiatives and projects.
- Develop a comprehensive program for building a cohesive school team.
- Promote negotiation as a conflict resolution tool at the team level.
- Streamline professional training, teacher registration for extracurricular training, and teacher evaluation to reflect their activities fairly.
- Cultivate a culture of professional cooperation among teachers, encouraging sharing of teaching materials.
- Identify and secure resources needed for teaching and evaluation activities.
- Explore creative options for material incentives for teachers using alternative assessment methods, along with non-material incentives.
- Improve transparency with the teaching staff regarding support from local authorities and supervision, involving teachers in discussions to enhance support for alternative assessment methods and student achievements.

8. Acknowledgments

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TAXONOMY IN RETAIL. HOW DID THE COMPANIES COMPLY WITH THE LEGISLATION?

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Abstract: *Every day we face the effects of pollution on our daily existence. We are exposed to advertising promoting the green behavior of retailers, but we have no certainty as to the veracity of this information. Thus, the question that was the basis of this research refers to how we can identify businesses or companies that carry out sustainable activity. In support of consumers, there is the legislative framework, which, through the taxonomy directives at the level of the European Union, mentions the objectives that a company must fulfill to be considered as having a sustainable character. In carrying out this scientific approach, we undertook a documentary research on the sustainable behavior of retailers in the field of fast-moving consumer goods (FMCG). We identified the most important companies on the market (the top three) and followed how the sustainability reports they make available to the public include the legislative provisions and the reporting required by them. The results obtained highlighted the fact that, by the legislation, the aspects related to the first objectives of the taxonomy are mentioned, but no additional information is provided regarding the expenses resulting from the sustainable activities that the companies carry out.*
Among the objectives of this scientific approach is the identification of how the companies complied with the legislative provisions and the analysis of how they materialized. Following the research undertaken, it could be observed that the most common, in sustainability reports, are the measures undertaken by companies to adapt to environmental changes and the actions undertaken to protect them.

Keywords: *taxonomy, retail, EU regulation 2020/852, operational expenditure (OpEx), capital expenditure (CaPex), sustainability*

JEL Classification: *K32, Q01, Q56*

1. Introduction

Over time, sustainability has been a concept brought more and more frequently to the attention of consumers. Of course, many companies and non-governmental organizations believed that the application of sustainable principles in existing business models in emerging economies was a necessity, being, in fact, a response to the emergence of pollution. Thus, we have frequently encountered the idea of sustainability applied in most companies, regardless of the field we consider: Do-It-Yourself, Fashion, Fast-Moving Consumer Goods (FMCG), Electronics, etc.

Of course, the application of sustainable principles led to obtaining benefits for the environment. Through some campaigns run by the state, we, as consumers, were taught to recycle, and sort waste, and companies supported these actions by running social responsibility campaigns (planting some areas of land, collecting waste, replacing energy sources, etc.).

At the same time, the modification of companies' production processes through the implementation of sustainable principles also generated some additional costs for consumers, which are reflected in the final price borne by consumers. Numerous studies (Pieters et al., 2022; Dabija et al., 2019; Aschemann-Witzel & Zielke, 2017) show that green products are characterized by a higher price level, an aspect that leads to consumer segmentation.

Under these conditions, the question arises about which businesses are truly sustainable. Based on this dilemma, the research question that was the basis of this research was "How can we identify businesses that are truly sustainable?". In finding the answer to this question, the legislative framework supports us, the authorities adopting the concept of taxonomy. According to specialists, the EU taxonomy is a tool developed at the level of the European Union that supports investors in establishing the sustainable character of a business, from an ecological point of view, analyzing the transition to an economy with low carbon emissions (Liciu, 2022).

As a result of the documentary research we have carried out, we have noticed that although there is a legislative framework to explain the concept of "taxonomy" and how it must be adopted and implemented by companies, there are some discrepancies in the reporting carried out by large companies. So, the research gap is the lack of studies on the practical way in which the taxonomy is adopted by companies and communicated, through activity/sustainability reports to stakeholders and the general public.

The research novelty is represented by the complete presentation of the legislative framework and the indicators that must be reported, with applicability in the retail field. Thus, the first part of the paper includes aspects related to taxonomy - definition and component elements. Also, the research analyzes the most important retailers in the FMCG field and how they report the indicators related to taxonomy.

2. Literature review

2.1 UE Taxonomy

Analyzing the etymological meaning of the concept "taxonomy" we can learn that it comes from the French language, meaning "the science of classification laws" (Coteanuet al., 2009). Originally entered the educational sphere and used by Bloom (1956) in defining the taxonomy of educational objectives, the term has been extrapolated to other fields, in recent years being correlated with the idea of "corporate sustainability" and constituting a part of this paradigm (Horváth, 2024).

Since 2013, Decision No. 1386/2013/EU provided for an increase in private sector financing for environmental and climate-related expenditure, intending to measure the costs to companies as well as the profits resulting from the use of environmental services (European Parliament, 2020). Therefore, the attention paid to the implementation of sustainable principles was also regulated by the legislative framework.

Later, at the level of the European Union, through the EU taxonomy, the aim was to create a unique classification system, that has the role of evaluating economic activities from the point of view of sustainability, as well as analyzing the transition to a neutral economy from the perspective of carbon emissions. Through the taxonomy, a common language was provided for all market actors, providing them with a legislative framework to help them achieve their environmental goals. Thus, it was necessary to establish relevant criteria according to which the activities that could be considered sustainable were defined.

Through the adopted legislative regulations, the implementation of a common language between investors, issuers, and project promoters was pursued (Liciu, 2022). Together, they pursue the same standards that economic activities must achieve to be considered environmentally sustainable.

Another advantage of establishing the legislative framework on the EU taxonomy is the transparency that occurs in the market (Gallagher et al., 2021). A growing number of European companies (over 11,000) will report the percentages of their sales and capital expenditures that fall into the aforementioned categories (Liciu, 2022).

The legislative framework was not only about adopting a directive to increase private sector financing in terms of environmental spending. EU Regulation 2020/852, which applied to financial reports published after January 1, 2022, mentioned the six thematic objectives (European Parliament, 2020):

- "Climate change mitigation
- Adaptation to climate change
- Sustainable use and protection of water and marine resources
- The transition to a circular economy
- Pollution prevention and control
- Protection and restoration of biodiversity and ecosystems".

According to the legislative framework, a company is considered to have a sustainable activity if it contributes significantly to at least one objective. Practically, the legislative framework supports companies that want to orient their activity toward sustainable practices. At the same time, the first attempts to adopt the EU taxonomy allowed companies to report the activities that adhered to the first two objectives, reporting for the other four only starting in 2024 (Auchan Retail, 2022).

According to specialists, the EU taxonomy is seen as "a standard that regulates environmental sustainability within the European Union", offering companies a framework through which to demonstrate their performance and the path toward a sustainable economy (Horváth, 2024). Thus, companies' reports must include capital expenditure (CapEx), respectively operating expenditure (OpEx) (European Parliament, 2020).

Subsequently, the companies' obligations increased, with reports including (Horváth, 2024):

- "Sales share for products and services related to environmentally sustainable economic activity
- Total investments in tangible and intangible assets about sustainable economic activities (green CaPex)
- The amount of operational expenses for the measures or processes that aim to fulfill one of the objectives or criteria related to the taxonomy (green OpEx)".

Of course, we have to consider the components that the two categories of expenses have. In the OpEx category, we include the operational expenses of companies, which are necessary for the business to function and generate income (employee salaries, rents, utilities, stationery, etc.) (Brans, 2023). Antagonistically, CapEx includes the company's investments, which are necessary to expand, modernize, or improve existing assets (acquisition of software, construction/acquisition of new buildings, purchase of production equipment or technology, etc.) (Fernando, 2024). Green CapEx or sustainable CapEx includes the investments made by companies or governments in environmentally friendly and sustainable projects. Thus, in this category, we include sustainable practices and investments in technologies that reduce the carbon footprint, investments related to renewable energy, green transportation, or waste and water management (Kaustubh, 2023).

Basically, through the methodology it is based on, the EU taxonomy mentions the performance criteria necessary to determine the economic activities that contribute to the growth strategy proposed by the European Union and which has the role of improving the well-being and health of citizens, allowing Europe to become neutral from a climate point of view up to the level of 2050 (The European Commission, 2021).

3. Methodology

To carry out this study, we developed a documentary analysis focused on two directions: theoretical aspects and practical aspects. Regarding the theoretical aspects, the authors' research was conducted by searching the international Ebsco, Web of Science, Springer, Scopus, Emerald, ProQuest, Science Direct, and JSTOR databases, accessed via their university library's subscription. Searches were performed using certain English keywords such as "Taxonomy" 2,144,251 results), "EU Taxonomy" (196,017 results), "Retail Taxonomy" (128,954 results), and "USA Taxonomy" (29,450 results). Although the latest searches revealed a large number of papers, these could not be accessed through the university library's subscription. The majority of results yielded for each keyword included articles dated after 2021.

Also, a good part of the articles analyzed the classifications of retailers or the classifications of the fields where companies operate, for this reason, they were not taken into account.

Regarding the theoretical part, we decided to turn our attention to the field of fast-moving consumer goods (FMCG), which includes products with high circulation and a relatively low price (Ciobanu, 2009; Bejan et al., 2024).

Considering the large number of companies active in this field, we turned our attention to the largest retailers in the market, according to the rankings made at the level of 2022. We took into account that period because the available information is complete and validated.

Based on these considerations, the retailers analyzed in the practical part are Lidl Discount, Kaufland Romania, and Profi Rom Food (Popa, 2022). For each of these, we analyzed the most recent sustainability reports to see compliance with the existing taxonomy at the EU level and the reporting they do.

4. Results and discussions

4.1. Lidl Romania

The first retailer we considered is Lidl. Part of the Schwartz group, the Lidl discount store has been present on the Romanian market since 2011, today having a consolidated presence through over 350 stores in the country, where it operates with the help of over 12,000 employees. According to the latest published information, Lidl has developed its logistics department, having 6 centers in Romania (Lidl, 2024).

According to the last published sustainability report, Lidl directs its attention in three directions, which are also reflected in the slogan "For you. For Romania. For the planet."

On a practical level, the group's representatives started the "Material Domain 1.5 degrees Celsius", which aims to "limit the dangerous and irreversible effects of climate change". The sustainability report mentions the changes made at the level of "operational energy management, transport and logistics, environmentally friendly supply chains, building certifications, and sustainable buildings" (Lidl, 2023, p. 62).

For the retailer Lidl, the sustainability report aligns with the first two directions suggested by the EU taxonomy (aspects related to climate change and adaptation to it).

Thus, according to the report published in 2023, Lidl had installed, at the end of 2023, photovoltaic panels in 20 stores, representing an area of over 11,900 square meters, thus increasing the amount of self-generated electricity by 78% (figure no. 1) (Lidl, 2023).

	2021	2022
Consumul direct de energie	44.734.814	42.691.041
Energia electrică autogenerată	454.878	813.219
Din care energie electrică autogenerată din surse neregenerabile	0	0
Din care energie electrică autogenerată din surse regenerabile (sistem de panouri fotovoltaice)	454.878	813.219
Energie consumată din gaz natural	27.205.044	22.781.790
Energie consumată pentru flota de autovehicule*	17.074.892	17.974.580
Energie consumată din păcură	0	0
Alte surse primare din care s-a obținut energie** (GPL, motorină de urgență)	0	1.121.451
Consum indirect de energie	182.457.720	202.884.723
Încălzire centralizată	0	0
Energie electrică achiziționată din surse mixte	4.101.074	138.534.133
Energie electrică achiziționată din surse regenerabile	178.356.646	64.350.590
Totalul consumului direct și indirect de energie	227.192.534	245.575.764
Vânzarea de energie regenerabilă (injecția în rețeaua publică)	0	0
Vânzarea de energie neregenerabilă (injecția în rețeaua publică)	0	0
Consum total de energie (calculat în kWh)	227.192.534	245.575.764

Figure 10: Direct energy consumption, depending on the primary energy source
Sursa: (Lidl, 2023, p. 65)

To avoid the effects of pollution, 64% of the recyclable materials were recycled or reused, eliminating approximately 42 tons of plastic from the composition of the packaging (figure no. 2) (Lidl, 2023).

Material		2021	2022
Hârtie	Materiale promoționale și reviste/ broșuri pentru clienți/altele (calculată în tone)	10.094	6.919
	Cantitatea de hârtie de imprimantă (calculată în tone)	123	102
	Cantitatea de hârtie pentru pungile de pâine (calculată în tone)	557	839
Din care material reciclat	Materiale promoționale și reviste/ broșuri pentru clienți/altele (calculată în tone)	8.902	6.679
	Cantitatea de hârtie de imprimantă (calculată în tone)	0	0
	Cantitatea de hârtie pentru pungile de pâine (calculată în tone)	0	0
Plastic	Cantitatea de saci de gunoi	120	252
	Cantitatea de folie de plastic (material de ambalaj)	412	422

Figure 11: Paper and plastics use (tones)
Sursa: (Lidl, 2023, p. 83)

In terms of sustainable buildings, Lidl stores, both newly opened and existing ones, have changed to become as environmentally friendly as possible. Thus, the representatives of the group proposed to continue using construction materials that do not affect the environment and do not endanger the lives of individuals. At the same time, in the existing stores, they modernized the technical equipment, replacing the old refrigeration equipment with other equipment that uses natural refrigerants (Lidl, 2023).

4.2. Kaufland Romania

Part of the Schwartz group, the Kaufland retailer is one of the most important retailers in the Romanian market. Having a wide range of products and differentiating itself through a large range of its brands, Kaufland satisfies the needs and wishes of consumers through more than 167 stores that it has on the Romanian market, in which more than 17,000 employees work (Kaufland, 2024).

Part of the Schwartz group, Kaufland has a strategy quite similar to that of the retailer Lidl, at least in terms of sustainable actions and how they are implemented at the company level. Among the best-known actions are "Micro-plastic Free" initiatives, avoiding the use of microplastics and non-biodegradable polymers for private-label cosmetics or home care products. They also support sustainable crops through the UTZ certification applicable to chocolate products, thus improving environmental conditions in the growing countries. Similar to the retailers Lidl and Kaufland, it has adopted the new natural refrigerants, which it uses for its refrigeration equipment. They are equally committed to reducing carbon dioxide emissions resulting from activities carried out along the upstream and downstream value chains (Kaufland, 2023).

4.3. Profi România

Currently, Profi Romania represents the retailer with the largest expansion in the market, having been almost 22 years old (Profi, 2024). In this interval, the company opened more than 1,600 stores in 790 localities, with approximately 24,000 employees (Profi, 2023). With the slogan "Daily low prices", Profi is a Romanian retailer that enjoys a sustained presence in both urban and rural areas.

According to the 2022 sustainability report, Profi aligns itself with the two objectives of the EU Taxonomy, mentioning the measures it adopts to protect the environment and the way it adapts to the new legislative regulations.

The sustainable actions of Profi Romania are directed in three directions: economic impact (lower costs for electricity, fuels, and natural gas), social impact (rationalization of the use of exhaustible natural resources), and environmental impact (protecting the environment by controlling the effects generated by the company's actions on it).

Similar to other retailers on the market, Profi reduced electricity consumption and opted for the installation of photovoltaic panels, 175,000 kWh coming from renewable sources. Also, natural gas consumption was reduced by 38% through the installation of power plants. Regarding the company's fleet, the transition was made to numerous gasoline vehicles, reducing diesel consumption by 2.47% (Profi, 2023).

Unlike the two retailers analyzed previously, Profi Romania reports the capital expenses (CAPEX) and operational expenses (OPEX) that it had at the level of 2022 (figure no. 3).

		Ponderea activităților economice eligibile	Ponderea activităților economice aliniate	Ponderea activităților economice neeligibile
Cifra de afaceri	RON	8.756.459,96	0	11.651.901.099,04
	%	0.08%	0%	99.92%
Cheltuieli de capital (CapEx)	RON	119.846.476,31	0	395.112.714,17
	%	23.27%	0%	76.73%
Cheltuieli operaționale (OpEx)	RON	0	0	12.447.557.196,00
	%	0%	0%	100.00%

Figure 12: Analysis of the economic activities of Profi Romania
Sursa: (Profi, 2023, p. 36)

At the same time, expenses included in the two categories are mentioned, highlighting the sustainable aspects of the business (figure no. 4).

KPI	Activitatea economică
Cifra de afaceri	7.7. Achiziționarea și deținerea de clădiri
Cheltuieli de capital	6.5. Transportul cu motociclete, autoturisme și vehicule utilitare ușoare
	7.2. Renovarea clădirilor existente
	7.6. Instalarea, întreținerea și repararea tehnologiilor din domeniul energiei din surse regenerabile
Cheltuieli operaționale	6.5. Transportul cu motociclete, autoturisme și vehicule utilitare ușoare
	7.7. Achiziționarea și deținerea de clădiri

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Figure 13: KPI and the economic activity of Profi Romania
Sursa: (Profi, 2023, p. 34)

Practically, the retailer complies with the general legislative framework, even if the obligation to report the two types of expenses only enters into force in 2024. Thus, the retailer shows transparency, preparing the first framework documents related to the legislative changes that will come into force this year, an aspect that demonstrates comfort with legislative norms.

5. In conclusion

Analyzing the effects of pollution, we realize that there is a pressing need to get involved in protecting the environment. Thus, sustainable activities are the first step to conserving the resources we have, preserving the environment, adapting to climate change, and actively involving ourselves in waste sorting or recycling processes.

The desire of individuals to get involved in protecting the environment has also been speculated by the big companies in the market. Wanting to collaborate with consumers, and to show that they take into account their need to live in a clean and healthy environment, large retailers have implemented sustainable principles in all sectors of the economy and in the processes they run.

However, the costs generated can sometimes represent an impediment for companies in their process of adopting sustainable behavior.

In this sense, a unique legislative framework was created at the level of the European Union - the EU taxonomy aimed at six objectives, and businesses considered to be sustainable must adhere to at least one of them. In this way, the confusion in consumers' minds regarding what a sustainable business means is eliminated, and for companies, it represents a benefit because they can be more easily identified, being able to prove, at the same time, the sustainable nature of the business.

According to the regulations, from 2022, retailers must report aspects related to how they combat climate change, how they are actively involved, but also how they adapt to it. Analyzing the FMCG field, we can say that the biggest players in the market have adapted to the legislation in force.

In this context, we can consider that the retailer Profi Romania moved forward and in the last sustainability report included the special category - "Taxonomy", mentioning at the same time the capital expenses and the operational expenses generated by the business, aspects that will be imperatively required to be found in the following sustainability reports, starting from 2024.

Therefore, the European Directive supported the companies, and this aspect was appreciated by the market actors, who respected the legislative provisions, taking into account additional aspects, which are to become mandatory.

At the same time, regarding future research directions, we want to expand this scientific approach under two aspects. First, we want to see if retailers' sustainability reports will change with this year's new imposition: the requirement to describe the taxonomy's six objectives and capital and operational expenditures. Second, we consider extending the

research to other business sectors (for example, gas stations) to see how these campaigns have adapted to the UE taxonomy.

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HOW DID THE E-COMMERCE FOR BEAUTY INDUSTRY DEVELOP IN KOREA COMPARED TO ROMANIA?

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Abstract: *E-commerce has nowadays become a type of business that the younger generation prefer rather than industrial business due to the little costs of developing. The efficiency and fast turnaround time of a little investment in an e-commerce business makes people oriented towards. The reason for choosing the beauty industry for our analysis is that the industry gained numerous new white label products launched by various brands lately therefore e-commences embrace them and promote them properly. The beauty industry has now a greater number of consumers due to the various benefits such as skin care routine and careful face hygiene. Korea is one of the countries that produce and develop a strong industry having advanced technology for producing high quality beauty products. Romania is an import country of beauty products with an enormous interest in Korean skin care products and cosmetics. The two countries developed the idea of cosmetics business using online methods and e-commerce platforms. The purpose of this analysis is to find the differences of promoting an e-commerce of beauty products on different platforms such as Naver and Google while outlining the tendency of customers behaviors in two totally different societies but also the way businesses can develop online while optimizing using specific platform engines so they can improve their performances. Therefore, we analyze a literature review on the beauty industry development, how this proceeds online during and after pandemic and how important are those for the Romania and Korea population. The research will ensure a better view of both platforms Naver and Google and how those are helping the e-commerce business in the beauty industry. We will see a proper comparison between the society's approach for e-commerce in both countries and an applied example on how this works for each culture.*

Keywords: *E-commerce; Naver; Google; beauty industry; cosmetics; customer behaviour.*

JEL Classification: *M31*

Introduction

Cosmetics embrace a variety of categories of products. From the fact that these ensure basic hygiene to the fact that it raise self-esteem and social prestige. Being one of the most profitable product categories, skin care industry is leading the global market with 41 percent in 2021. (Delphine & Lindsay , 2023)However, the industry of cosmetics has changed over the years through numerous segments reaching so many different areas such as beauty tech, e-commerce and DTC models, wellness integration, inclusive representation, influencer marketing and the list may go on. Nowadays we are facing a major phenomenon of crowdsourcing where beauty products, recommendation and acknowledgment are viral and easy to access for everyone. (Izabela & Patrycja , 2020)This fact may be caused by the expansion of the numerous people using beauty products from teenagers to elderly people. If it was considered to be a women focus segment industry the recent studies show that men started to use some of the beauty products for wellness and skin care as well. (Aditya , 2024) This fact opened the doors for more brands and startups to show on the

market developing cosmetics and beauty products. Coming from a historical controversy of consumer attachment regarding the animals the beauty industry suffered the first major change. The cosmetics started to be created in a more sustainable way creating products that are cruelty free and not tested on animals. (Antonio , et al., 2024) Moreover, the pandemic was a really challenging period for the beauty industry, especially for the fact that people didn't see a necessity anymore in using them because of the stay at home worldwide rule. However, the skincare products gained a lot of popularity through this period while people were experiencing skin problems due to the mask wearing. With that so, Amazon reported a 70% increase in its e-commerce sales in beauty and personal-care categories compared with pre–COVID-19, which was 5% higher than the increase seen in its total sales. Sephora US online sales during the pandemic were reportedly up by 30% compared to 2019. This leads us to validation of the lipstick effect. (Daniel Almaguer , et al., 2023) After the covid, the industry came across a large number of new white labels overnight because of the new trend defined in 2023 of " skinimalism " that highlights the benefits of a simple skincare routine which shows the importance of a product to be multifunctional. (Roman , 2023) White label is a concept of new business that represents creating a product by a manufacturer and then selling it to another company. The company that purchased the product rebranded it with their own logo and selling it into the market. (Sjaak & Roderick , 2011) Let's consider us wanting to make a shower gel and we know exactly the composition we want for that shower gel. We can go to any manufacturer that creates products for other brands but create our own with our own specifications and indications. It is a diverse market but not many manufacturers. Therefore, the marketing strategy nowadays is to sell what the company thinks you need, not what you need.

For example, it is not unusual to hear from an influencer the phrase "you need to buy this product. It has this and that benefits". (Boris , 2023) So, if the old concept of marketing says that it comes to satisfy consumer's needs at the highest level, the new marketing strategy is to create a product and then to create a need for it. A good example is lip sleeping masks. There are a lot of lip balms for dry lips but there came another product lips sleeping mask) to help the same issue that had already a solution product. Therefore, to support such a large selling industry, there is a need for a big infrastructure especially with the globalization of exporting and importing. After Co-vid, e-commerce gained more popularity among the consumers as being an accelerator to online shopping. Based on a study, it really became a booster to the global market for one of the most successful Chinese brands" Perfect Diary" where the study highlights the benefits of online shopping. (Xi, 2024) But how exactly did the e-commerce beauty industry develop in Korea compared to Romania after the pandemic?

Literature review

From an economic standpoint at UE level the beauty industry helps the growth of the economic market which was about to reach US $143.30 billion by the end of 2023.This is a considerable annual growth with 1.62% that is about to happen between 2024 and 2028. (EuroDev, 2024) Based on EuroDev the market may be sensitive in the future to some macroeconomic forces such as market dynamic, demography of online platforms and consumer behavior.

But considering the pandemic evolution we tend to understand an unusual consumer behavior which is called "the lipstick effect". (Aanchal , et al., 2022) The lipstick effect was discovered by Leonard Lauder, who was the head of The Estee Lauder Inc. at that time. The unusual behavior he noticed after the 9/11 attack was the increasing demand for lipstick with 11%. Later in 2008, at the greatest economic recession, he noted the same rise in the company's sales. Similarities are based on the great depression where sales of cosmetics rose when the economy was experiencing some of its darkest day. This may lead to the

point that the necessity of purchasing something small to make the consumer happy may be the way of getting over the depressive economic crisis. Consumer-centric nature of the beauty industry is amplified by its growing emphasis on inclusivity. The beauty sector is increasingly recognizing and celebrating diverse standards of beauty, catering to a wide spectrum of skin tones, hair types, and gender identities. Brands that prioritize inclusivity not only resonate with a broader customer base but also underscore the consumer-centric concept of the industry. (Qingyang , 2023)Therefore, the beauty industry canceled the traditional offline marketing methods and kept a closer look with digital marketing using new tools and methods of promoting: Influencer marketing, PPC, Google ads, Reviews etc. The purpose of this is to gain a competitive position in the market as the products and business grew fast. (Seok-Soo & Won-Suk , 2015)The first differentiation from the competition is the cruelty free character of the products. Consumer behavior is represented in the literature as being very sensitive to this subject as a brand becoming cruelty free or vegan may lead to a higher interest of purchase. If the buying action is high, it will be understood as a "high brand association". (Shirui , 2023)

First step was made regarding replacing or searching for more sustainable ingredient alternatives. That had an effect of raising numerous questions regarding safety of the products and the chemical composition of them. (Geoffrey Jones, 2023) Now we can see a sustainability approach of the beauty industry. More and more became vegan and cruelty free for example Rare Beauty cosmetics, Cosrx, iUnik, D'Alba, Klairs.

E-commerce as a first choice for start-ups

E-commerce is a cost-effective way that brings owners in a direct relationship with customers and partners despite the geographic location and time zone. This makes the business flow and develop easier compared to old type of business. One positive aspect of e-commerce is that it may have a great base of retailers and it ensures a better organization stock. Globalization highlights the importance of infrastructure developed for this type of business, which is represented by the payment method, e-commerce platforms such as Shopify or WordPress, mobile shopping, fulfillment center and shipping methods. (Jefry, 2019) Moreover, having the KPI's that measure the performance of the business in real time which can be compared to last year or last month in order to make better future decisions is an efficient way to organize the business in a long and short time. (Sebastian & Arkadiusz , 2018) For example, marketing campaign decisions or ordering stock, restocking skus can be predicted by last performances registered by KPI'S.

Figure1: KPI'S e-commerce
Source: (Nepal, 2017)

E-commerce is still trying to optimize and provide the best experience to the customer by offering AI improvements, an outstanding logistics distribution, visual marketing campaigns,

professional materials in terms of product description and enlisting on websites and of course a secure way of payment and short delivery time. (Wenwen , et al., 2024) A couple of strengths of the AI implementation in e-commerce are: increased the loyalty and involvement of the customer, a better marketing advertising targeting, a better user experience while shopping. For all the above, big data is the major factor that plays a significant role. (Suming , 2024) After Co-vid, some businesses were forced to sell online due to the worldwide restrictions. If there was a gradual growth of e-commerce before the pandemic, after that it became more and more. Younger generation is tempted to choose e-commerce because based on a study they use online shopping more than offline shopping. So that, they understand the opportunity of e-commerce to its core value and efficiency. (Nabila & Zuhrinal , 2022) Another version of developing e-commerce was through white label and drop shipping. If before we took products and sold them overseas at a better price today, we see a great number of producers producing their own products. (Xianhao , et al., 2019) Based on a role product they go and ask for a prototype and then create a series of products for their own use. Therefore, on the beauty market we tend to see a cannibalization of products. If Amazon reported to have just a few merchants in the past that were selling now we tend to see more and more retailers that presents their offer on Amazon and other e-commences platforms simulations. (Meng Cao, 2023)

The evolution of e-commerce beauty industry in Korea vs Romania

As a main objective we need to see where is more easily to open a beauty products e-commerce based on specific parameters that can either help or not the business. In the Korean market for example, e-commerce stands as the 12th largest globally offering a lucrative overview for growth. Among the most famous e-commerce producers of beauty products, we encounter: Misha, TonyMoly, Lanaige and Sulwhasoo. These are also famous internationally and has a wide brand awareness globally. Beside those, Korea has a big chain of retailers of e-commerce's where we can mention StyleKorean, Soko Glam and Coupang.
This can be owed also to the Korean government that started a visa project for young entrepreneurs whose desires are to open start-ups in South Korea in a couple of industries. In 2023 their focus on e-commerce is mentioned as much as attracting the young generation to travel and invest in Korea and K-pop culture entertainment and beauty. (Kyei, 2023) Korean society pictures beauty products as a very important necessity in their daily lives and their daily routines. Their products are popular among people as being a morning/evening routine. This is also promoted on live streaming platforms and social media by influencers. (MinKyung & RakGun , 2022) They keep on consuming the new launch skin care products online and offline as much as fashion items as a loyalty behavior of their lifestyle for their favorite products. Therefore, an external factor as covid, couldn't stop the skin care industry.The browser that supports this e-commerce initiative is Naver, an inferior browser compared to Google which is used in western countries and Europe. (Peter & Minhyung, 2009)This is mainly because Naver came as an answer to the lack of information on Google for the Korean population. This is caused by the language barrier. The online shopping sector is supposed to grow because the progress of technology is directly bound with the implementation of 5G internet which brings more fluidity in using the internet in Korea. Samsung is making a lot of effort in this by creating new and upgraded devices. Based on a study there were 40.18 million people using the internet back in 2019 a number that significantly grew in 2023, where 50.56 million of internet users were registered. Moreover, the online methods of payment and the legislation of e-commerce activity such as the Computer Program Protection Act, Patent Act, Design Act, in Korea brings security to the population and encourages them to buy online. (Theresa , et al., 2019) Therefore, there has been a very rapid development of Naver while implementing functionalities such as Naver cafe, blogs, emails, news, web toon, shopping to fulfill the requirements of consumers.

Beside those, Naver implemented a Q&A platform with the official adoption of Knowledge iN. The AirRSearch artificial intelligence service that offers the possibility for people to ask a question where other users can provide answers like Yahoo answers. It is a great way for businesses to promote their products mainly because it helps the keywords optimization. (Inho , 2017) It is good for search engine optimization because it includes a link to your website which can bring you a boost to your position in Naver's ranking based on a relevant keyword somebody is searching. (Yun-Kyoung , 2022) For example, there was a question on Knowledge IN: "I have dry skin. Please recommend a basic skin care product." And the answer came giving some brands name as recommendations and links to directly access and possible purchase those products.
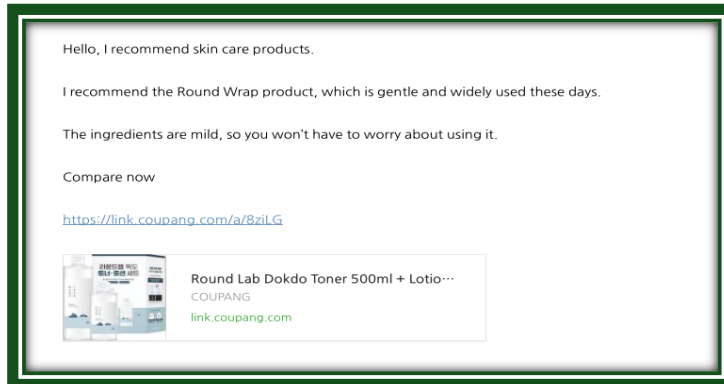
Figure2: Results of inquiry
Source: By author (KnowledgeIN, 2024)

Meanwhile in Romania, the eCommerce market contributed to the worldwide growth rate of only 9.6% in 2023. Google is the main browser used by Romanians when it comes to e-commerce. There are a lot of tools used for tracking performances, while Google indeed indexed a lot of information. Naver's strategy of excluding inquiries from other search engines from its database of replies is surely one factor in the company's success. This policy essentially limits Google's utility in the Korean market by preventing Google from offering any Knowledge iN content to its consumers. Because there isn't much web content available in Korean, Naver's closed and extensive database of responses has drawn a lot of traffic from Korean Internet users who typically prefer to search for information in Korean. (Edison & Kihoon , 2012) Google Analytics has six main categories of reports: Real-time, Audience, Acquisition, Behavior, Conversions, and Discover. Here we can observe different metrics (dimensions that can be given a quantifiable value, such as Pages/ Session, Pageviews, Average Session Duration) and analyze them to make the right decisions about the company. But is not the case in Korea. No matter how strong its search engine is, Google cannot find enough Korean-language information to satisfy Korean users. Google's technological edge in sophisticated search was significantly diminished. Naver's knowledge-sharing platform assisted it in addressing the dearth of Korean-language online material. Naver can better serve users who do online information searches by utilizing user-generated content. Romanians think that one of the advantages of e-commerce is time saving but it is not directly seen in the population behavior as there is still a lot of lack of confidence in the online payment system. If the trust of Koreans in online market is very stable, in Romania the consumers are not so open about this method of payment. Most orders are chosen to be paid at the delivery. Digitalization requires a change in terms of payment method as there are numerous options to do it: Paypal, Credit card, debit card, bank transfer. Online, the products are seen by Romanians as being easily compared while the offer grew significantly over the years. We can see a couple of new beauty products online stores: Skin Guru,

Korean skin, My-K Romania Ksisters. Their products offer is similar to Korean stores. The only difference is that the Korean e-commerce has a wider offer of products. Also, most of the Romanian online beauty stores sells the same products with slightly differentiation of prices, compared to Korea where the offer is quite diverse due to the rich number of producers if we do not encounter the official stores of the producers. Among the main e-commerce that really met a successful growth in Romania we encounter: Altex, Emag and Elefant. In 2019 eMag became the leader of the market with a total of 3,500 sellers and enlisting around 1.4 million products. The main products registered to be purchased online in 2018 were electronics, fashion, home and decorative garden items and other toddlers' articles. (Mihaela , 2019) The beauty industry e-commerce market is larger now implementing a lot of Korean skin care products while the number of online stores grew after the pandemic.

The methodology of the research started from a question I wanted to answer: How many e-commerce's of skin care products opened after the pandemic in Romania? To find out the year the online beauty stores started to work, we used the "wayback machine" a digital archive tool that was made initially to see how the website looked before. The tool also shows a calendar of usage since the beginning. The next step was the selection of online stores that were analyzed with the "wayback machine" based on the following keywords: cosrx; bb cream, hydration cream, hydrating oil. I have chosen these keywords because they have the biggest search ranking on the Romania market. Statistics determined by Ahrefs. Therefore, I have found the following results of online stores that has the products that contains one of the keywords I searched:
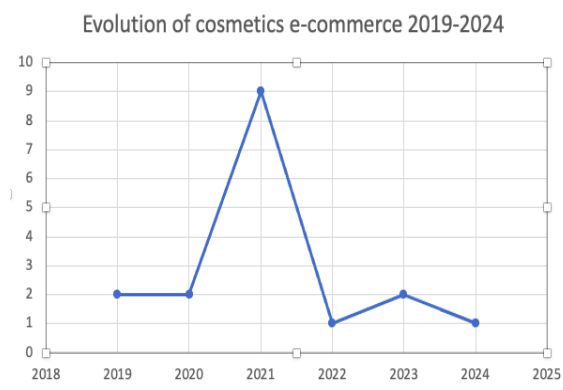
Figure3: Evolution of cosmetics e-commerce 2019-2024
Source: By author based on the table below (Wayback Machine, 2024)

Table 1: E-commerce platforms results for beauty products

2019	2020	2021	2022	2023	2024
https://www.sole.ro	https://my-k.ro	https://skinguru.ro	https://hiroskin.ro/	https://www.skinwonder.ro	https://rivabeauty.ro
https://www.lookfantastic.ro	https://blively.ro	https://beautyko.ro		https://ksisters.ro	
		https://wowskin.ro			
		https://koreanskin.ro			
		https://www.radiantbeauty.ro			
		https://sophielashes.ro			
		https://www.springfarma.com			
		https://orisha.ro			
		https://moonglow.ro			

Source: (Machine, 2024)

As a limit of the research, we can definitely encounter the volatility of the beauty market and the dynamics of the algorithms because of the keyword's trends.

For future research directions we can take into consideration the consumer behavior regarding the importance of skin care products for each country market and the reason why from a year to another in Romania it opens at least one e-commerce while in Korea the number of products increased significantly as "white labeling" is the main reason for it. Also, if the increasing number of products in Korea will affect or not the request of products in Romanian market and how are these depending on one another.

Conclusions

Beauty industry as a leading category of best-selling products is now an industry that implies male and female interest. "Skinimalism" and lipstick effect are two different concepts that have appeared among consumer behavior. Therefore, we tend to see more and significant role in the e-commerce industry by providing specific tools to measure performances of the business such as: average time spent per customer, number of sessions on the website, abandon rate, average order value and so on.

In Korea, the government tries to push the e-commerce sector by providing visas for those who have a business idea that can be implemented online. Their internet infrastructure by implementing 5G and the speed of the internet gives them a superior advantage compared to Romania. In fact, their skincare industry has now grown on another level as the skincare industry and fashion is considered very important by the population.

Their number one platform used is Naver, a platform that introduces features such as Naver blog, Naver cafe, Naver Q&A very similar to Yahoo answers. These features help search engine optimization and come as a help for businesses to optimize and promote their business online. Visibility is a keyword in an e-commerce business. Therefore, Naver uses the Q&A section to provide helpful information in real time for people who are looking for a certain product with specific requirements.

Compared to Korea, Romania is a little bit behind with all these technological changes. We have an anxious type of customers that have a fear of buying online due to the increased rate of fraud and scams. Even though there is a hesitation, the beauty products e-commerce increased during the pandemic and after that. This may lead to an interest among the population not only for products but for Korean products specifically.

The superior platform used by Romania is Google, and so Google analytics is the main tool that measures the KPI performances. Things may change in the future as there is constant upgrading of tools. Google analytics 4 replaced universal analytics. This way Google analytics 4 will not only have web data in the property but app data too which helps to compare the page metrics. The language barrier between the 2 makes Naver very successful among the Koreans. It provides a better service for their population as there is enough language information than on Google. The functions are different, the information is less than Google and the Rankins of business are easier than the usual.

more people being interested in skin care routine and skin care products.

A platform that supports all this interest is online shopping through e-commerce that is one of the most chosen ways of business in recent years. Even before the pandemic, e-commerce benefits were seen by the investors as a good way to sell efficiently in a distinguished geographical distribution using stocks or no stocks for satisfying consumers needs of skin care products.

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NETWORK ORIENTED ENTERPRISE – CHARACTERISTICS, COMPONENTS AND BENEFITS: COMPREHENSIVE LITERATURE REVIEW

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Abstract: *The concept of network based economy refers to the interconnectivity of the current business environment, in the context of the global economy, where the main way of progress is given by the participation in a network. On the other hand, the network orientation of a business organization has as a priority its integration within physical or virtual networks, in order to increase its efficiency, acquire new information and finally achieve competitiveness. This paper carries out an extensive literature review, and it will explain different characteristics related to the two concepts, as well as their components. Thus, the present research is of a theoretical nature, carried out in a qualitative manner, because a series of articles from the scientific literature have been analyzed. Also, this study will identify the benefits of an organization orientation towards business networks in order to facilitate incremental and radical product, service and process innovation, as a result of the fact that innovation has a high importance for a company in order to ensure its competitiveness in a sustainable manner in the turbulent economic environment in which it operates. Moreover, the benefits of focusing on business networks are also propagated on the processes of ensuring efficient human resources at company level, as a result of the fact that the dynamic economic environment brings with it a need to correlate employees' skills with the new needs existing in the business environment. Thus, business organizations must be constantly on the lookout for best practices in human resources, which is made easier by their participation in networks. Finally, the main benefit of this research is the providing a new perspective on a company's business network orientation.*

Keywords – *network based economy; network oriented enterprise; business network oriented enterprise; innovation; human resources management*

JEL Classification: M10, O31, D83

1. Introduction

The networking orientation of a business organization is an essential success factor for business organizations within today's economy. However, business organization's network orientation previous concept is the network based economy. The network based economy takes a view of the entire economic environment, where the interconnectedness of business organizations increases as a result of technological progress in the twenty-first century, especially through the use of new digital technologies in business practices (Pagani & Pardo, 2017).

The link between the network economy and the business environment is represented by the orientation of companies towards business networks. Thus, the network orientation of a business organizations is a necessity in the current economic environment, which is constantly changing and in which the orientation towards business networks of a company is an essential condition for obtaining competitive advantage. (Hong & Kim, 2012).

2. Methodology

This paper aims to research the orientation of companies towards business networks, starting from the conceptual framework of a network-based economy. On the one hand, a series of features and components related to the concepts of network economy and network oriented enterprise will be illustrated, and on the other hand, the beneficial role of a company's business network orientation on its ability to innovate and manage human resources efficiently will be exposed.

This study will conceptualize a holistic view of business organizations' networking, which will help them gradually integrate certain engagement-oriented practices into new business networks. In order to meet the proposed objectives, an extensive literature review was carried out, by reviewing articles and studies from international databases, which were integrated in a structured manner within this paper. The scientific bases used were EBSCO, Web of Science and Google Scholar, and the keywords were the following: "business network oriented enterprise", "network based economy", "business network benefits", from network oriented enterprise to innovation", "from network oriented enterprise to human resources management".

3. Literature review

3.1. Network economy

The knowledge and information economies have facilitated the emergence of networks of firms and different elements operating within the multiple existing ecosystems. Through this mechanism, the concept of a network-based economy was formed. Unlike the traditional economy, which had a highly linear component, the economy in the information age is characterized by intercoditionality and the need to create business relationships.
The main element of a network is that of the existence of nodes, which provide the connection between the different component (Benedetto & Fabio, 2012) . Whereas the traditional economy was based on economies of scale and scope, the new economy is based on generating the network effect (Yang, Malthouse, & Vakeel, 2020). Moreover, on the one hand, the network effect creates value for organizations that are on the same side of a network, such as firms, as part of the network (Arvind, și alții, 2020), and on the other hand, a signal initiated by one of the members of the business network generates signals for all external collaborators of that network, whether they have a direct link to that member or a link to the whole network (Acemoglu & Akcigit, 2015). Thus, within the new economy, the increase in the number of elements within the network generates an increase in the benefits felt by each of its users.
An important part of the network economy is the platform economy. A platform is a digital infrastructure within which users can, on the one hand, write different computer code or collect data, and, on the other hand, use it in accordance with its functionalities, design and related boundaries made by developers. Persons or firms operating within a platform are not only considered to be users, but also inputs, as their participation creates value for other users of that platform as well (Schwarz, 2017).
The information field at the level of a network ultimately creates valuable knowledge for the entire economic spectrum. The information-knowledge-network triad ensures the sustainable progress of the ecosystem at urban or regional level by identifying new sources of progress and broadening the spectrum of existing connections. In these ways, a company can have a progress in several markets that facilitate its sustainable competitiveness (Kern & Munier, 2009).

3.2. A network oriented enterprise

The network orientation of business organizations requires maintaining continuous progress at business level, through a permanent knowledge of the actions taken by customers, suppliers, competitors or other organizations in the context of an economic environment in perpetual change.

One of the researches was conducted by Eriksson (2014), who observed the positive influence of a company's participation in entrepreneurial networks on the acquisition of dynamic capabilities and the relationship of a company with other businesses (Eriksson, 2014). The benefits of a company's participation in networks is complemented by the importance of buyer-supplier dynamics and the way of facilitating the development of research and innovation capabilities at business level. Thus, in a research conducted by Mahmood et al. (2011) it was identified that the centrality of the relationship between a particular buyer on the one hand and a supplier on the other can positively influence the innovation, research and development capabilities of a business organization (Majmood, Zhu, & Zajac, 2011). In addition to Mahmood et al. (2011) perspective related to the buyer and supplier antithesis, Perks&Moxey (2011) present us with the idea that innovation is not found on either the buyer, nor the supplier side, but is the result of an action carried out in close cooperation by the two categories (Perks & Moxey, 2011). The broadening of the perspective from buyer-supplier dynamics to the entire network-based ecosystem is achieved by Bruneel et al. (2014) who pointed out the importance of links between different types of businesses, the need for diversity among them and the need to provide valuable inputs for the entire network, such as knowledge, different types of raw materials or products to other companies at ecosystem level in order for them to continue its operational and strategic activities (Brunneel, Clarysse, Mahajan, & Wright, 2014).

Due to the fact that organizations operate in an environment with a constantly evolving technology, it is necessary for them to integrate digital technologies to obtain useful data in formulating strategic directions. Therefore, Genamora et al. (2019) concluded that an SME's digital platform capability increases both its network capability, which positively influences its performance.

The implications of innovation networks have been researched by Najafi-Tavani et al. (2018) which demonstrated the positive impact between firms' integration into collaborative networks and innovation capabilities, mediated by absorption capacities (Najafi-Tavani, Najafi-Tavani, Naude, Oghazi, & Zeynaloo, 2018).

Another benefit of orienting companies towards business networks is represented by the advantage of coopetition at their level. In this way, within a business network, both a company's business partners and rival companies are found. Thus, with the latter companies, a coopetition relationship will be developed, in which, on the one hand, companies will compete on the direct market, and on the other hand, they will be partners in order to strengthen competitive advantages for both of them. Thus, Bounckem & Fredrich (2016) identified a positive influence of coopetional dynamics on the learning process within a business network, a correlation mediated by the size of that network. (Bouncken & Fredrich, 2016). In addition, research was conducted based on a company's sustainable business model, through which it was identified that a business model made in a sustainable manner takes into account the integration of the company within value-based networks, with new purpose, architecture and governance (Evans, Holgado, Yang, Van Fossen, & Vladimirova, 2017).

Following the study of the scientific literature, five components related to the network orientation of a business organization were identified:
1. Business collaboration – participation in knowledge-sharing networks – This component refers to the multitude of dynamics and relationships built up over a period of time at the level of a business network. In previous studies, the dimensions

of a network for a number of manufacturing companies have been investigated from a strategic business unit perspective   (Valkokari, 2015) , ways of impacting the diffusion of innovation as a result of network dynamics (Rieple, Pironti, & Pisano, 2012), analyzing the process of forming a business network (Valtteri, Nicole, & Niina, 2019), studying mergers and divisions of companies from the perspective of the networks within they are involved (Anderson, Havila, & Salmi, 2001), and last but not least researching network dynamics at the level of the entrepreneurial environment for emerging companies. (Coviello, 2006)

2. Use of platforms – The component refers to all digital platforms designed for business that a company uses in order to establish business relationships with other complementary or similar companies from a business perspective. Previous studies related to this topic have covered comparative analysis of digital business platform typologies (Derave, Gailly, Poels, & Sales, 2021), analysis of likely scenarios for digital platforms(Kenney & Zysman, 2015), the development of new trends and policies that will govern the platform economy (Sasikumar & Sersia, 2020), and last but not least the analysis of the influence of the new platform economy on the phenomenon of increasing digital work provided by human resources at company level (Panaligan & Soriano, 2019).

3. Interaction with suppliers – This component refers to all the relationships that a company develops with its suppliers, in order to streamline and operationalize all the activities undertaken by that company. Studies on this topic were represented by the analysis of production networks and the role played by suppliers at operational flows level   (Carvalho, 2014) ,the logistic operational flow strategic reorientation through reuse, restoration, reproduction and recycling of a company's products in order to reintegrate into the production flow of suppliers (Amin & Zhang, 2012), supply chain risk management (Alpan & Tuncel, 2010), innovation within the supplier network analysed from the perspective of added value created (Dooley, Yang, & Tingting, 2017) and not least, analysing supply and demand across supply chains, the impact of material suppliers on a manufacturing firm, operational independence and relational mediation capacity (Choi, Dooley, Kim, & Yan, 2011).

4. Interaction with competitors – This component refers to interactions between the business organization and its competitors. The purpose is given by acquiring a competitive advantage for these companies, as a result of partnership activities and constant collaborations, in parallel with the existing state of competition between companies. This component is directly correlated with that of "co-optetition", being studied from the perspective of competing companies within business networks (Bengtsson & Kock, 2000) , research of the set of competitive dynamics established at business networks level (Ford & Hakansson, 2013), research of competitor orientation in relation to the evolution of markets and business networks (Bendle & Vandenbosch, 2014), and last but not least exemplifying concrete cases of cooperation between competing companies from the perspective of advantages and disadvantages existing as a result of these activities (Peng, Pike, Roos, & Yang, 2012).

5. Use of new platforms – This component refers to a company's use of the multitude of digital platforms available to it, with the aim of establishing connections and relationships with other companies. Previous studies on this component have looked in a comparative manner at different typologies of digital platforms   (Derave, Gailly, Poels, & Sales, 2021) , the existing new trends in digital platforms, as well as the policies on which their relationships are established (Sasikumar & Sersia, 2020), research into different scenarios likely to be materialise in the future (Kenney & Zysman, 2015) and last but not least analysing the influence of the platform economy in increasing the digital work of human resources at company level (Panaligan & Soriano, 2019).

3.3. Benefits and implications of the company's orientation towards business networks on innovation capabilities

Previous research has identified that business networks have led to innovative activities and ideas within numerous companies. The existing link between network and innovation was researched by Dittrich & Duysters (2007) from the perspective of two different strategies applied by a company. The first strategy was exploration and consisted of the existence of several partners who owned different technologies, the connection with the company was one of inequity based on an opportunistic behavior of the firm with more advanced technology, the agreements were non-equitable and were mainly aimed at seeking technological capabilities at any cost. The second strategy was exploitation and consisted of the existence of already known partners for a company, alliances based on equality and maintaining a strong link between companies, the technological perspective aimed at expanding and improving already existing technologies, and all dynamics between companies were governed by the principle of equity. The study concluded that both existing types of strategies led to an increase in innovation capability for companies. Moreover, it was observed that an intermediate variable, i.e. time spent within a network, played an important role in strengthening a relationship based mainly on mutual trust and collaboration, to the detriment of rigid contracts (Ditrrich & Duysters, 2007). Thus, participation in networks facilitates the increase of innovation capabilities and the long-term collaboration of companies. From a regional perspective, it has been identified that the dynamics of networks focused on collaboration between companies has a positive impact on the innovation capacity of the entire region economic ecosystem (Belussi, Sammarra, & Sedita, 2010).

From a technological perspective, Phelps&Paris (2010) identified that there is a direct correlation between the diversity of technologies used at network level and the potential for exploratory innovation held by companies (Phelps & Paris, 2010).

In another study, it was identified that business networks formation based on a connected environment of all companies belonging to the network facilitates the processes of co-creation and then co-innovation. (Lee, Olson, & Trimi, 2012) . Perry-Smith & Mannucci (2017) identified four stages of the innovative process (generation, elaboration, support and implementation of an idea), which are in turn supported by network facilitators, thus generating a network effect (Perry-Smith & Mannucci, 2017). Moreover, firms have a decisive role in the structure of the network created, while the network has the role of innovation facilitator (Nambisan & Sawhney, 2011). The perspective of networks from a procedural point of view can be completed with the image of knowledge-based networks, with multiple implications on the innovative capabilities of a company (Fruin, Rodan, Wang, & Xu, 2014).

Research into the dynamics between business network orientation and a company's innovation capabilities in a different way was conducted by Burenin et al. (2019). Within it, the network had an intermediate role in the innovation flow, and the value creation process had three levels. The first level refers to the pre-production stage where consumer wishes are identified and R&D activities are carried out, the second level is based on production with the help of the network in which the company is involved and with the provision of components from other companies within the network, while the third level comprises post-production stages where the company uses the network to carry out activities such as marketing, distribution and finally the sale of those products. Thus, this flow supports the creation of added value through the network taking as a starting point the preferences and needs of customers (Burenin, Pogodina, Polianova, & Yunusov, 2019).

3.4. Benefits and implications of the company's orientation towards business networks on human resources management

The connection between business network orientation and human capital is covered by articles that mainly focus on how dynamics and nodes within a network directly influence the human resource a firm benefits, from the perspective of recruitment, talent management, as well as leadership practiced at a company level.

Network-based links between organisations facilitate access to distributed knowledge and also include contacts for collaboration with other firms or universities, which can provide complementary human resources. Thus, Sullivan & Marvel (2011) demonstrated that the workforce recruited through networks brings greater benefits to the firm than the development of knowledge in an individual manner (Marvel & Sullivan, 2011). Moreover, Pedrini (2007) studied the direct link between relationships within a network and the company's relational capital, demonstrating that a benefit of the network is given by the stabilizing role it has in the context of social dynamics (Pedrini, 2007). The perspective of increasing the adaptability of social capital through networks was studied by Boon, Eckardt, Lepak, & Boselie (2018), who identified that networks and their information flow have beneficial implications on the adaptability of an organization, both in terms of human capital and technology (Boon, Eckardt, Lepak, & Boselie, 2018).

The implications of using networks in recruitment and selection process, as well as talent management, have been researched by Hollenbeck & Jamieson(2015). They have demonstrated that network-based analysis helps the human resources department identify which employees are most important, supports the process of identifying their skills in order to be used to their full potential, and last but not least supports the recruitment and selection process of new employees (Hollenbeck & Jamieson, 2015).

Developing visionary leaders is another challenge in the new economy, given that more and more managers who should be leaders are not oriented towards new ways of management. Thus, the development of concrete talent management and leadership systems is a priority for any business organization. Human resources specialists have identified that networks aimed at organizational development have a high impact on providing quality human resources and useful information in the development of future leaders of the company, due to the adaptive space created within the network (Arena & Uhl-Bien, 2016). The previous perspective at the firm level is complemented by the perspective of an employee's individual career. Thus, career is seen as a path that crosses a series of networks and helps the individual specialize throughout his life (Canibano & Potts, 2019). Although this aforementioned connection does not directly link a company's network orientation to the human capital within a firm, it does link networking to career progression for an individual, which will help the progress and performance of the company they are worrking for.

4. Conclusions

As a result of the research carried out, it was possible to observe the orientation of companies towards business networks in the context of the current economic environment, which requires high inter-connectivity both from the technologies used perspective and from the access to information and knowledge in a real-time manner perspective. The transition of companies to business networks has been achieved through interactions with customers, suppliers and competitors, collaboration at the business environment level and last but not least through the use of multiple typologies of digital platforms, such as social media or those specialized strictly on a business field. The goal is to integrate the company into multiple ecosystems interconnected both horizontally (with other companies in similar fields) and vertically (upstream or downstream of processes) so that ultimately it increases its possibilities to obtain a sustainable competitive advantage.

The conceptualization of the framework of network orientation of business organizations was achieved from several perspectives within this work, such as the importance of knowledge and information within the network, illustrating the importance of new information

technologies in the processes that take place at the network level, as well as presenting the concept of network effect. However, a potential model related to a company's business network orientation is based on five components – customer interaction, supplier interaction, interaction with competitors, business environment collaboration and platform use. These components have been studied in an intensive manner, as a result of research conducted on all of the five components presented above.

Also, in this paper were presented the benefits of business network orientation, given that it has a direct and positive role on facilitating process, service or product innovation capabilities for a company. Last but not least, the company's participation in business networks also leads to an efficiency of recruitment and selection practices, as well as an improvement in human resources management.

Regarding future research on this topic, a number of other benefits and implications of this concept can be studied, as well as other components for a network oriented enterprise, in addition to those presented in this paper.

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CONCEPTS CONCERNING DIGITAL ECOSYSTEMS- A REVIEW

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Abstract: *Digital transformation is anticipated to be the fourth industrial revolution. Considering this phenomenon, some economic entities tend to group and collaborate using digital technologies, thus forming economic ecosystems. The notion of ecosystem is a relatively recent concept used in economic language, coming from biology. Because of this, the ecosystem and the specific types of ecosystems, such as business and digital, are not consistently defined in the literature. There are multiple conceptualizations of these concepts, which in practice leads to confusion and even misuse of the terminology. The main purpose of the paper is to revise the concepts related to the ecosystem construct, but also the most important types of ecosystems for the world economy, namely the business and digital ecosystems. The methodology used is the analysis of the main sources dealing with ecosystems, particularly digital and business. We have reviewed papers from the following journals: Technological Forecasting and Social Change, Journal of Business Research, Technovation, Digital Business, International Journal of Information Management, and Technology Innovation Management Review. It is important to note that the analysis of the articles was carried out from a managerial point of view, without adopting a technical perspective. Following this analysis, we made a comparison between the two types of ecosystems, highlighting their common features.*

Introduction
Digital transformation represents a major change (Gong & Ribiere, 2021) manifested at the level of the entire economy, requiring all economic entities to adapt the specifics of their activities, including this digitization process. This process represents even for managers a major modification of their leadership style, as they are forced to make decisions at a faster pace (Fernandez-Vidal et al., 2022) in a society where speed is such a commonly used term that it has become normalcy.

With the increasingly profound implementation of digital transformation, economic entities have begun to cluster themselves according to the nature of their activities and the interests they pursue. Thus, the ecosystem concept has been adopted and adapted, evolving from its primary biological form—illustrating the first type of grouping that followed this pattern of association based on certain characteristics and common interests (Scaringella & Radziwon, 2017)—to encompass business, digital, knowledge and innovation ecosystems (Valkokari, 2015).

The economy has been influenced by the activity of numerous ecosystems created because of technological and societal development, but, specifically, business ecosystems and digital ecosystems are the ones that have deeply impacted the economic phenomenon.

Therefore, in this paper, we will analyze these two types of ecosystems, observing their main characteristics. We conducted this analysis with the aim of clarifying the concepts of digital

ecosystem and business ecosystem. These concepts are not well enough understood, as there is no universally accepted definition for them, which leads to ambiguity.

This article is structured as follows: the concept of an ecosystem is presented at the beginning, starting from the origin of the term, also mentioning the main types of ecosystems. Then, business and digital ecosystems are presented in detail, by analyzing the most relevant definitions for each of them, but also by mentioning their particular aspects. The article concludes by comparing the two types of ecosystems.

1. What is an ecosystem?
1.1. The origin of the word

Ecosystem, a concept already well-established in economic discourse, originates from a vastly different field, one might say almost unrelated to economics, namely, from the field of biology. In biology, it represented a community of living organisms interacting with various elements within their environments (Scaringella & Radziwon, 2018).

In a biological ecosystem, organisms are unique, each species having its own well-defined traits. This composition is also found in business ecosystems, where companies, despite major differences, interact, thus creating an ecosystem in which each entity will have its own role. Due to this similarity, the concept of an ecosystem has been adopted in the economic domain. In a business ecosystem, interactions between entities will determine the evolution of the ecosystem. Simultaneously, the ecosystem can influence the success or evolution of individual entities (Ianisiti & Levien, 2004).

1.2. Types of Ecosystems

Although business ecosystems are looking at a niche problem of the economy, the need to categorize these ecosystems has been observed, with a view to researching them in a deeper, more niche manner. So, Bejjani et al. (2023) in their work carried out a classification of business ecosystems, starting from the simultaneous analysis of the degree of interaction within the ecosystem and the degree of autonomy in governance. As a result of the analysis, there were identified four categories in which business ecosystems could be classified: the open-source ecosystem, the chat room ecosystem, the marketing ecosystem, the marketing ecosystem, the innovation platform ecosystem (Bejjani et al., 2023). The open-source ecosystem exhibits a high degree of autonomy in governance, but in terms of collaboration within the group, this type of ecosystem demonstrates a low level of collaboration ((Bejjani et al., 2023). The Marketplace Ecosystem, both in terms of governance autonomy and collaboration within it, displays a low degree, indicating the presence of a higher authority or entity managing power through various mechanisms. In contrast to The Marketplace Ecosystem, the Chat Room Ecosystem demonstrates a high degree of both governance autonomy and collaboration within the ecosystem, thus indicating an equal distribution of power, with all members engaging in decision-making ((Bejjani et al., 2023). The Innovation Platform Ecosystem shows a high level of collaboration within the ecosystem but a low one in terms of governance autonomy ((Bejjani et al., 2023).

Valkokari (2015), by analyzing the combination of various external and internal factors, diverse ideas, skills, and knowledge, identified three categories of economic ecosystems: the business ecosystem, the knowledge ecosystem, and the innovation ecosystem. The business ecosystem focuses on providing and enhancing satisfaction for end customers, i.e., consumers, as their purchases of products or use of services offered by the ecosystem generate profit for the entire group, with customer loyalty being the primary goal of any economic entity. The knowledge-based ecosystem, as the name suggests, concentrates its entire focus on generating new knowledge, through which the discovery of new technologies and techniques becomes possible. Within this type of ecosystem, research centers and technology-focused companies constitute the core of the group. The innovation ecosystem

serves as a link between the previous ecosystems, integrating new technologies and techniques resulting from research conducted within the knowledge-based ecosystem into the practical side of the business ecosystem. Thus, this group continually tests new techniques for company development.

Bejjani et al. (2023) grouped ecosystems by analyzing their governance autonomy and intra-group collaboration, whereas (Valkokari, 2015) categorized ecosystems based on the combination of various external and internal factors, diverse ideas, skills, and knowledge.

2. Business ecosystems
2.1. Definitions

Understanding the origin of this term, numerous researchers have provided definitions for the notion of business ecosystem; however, there is no universally accepted definition.

Milinkovich, (2008) explains the business ecosystem as a group of entities that interact with each other by combining various resources, thus creating value both individually and for the entire ecosystem. This definition paints a very clear picture of what happens within a business ecosystem, with the author highlighting how value is created for the members of the ecosystem and for the ecosystem. The method emphasized by the author is represented by the combination of different resources from equally different entities, as the most complex outcomes can be achieved only by combining multiple types of resources.

Another definition is provided by (Moore, 1998), who explains the ecosystem as a community composed of a wide variety of economic agents that interact with each other, thereby providing vitality and support to the entire ecosystem. In Moore's conception, economic agents are viewed as "organisms of the business world" (Moore, 1998).

This definition provides us with an overview of what a business ecosystem represents, with the basic idea being summarized as a group of organizations or individual economic agents interacting with each other.

Peltoniemi & Vuori, (2004) explained the concept of the business ecosystem as a structure formed by the interaction of individuals representing various economic entities, with a focus on human resources. Peltoniemi & Vuori, (2004) provide details regarding the types of organizations that can be part of a business ecosystem, including both small and large companies, as well as universities or research centers.

Milinkovich, (2008) emphasized the concept of a business ecosystem by focusing on the idea of a group and the interaction within that group. He provided further details about the group, specifying it as being comprised of various firms and organizations. Through the interaction among these members, he refers to the commercial relations that take place between them, with the exchange of resources aiding in the development of both individual organizations/companies and the ecosystem.

Moore, (1998) explains the concept of the business ecosystem by characterizing it as a group of organizations that mutually assist each other. The author provides details about the composition of this group, which includes representatives of customers, producers, governmental institutions, and various financial institutions. The connections within this group are strong, even though the formation of the group is not entirely intentional, with the author specifying that it has formed somewhat accidentally. Additionally, according to (Moore, 1998), the business ecosystem is an independent group, in which all members are involved in organization, thus emphasizing the collective nature of the group's organization.

Garnsey & Leong, (2008) provides a concise definition of the business ecosystem, presenting it as an open system where companies interact freely. This definition emphasizes the essence of an ecosystem, which is illustrated by freedom.

Analyzing all these definitions reveals a common element, represented by the idea that business ecosystems are characterized by the concept of a group, particularly the interaction among ecosystem members. Within the analyzed definitions, it is mentioned that this type of communal relationship among members adds significant value to the entire ecosystem,

representing an advantage for both the group and individual companies. In contrast to the other definitions, (Moore, 1998) pays special attention to analyzing the nature of relationships within business ecosystems, mentioning a trait not encountered in the rest of the analyses, namely that certain relationships among members have been formed unintentionally, even accidentally (Moore, 1998).

2.2. Attributes of an ecosystem

Any form of existence or organization requires certain characteristics in order to be able to develop in a harmonious way. There is also the premise that any entity wants to achieve a certain success, and to achieve this goal, certain specific traits are needed again, consistent with that positive result. So business ecosystems too, to be success-oriented, require the inclusion of certain features.

In his vision (Bejjani et al., 2023) a business ecosystem will be successful if it meets certain conditions and if it owns certain resources. One of the most important criteria that, once respected, will bring good development of the business ecosystem is governance. This feature refers to the fact that the ecosystem is organized in its own way, there is no entity to control it, the power being divided between its members. This equal distribution of power determines certain behaviors among group members, one of which is illustrated by the fact that although the member entities are mutually dependent on each other, they are hierarchically equal, autonomous, as there is no hierarchical structure of the ecosystem. This feature of the business ecosystem is also mentioned by (Senyo et al., 2019).

Another important feature in his vision (Bejjani et al., 2023) is considered the removal of geographical barriers, as proof in certain ecosystems the entities that are part of them, even if the physical is at a great distance, the collaboration is not affected. Also, the concept of a barrier can be extended, respectively within a business ecosystem, one can observe a connection of several areas of activity, and this gives the ecosystem added value and utility.

Senyo et al., (2019) considers platformization an important feature in the proper development of a business ecosystem. It refers to a set of software and hardware tools and programs that facilitate both interaction between ecosystem members and innovation. This feature is somewhat of a cornerstone for any digital ecosystem, as without it it would be practically impossible to achieve remote collaboration in such an efficient way. Bejjani et al., (2023) indirectly mentions this trait by assessing the removal of geographical barriers within business ecosystems.

Another important feature in his vision (Senyo et al., 2019) is illustrated by symbiosis. This refers to the close connection between the subjects of the business ecosystem: members, information, and technology. A good collaboration between them will lead the entire group to accelerated development, while the individual development of the member entities. Also, a symbiosis within the ecosystem will generate an increase in creativity, the whole group being driven to generate a higher value, this process benefiting the entire society.

Co-evolution is another trait that (Bejjani et al., 2023) noted when it comes to the business ecosystem. This refers to its ability to transform collectively, meaning change is adopted on an individual level by all entities that are part of the ecosystem, when external or internal factors demand this. This feature is easy to highlight when considering in antithesis the reaction of solitary companies, when a stimulus occurs that causes certain changes within them.

Another feature of the business ecosystems observed by (Bejjani et al., 2023) is illustrated by its own independent organization. The authors refer by this feature to the fact that this type of ecosystem applies a style of its own organization, materialized by its ability to learn to react to changes in its environment. Bejjani et al., (2023) emphasized the same feature of business ecosystems, appreciating the fact that there is no entity that fully holds the power, it is divided in a balanced way between all members of the ecosystem.

Iansiti & Levien, (2004) conducted a deep analysis of business ecosystems and highlighted certain features that determine their evolution. A first feature observed by the authors is illustrated by productivity. It retains its classic meaning, emphasizing its importance for absolutely any type of ecosystem, and even more, for any type of business. Productivity in its general sense illustrates the efficiency of various processes from production to organization, it is recommended to apply to any economic entity as one of its objectives is to quantify the results obtained from the various activities performed, and for a manager the lack of them could be synonymous with failure.

Following the research carried out, (Iansiti & Levien, 2004) appreciated the robustness of a business ecosystem as another characteristic specific to a successful one. It refers to the ability of an ecosystem to successfully manage potential threats or problems that arise either from within it or from the outside environment, so that the ecosystem is not affected by the negative stimuli that have arisen, and more so, it transforms the danger into opportunity. This ability also allows an ecosystem to succeed in changing the environment in which it operates, regardless of the moment or the global situation, in order to maximize the interests pursued.

Another feature of business ecosystems that in his opinion (Iansiti & Levien, 2004) Fails to lead to a good development of them and even to achieve success is illustrated by the creation of niches and certain opportunities for new entities. This ability gives any ecosystem great value, especially when referred to as a whole, because any economic entity aims to produce certain products or services to address to certain customers. One of the most difficult issues for an economic entity, especially at the beginning of the road is considered to be the correct identification of niches and opportunities. In practice it is noted that opportunities are difficult to identify not only for companies in the initial phase, but even for large companies, for managers with a lot of experience behind them. Thus, if an ecosystem manages to acquire this feature, it will surely attract a large number of entities that will want to be part of the group, and on the other hand, it will attract, it will certainly provide a climate conducive to the harmonious development of firms, guiding them towards success.

Attribute	Source
Self-organization	Bejjani et al., 2023, Senyo et al., 2019
Platformization	Senyo et al., 2019
Governance	Bejjani et al., 2023
Robustness	Iansiti and Levien, 2004
Productivity	Iansiti and Levien, 2004

3. Digital ecosystems

Although, on the one hand, it is digital ecosystems that have changed many operating principles of the world economy, and on the other hand, it is digital ecosystems that have changed many operating principles of the world economy, many researchers with remarkable results were involved in the process of defining them, a unanimously accepted definition has not been established. This misunderstanding about the clear meaning of the concept of digital ecosystem causes a general confusion, so the use of this concept must be carried out with increased attention (Koch et al., 2022).

3.1. Definitions

Koch et al., (2022) conducted a deep analysis on the concept of digital ecosystem, mentioning the existence of two important tools of the digital service and the digital platform. The authors provide an overview of the concept of the digital ecosystem, explaining it in a relatively simplistic manner as being such a social system, as well as technically aiming to

link supply and demand, between customers and suppliers, in order to meet the needs of both parties involved.

Following the sketch of this general image of the digital ecosystem, (Koch et al., 2022) specifies the special importance of its tools, represented by digital services and the digital platform, on which any digital ecosystem relies to optimise the expected effects, while providing a brief explanation for each instrument. Thus, the digital service was presented as an asset exchange activity between providers and users/clients. It is also specified that this exchange process takes place exclusively through the other instrument of the digital ecosystem, namely through the digital platform. This is defined as a software system that represents the engine of the entire digital ecosystem, the latter being unable to exist without the use of a digital platform. Its main role is to create and concretize a link between the customer and the supplier, in terms of acquiring a certain asset.

Briscoe et al., (2011) presented digital ecosystems as closely related to biological ecosystems, even suggesting that they appropriated the characteristics of biological ecosystems with certain peculiarities. Following the overlapping of the two types of ecosystems, in terms of features, the authors have customized digital ecosystems as robust, scalable, but at the same time self-organized. This definition emphasizes the link between ecosystems over time, the digital one, according to the authors coming from the biological one, which, from a temporal point of view, is much older, one of the first appeared. On the other hand, the digital ecosystem is considered to be one of the most recent emerging ecosystems.

3.2. The specificity of digital ecosystems in the world of ecosystems

Digital ecosystems are some of the newest types of ecosystems that were created with the accelerated evolution of technology, illustrating practically an effect of society's need to use digital services.

Digital ecosystems are extremely complex, unique in their functioning and reaction to the environment, with features that distinguish them from other ecosystems.

Boley & Chang, (2007) observed some of the most important features of a digital ecosystem, defining it as an open system whose organizing power is not a central one, a single entity in control, but none classically distributed among their constituent entities, this aspect offering uniqueness to digital ecosystems.

The way of distributing power is done in a unique way, according to the authors, it is constantly dependent on the variation of market demand. This policy in relation to the power within the ecosystem generates certain effects, such as the fact that within digital ecosystems, fixed roles are waived for entities that are part of the ecosystem as well, it goes without saying that by following this type of policy, there will be no centralized control structure, all these effects, distinguishing digital from traditional ecosystems where there are many clear provisions regarding power policy.

Briscoe & De Wilde, (2009) highlighted certain defining features of digital ecosystems, including self-organization, scalability and viability. These traits, although they are also found within the biological ecosystem, the way they manifest within digital ecosystems gives the digital ecosystem uniqueness in relation to other ecosystems.

Darking et al., (2007) emphasised transparency in decision-making within digital ecosystems as a feature that, together with the inclusion of member entities, distinguishes it from other ecosystems. Another feature observed by the author is illustrated by good organization and timing as proof, the basic code infrastructure is in constant development.

Analyzing the characteristics of digital ecosystems suggested by the cited authors, a common element is represented by the way power is divided. Boley & Chang (2007)considered this to be a differentiating factor compared to other types of ecosystems.

In contrast, Darking et al. (2007) regarded transparency in the decision-making process as what sets digital ecosystems apart from the rest.

3.3. Impact

Digital ecosystems have a major impact on all economic entities because, through their dynamics, they have changed the flow of the entire economy. One of the most quantifiable effects is the expansion of the level of activity of economic entities. Numerous companies operating locally have managed to expand their business to a higher level, with some agents managing to globalize their activity. Digital ecosystems have facilitated this opportunity for many companies by improving the speed of information transmission, but also by eliminating any type of boundaries between economic agents (Nachira et al., 2007).

4. In conclusion

The main traits of digital ecosystems and business ecosystems are in full accordance with the current trend of the economy, shaping its evolution.

Upon analysis, certain common characteristics are observed between the two ecosystems. One of the main common features is illustrated by the fact that both ecosystems practice a different policy compared to other types of ecosystems regarding power management within them. This difference lies in the fact that power is distributed equally among all component entities, with no central entity holding all the power (Bejjani et al., 2023; Boley & Chang, 2007). An effect of this approach to power within ecosystems is represented by a higher level of transparency (Darking et al., 2007) both in the decision-making process and in informing the component entities about the activities carried out.

Platformization is another common feature of the two ecosystems that facilitate the rapid transfer of information between the component entities, but also the innovation process (Senyo et al., 2019).

Thanks to the platforming use of various software and hardware equipment, it is possible to eliminate the physical boundaries between the entities that are components of the two types of ecosystems, business and digital, in order to collaborate, to, thus, the interaction is easy, regardless of the geographical position of the members.

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THE BORN OF THE ROMANIAN POLICE FROM THE MILITIA DURING THE COMMUNIST PERIOD

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Abstract: *During the last decade Romania has undergone major political transformation from communist regimes to democratic forms of government. Despite changes--introducing police ranks, changing uniforms, prohibiting party affiliation, police find it more difficult to persuade citizens that they have really changed. The article details the modifications that came about in tandem with the evolution of the Romanian Police following Romania's 1990 political upheaval. The relationship between socioeconomic shifts and the corresponding modifications to law enforcement agencies has received special attention. These modifications range from renaming the Militia to the Police to altering its personnel, organizational structure, and legal framework. The Romanian Police is a professional organization that serves the public and is commemorating its 202th anniversary in 2024.*

Keywords: *Police, Militia, international structures.*

JEL Classification: *O15*

1. Introduction

Throughout the 50 or so years of communism, the 'militia', as the police used to be called, was employed as a powerful instrument to crush any individual or collective protest against the powers that be. For many years, Romanians associated the police with the secret services (the 'Securitate') and feared both equally.

After December 1989, the names of the two institutions were changed (the militia became the police and the Securitate became the Romanian Intelligence Service), each having their own duties established by law.

However, both are still militarized, as are other special services, including the Foreign Intelligence Service, the Guarding and Protection Service, and the other secret services.

This means, among other things, that their internal rules and regulations are classified as secrets, that they benefit from numerous material privileges, and that only military prosecutors can investigate potential abuses; if indicted, the perpetrators can be tried only in military courts.

2. Summary of the Romanian Police history

The Mare Vornic, chosen by the monarch, was the early precursor to the modern police chief. The Romanian Police Service, known as the Agia, was established in 1834, with the National Guard later given extensive powers in 1864.

Significant reforms began in the 20th century under Interior Minister Vasile Lascăr, considered the founding father of the modern Romanian Police. The adoption of the Constitution in 1923 led to the reorganization of law enforcement institutions and the separation of state powers. The Law on the Organization of the General State Police in 1929 designated the General Directorate of the Police as the principal state body for public safety and internal order.

The Law of the Ministries in 1929 and the Regulation on the Organization of the Ministry of Interior in 1930 further empowered the police institution. The start of Communist control in 1949 marked a significant reorganization of the Ministry of Internal Affairs, dividing it into several directorates.

After the overthrow of the communist system in 1989, the Romanian Police underwent a reorganization along new principles, including the complete de-politicization of the institution. This served as a catalyst for reshaping the institution's constituent parts and the legal framework overseeing them.

Prior to the order, the majority of police officers held college degrees, to enter the militia, college degrees were not required. As per the Sighet Memorial, of the 35,000 workers who initially made up the Militia, only 161 held college degrees, 9,600 had completed four classes or less, and 7,800 – six-seven classes.

Since 1948, the staff had been subjected to several waves of purges. In July, the State Security Directorate issued an order aimed at identifying and sanctioning "all police officers and agents who actually worked in Security work until March 6, 1945", except for those who "are currently valuable informants, who have files created by informants and who have proven that they conscientiously fulfill their entrusted mission". In the same month, over a thousand employees excluded from the police were arrested and imprisoned. The former policemen remained imprisoned without trial until 1955, when they were sentenced to 8 years in prison based on article (193/1) of the Criminal Code, with retroactive character, defining "activity against the working class and the revolutionary movement.

To become militiamen, social origin and attachment to the party were more important than education. Professionalization was done on the fly, at first only by graduating from schools lasting a few months.

The Militia Apparatus began transit surveillance and residence control, meaning that by the end of 1952 no urban resident should be allowed to change his residence without the permission of a Militia office. One of the Militia's initial responsibilities was to issue residence permits and later, identity cards.

Over time, the Militia's power has increased. The institution's mission was reformulated in November 1969, with the new objective being to "contribute to the defense of the revolutionary conquests of the people, their peaceful work of socialist construction, public and personal wealth, life, freedom and dignity of individuals, the rule of law settled in Romania." The privileges granted by this legislation gave rise to numerous abuses, and the Militia was required by law to defend "socialist property against actions taken by criminals or other persons who harm the public property".

3. Organization of the Romania Militia

The Romanian militia, subordinate to the Ministry of Interior, was primarily responsible for conducting investigations and monitoring foreigners. Investigations were conducted by a group of militiamen using rapid questioning tactics. From July-August 1954, visas were issued by the Foreigners Control Section at the militia headquarters.

The militia had district headquarters with various sections including the Office of the Commanding Officer, Economic Militia Section, Control of Foreigners Section, Evidence of Population Section, Investigations Section, and Information Office. Each section had specific responsibilities ranging from commercial field activities, keeping records on foreigners, maintaining population census, issuing travel permits and building cards, to conducting investigations.

The Commanding Officers, usually a captain or a major, were selected from the ranks of the Communist Party. The Information Office, located at the entrance to the militia district office, was responsible for issuing passes into the building. Despite the inhuman manner of investigations, the militia played a significant role in maintaining law and order.

Sector runners, who are in charge of one to three streets, collaborate with block responsibles to gather information about inhabitants and conduct house checks. Each city is divided into sectors, each led by a sectorist who oversees agents controlling personnel movements within the sector.

Sectorists and their agents monitor breaches of economic and political laws and control the papers of anyone in the sector. The behavior of sector runners towards the population was generally poor.

The militia's uniform was gray-blue, with ranks denoted by stars. There were many women in the militia dressed as officers. The Director General of the militia, responsible to the Ministry of the Interior, oversaw three branches: Territorial Militia, Railroad Militia, and Prison Militia.

The Romanian Territorial Militia was organized by regions, with each district having a militia. The regional militia was commanded by a field grade officer, while the district militia was commanded by a company grade officer. The militia had various bureaus, each with specific responsibilities ranging from handling correspondence, verifying personnel, political education, controlling citizen movement, conducting investigations, issuing vehicle documents, controlling prices, preventing prostitution, ensuring state security, training militia, and administrative tasks.

Each district had a group of mountain militiamen who patrolled public roads. Each village had a militia post, with frontier villages having a post of four to six people. The militia was equipped for climbing and skiing in mountain villages.

The Railroad Militia, headquartered in Bucharest, had guard units in communication centers, railroad stations, and frontier zones. They controlled travel documents and guarded materials in railroad warehouses and on trains.

The Prison Militia, also headquartered in Bucharest, was responsible for guarding prisons and concentration camps. Spot checks were conducted in various public places and villages. The two main documents controlled were the "Buletin de Identitate" and the new military certificate.The militia collaborates with security forces and helps security troops to make arrests and deportations and to block off mountain passes, forests, etc.

They also make periodic checks of isolated houses and cabins.

4. Police Reforms Following 1989

Following the decision in December 1989 to uphold democratic values, Romania underwent significant reforms in all institutions, including the police system. The aim was to transform the police into a public-serving organization capable of adapting to changing crime and public order situations.

The Constitution of Romania, adopted on December 8, 1991, declared the Romanian State to be democratic and governed by the rule of law. It also expressed a vision for democracy, human rights, social justice, and humanity.

The first step towards reform was the passing of Law No. 40/1990, which gave the Ministry of Interior the authority to implement laws related to public order, defense of freedoms and rights, and prevention and investigation of criminal activity.

Post-1996, there was increased pressure from the police and civil society for government reforms. However, the costs of reform outweighed the potential for change, leading to a cautious government stance.

The Romanian police system now comprises three forces: the Romanian Police, the Romanian Gendarmerie, and the Public Guards, all responsible for maintaining public order.

The reform strategy aimed to improve communication, depoliticize, demilitarize, decentralize, increase transparency, partner with the community, establish an effective

accountability system, uphold professional ethics and human rights, and achieve interoperability with similar organizations from other European states.

The new Law on the Organization and Functioning of the Romanian Police was enacted in 1994, harmonizing the powers, authority, and limitations on the police with the provisions of the 1991 Constitution. The 1994 Law also included a clause forbidding police officers from belonging to political parties or organizations, while still protecting the freedom to vote.

Following the adoption of the 1994 Law, the Romanian Police began a major reform program, focusing on turning the Romanian Police into a civilian institution, improving operational response capability, altering organizational culture, maximizing resource utilization, and concentrating international efforts on police reforms.

The strategic activities of the Romanian police aimed to ensure effective logistical support, manage human resources, protect personnel, decentralize decision-making and resource allocation, modernize working methods, cooperate with public authorities, introduce new efficient instruments for police work management, and increase interoperability with similar bodies of the European Union.

In 2002, the European Code of Police Ethics was incorporated into Romanian law with the Law on the Organization and Functioning of the Romanian Police. This law emphasized public service and expanded the police's responsibilities to include combating terrorism, illegal immigration, and the trafficking of radioactive materials.

Law No. 218/2002 transformed the police's function into a public service mechanism, reducing their dependence on coercion. The Law on the Status of the Police Officer was the first legislation governing the police officer profession and its relationships with other professional communities.

5. Demilitarisation of the Romanian Police

The Romanian police system underwent significant reforms to become a public service without sacrificing its judicial function. This was based on the idea that a competent police force is best suited to uphold civic values. Legislative actions aimed to reorganize and restructure the Romanian Police, aligning it with similar structures in advanced democratic states and increasing interoperability with similar EU agencies.

The Romanian Police was reorganized into three components: Judiciary Police, Public Order Police, and Administrative Police. New structures were established, including the Institute for Crime Research and Prevention, the Division for Human Rights, specialized Brigades for Countering Organized Crime, and cross-border crime units. The national EUROPOL office was established for the Romanian Police to participate in European Community activities for countering organized crime.

A new organization, the Territorial Authority for Public Order, was created to involve the community in developing its own security framework. The law emphasized the importance of appropriate human resource management, aiming to replace the outdated image of the police officer as a military figure with that of a citizen who is approachable and possesses human traits.

Over half of the Romanian police officers who had served during the communist era left the country after 1989. The remaining officers sought to leave the system to pursue other employment opportunities. The Ministry of Interior's educational system in Romania underwent a significant reconstruction, transforming the School for Active Officers into a university-level institution, the Alexandru Ioan Cuza Police Academy. The academy offers four-year courses for training police officers, gendarmes, fire fighters, and archivists, with graduates receiving a BA-equivalent degree. It also offers two-year post-university courses and a six-year Ph.D. degree in police specialties.

The new Law on the Organisation and Functioning of the Romanian Police emphasized the protective role of the police and established new directions for police work and personnel training, focusing on crime prevention, countering organised crime, humanitarian law, and human rights.

Efforts were made to balance leadership and line positions, redistribute personnel according to specific problems, decrease personnel's average age, increase their quality and compatibility with tasks and missions, hire minority nationals, and increase the rate of women in the police forces. As a result, the number of Romanian police personnel increased by 68 percent compared to 1989, and relations between police officers and citizens were aligned with European Union standards.

6. Police and the romanian society

Police officers, as primary role models in society, have a unique and complex role that involves maintaining constant touch with the public and upholding an outstanding reputation. Their effectiveness is derived from societal acceptance and support, requiring a high degree of trust and confidentiality to foster cooperative relations between society and the police.

In recent times, more police officers have completed law school and are better educated, interacting with legal professionals on an equal footing. The public image of the Romanian Police varies among individuals, but with Romania's democratization, trust in the police has gradually increased, improving the institution's image.

However, minorities can impact societal perceptions, often negatively, due to frequent encounters with legal issues or feelings of disenfranchisement, leading to a decrease in trust in the police. The public's perception of the Romanian Police is influenced by numerous elements, including the errors committed and the outcomes of the missions completed by the officers.

The loss of faith in the police could stall or even vanish democracy, making the role of the police crucial for a democratic state. Without public engagement and faith in the police, criminal organizations will continue to grow and endanger public safety.

7. Romanian Police and the International Police Cooperation

The International Police Cooperation Centre, under the General Inspectorate of the Romanian Police, specializes in sharing intelligence to combat international crime. It maintains operational connections with foreign law enforcement through channels like Interpol, Europol, and the Schengen Information System. In 2012, the Centre participated actively in the exchange of police information, identifying and locating thousands of people and vehicles.

The Interpol National Bureau of Romania, established in 1973, serves as a national support point for international police cooperation, overcoming obstacles due to differences in national police structures, language barriers, and legal systems.

The National Focal Point (NFP), established in 2000, ensures operational connections between Romanian and foreign authorities and manages information flow on operations conducted by international police cooperation specialized structures of the Ministry of Internal Affairs.

In 2003, a Cooperation Agreement was signed between Romania and the European Police Office (EUROPOL), intensifying cooperation with EU countries. The NFP was designated as a specialized unit within the Ministry of Internal Affairs to act as the national contact point for Europol.

The Europol National Unit focuses on exchanging information related to various crimes, including financial crimes, drug trafficking, human trafficking, smuggling, murder/kidnapping, serious property damage, trafficking of nuclear and radioactive

materials, environmental crimes, theft, and terrorism. Cooperation may also involve other Europol competencies, such as exchanging knowledge, reports, investigation procedures, preventive methods, and providing advice and support in criminal investigations.

8. In conclusion

Reforming has not been simple. With all the uncertainties and challenges of a fresh start, Romanians had to relearn democratic principles and learn how to execute them after fifty years of an authoritarian administration that cut Romania off from the democratic world.There were various barriers to overcome, some of which were objective in the form of financial resources and others of which were subjective in nature and stemmed from the attitudes of both the public and police personnel. Other barriers included the lack of a collaborative culture and a model to follow.

The primary causes of the Romanian police's dysfunctions include a lack of management, political influence, slow legislation, and a failure to alter police officers' mindsets. Despite these obstacles, studies showing a 48 percent trust rate and the police ranked as the fifth most trusted state organization indicate that the reform of the Romanian police is deemed effective.

Romania has a low crime rate per 100,000 people, comparable to democratic nations like Austria, Switzerland, and Germany, demonstrating the effectiveness of the reforms. After overcoming the transitional phase, the changes are almost finished, along with ongoing attempts to integrate Europe and complete the concept of community policing.

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OPTIMISATION IN FOOD WAREHOUSE MANAGEMENT FOR PROVIDING TRACEABILITY OF PRODUCTS

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Abstract: *This paper presents a case study for a company with food warehouse, for which it is very important to know the traceability of products and at the same time to use a process as efficient as possible. Because we talk about food, each product have a lot number and an expiration date which is very important to be recorded in the information systems. When products are delivered to customers it is needed to provide a declaration of conformity with quantity, lot number, expiration date for each products.*

Keywords: *traceability, food warehouse management.*

JEL Classification: *L86*

1. Introduction

Batch production is a method of manufacturing where the products are made as specified groups or amounts, within a time frame. Batch production is used for many types of manufacturing that may need smaller amounts of production at a time to ensure specific quality standards or changes in the process. (Batch production, 2024) Batch production is used in food industry because is very important for quality control and have the advantage to identify more easily any problems. As a result of batch production each product will have printed on it the lot number and expiration date. A **lot number** is an identification number assigned to a particular quantity or lot of material from a single manufacturer. (Lot number, 2024)

WMS applications offer capabilities such as receiving, put-away, stock locating, inventory management, cycle counting, task interleaving, wave planning, order allocation, order picking, replenishment, packing, shipping, labor management, yard management and automated materials handling equipment interfaces. (warehouse-management-system-wms, 2024)

Produce traceability makes it possible to track produce from its point of origin to a retail location where it is purchased by consumers. Since many fruits and vegetables are eaten raw, the produce industry, from farmer to retailer, works diligently to protect these foods from contamination. Despite their best efforts, foreign matter can occasionally contaminate produce in the field or orchard, in packing or processing, in transit or storage. (Produce traceability, 2025)
Food warehouses often need to be able to provide customers in addition to the invoice with which the products are purchased by the customer, a document regarding the record of lot number and shelf life for the delivered products. This information shall also be printed on food packaging. Unfortunately, the barcode that also exists on these products does not

contain information about the lot number or expiration date of the products. The barcode is only used to identify products. In the following we will present the constraints, customer requirements and how we solved certain problems so that the entire process is as transparent, accurate and time-efficient as possible.

2. Purposes of the Study and Research Methods

This paper will present a case study. During this research we analyzed different situations within company and employees and clients needs.

After a preliminary study, the following requirements are defined that a system must fulfill in order to make the entire activity more efficient.

- The operations at the entrance and exit of the warehouse should be reflected exactly in the inventory management system.
- The operation of entries into inventory management system should be carried out by operating not only the product, the quantity and the price of the product, but also the batch number and the validity period.
- The operation of exits from inventory management system should be carried out not only by operating the product, the quantity and the selling price, but also the batch number and the validity period of the product, so that in addition to the invoice, the customer will receive a declaration of conformity and a list with detailed information of them.
- The operation of exits from inventory management should be carried out on the basis of the orders received from the client within the limit of the existing quantity.
- The inventory management system provide stock quantity for each product with detailed information on its component. The existing quantity in stock must be broken down by lot number and expiration date.
- All the operations performed at the inventory management system should be reflected in the accounting.
- Establishing work tasks for operators and streamlining work times.

3. Requirements analysis and concept realization

At the company level, each product that is worked with is defined in the product catalog, so that each product will be registered only once with some static information such as the product code, the name, the unit of measure, the VAT share, its accounting classification. Apart from these static properties, each product purchase may involve one or more different lots and obviously different validity periods. These properties of the purchased products will have to be kept at the level of each incoming transaction. Since there is a one-to-many dependency between the batch number and the product, it is as clear as possible that the batch cannot be kept in the product catalog.

The first modification of the application required making new adaptations at the database level by creating two new fields in order to memorize the lot number and validity period at the transaction level. By creating new fields, software needed to be upgraded to provide new ways for entering and viewing the data. For example a new stock report is needed to provide informations regarding the stock for each lot of a product.

The second change assumed the change of the way of making the reception by the necessity of operating the lot number and validity period for each product existing on the invoice. Since there are situations where the products appear cumulatively on the invoice, it is necessary to break them down by lot and expiration date at the reception. Therefore, a supplier invoice position will correspond to one or more reception positions.

Because the batch number and the validity period are often written both on the product and on the box in which the product is kept in clear writing and not with a barcode, and the barcode on the box in certain situations differs from the barcode on the product, but does not include information related to the batch or expiration date, we had to propose the creation of labels with barcodes that contain product identification information and also contain the batch number and their expiration date. Due to the large number of characters that we have to store and to avoid their incorrect or partial reading, the best decision was to opt for 2D data matrix barcode labels because they are safer and more compact, even if the readers codes from the warehouse will have to be changed. This label can be placed on boxes or pallets as needed.

Data matrix codes facilitate efficient product recalls, certification verification, and improved inventory management.2D barcodes can be read from almost any angle and in any direction, making them much easier to scan than 1D barcodes. (Unveiling the Power of data matrix codes: exploring the 2D barcodes, 2024)

The third change appeared as a necessity to streamline working time by listing labels directly from the management application. Even if there are software for making labels, it was decided to create an integrated module because at the time of reception, the products are defined by batch number and expiration date, an absolutely necessary operation, and since the data already exists in the database, direct listing of labels is much easier here, than entering another software and defining each label separately.
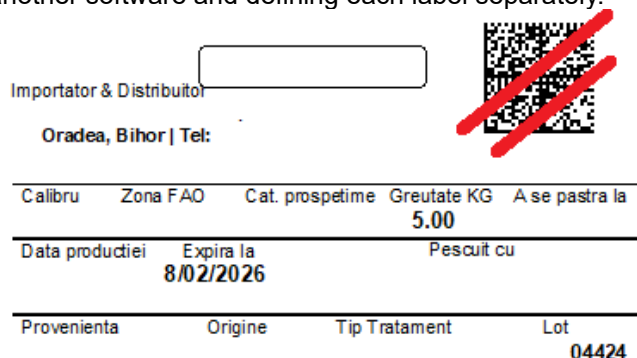
Fig. 1 Example of 2D barcode label with multiple catacteristics

Another identified problem is related to the way of using the scanners, when preparing the products for delivery. Mobile devices will scan the new labels, which include the product identifier, lot number and expiration date. At the time of scanning, the discharge must be carried out from the existing stock of the scanned product that has the same lot number and the same validity period. Therefore, it is necessary to implement a new method of producing management discharge, namely the discharge depending on the product and lot number, because the term of validity is closely related to the lot number in the case of these products. There cannot be products from the same batch that have different expiration dates.

The fourth change was the introduction of a new management download method at the application level, namely by product and batch number.

The fifth emerging need is to create an application for tablets through which the operators can move when preparing the goods in order to scan the label on the box or on the pallet. This application has to have the following pages:
- page for login, because we need to know the owner of each operations.

- central page from which we can access orders or picking documents
- page for searching orders
- page for seeing order details
- page for seeing order products
- page for searching picking
- page for seeing picking details
- page for seeing picking products

Easy retrieval of products inside the warehouse is another necessity in order to improve operating times. This was achieved by allocating each product to an area in the warehouse. Also, the products will have to be ordered first of all according to the order given by the storage area and then according to other criteria such as the product code and its name. This ordering criteria will have to be available in the mobile application for picking route.

The verification of the operated data must be carried out by the operator at the time of registration, therefore it was found necessary that the batch number and the validity period should be visible in the application on the tablet, so that any mistake in labeling or placing a product can be identified on the spot and not afterwards.

Since the operation in a mobile application is done a little differently than in a classic application, it was necessary to introduce some principles for specifying the quantity that we enter when scanning a product. The accumulation of quantities for scanned products when they come from the same lot and have the same selling price represents another requirement in order to use the viewing area as wisely as possible. Also, the facility of subsequent modification of the scanned quantity, either by increasing or decreasing it, was introduced.

Viewing the products to be scanned directly on the operating page is another requirement, therefore we had to define an area on the page reserved strictly for viewing them. When a product has been fully loaded, it will automatically disappear from the viewing area.
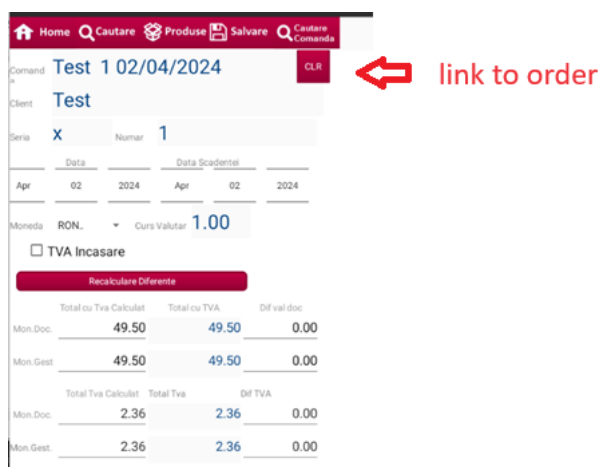
Fig 2. Picking detail page with link to order
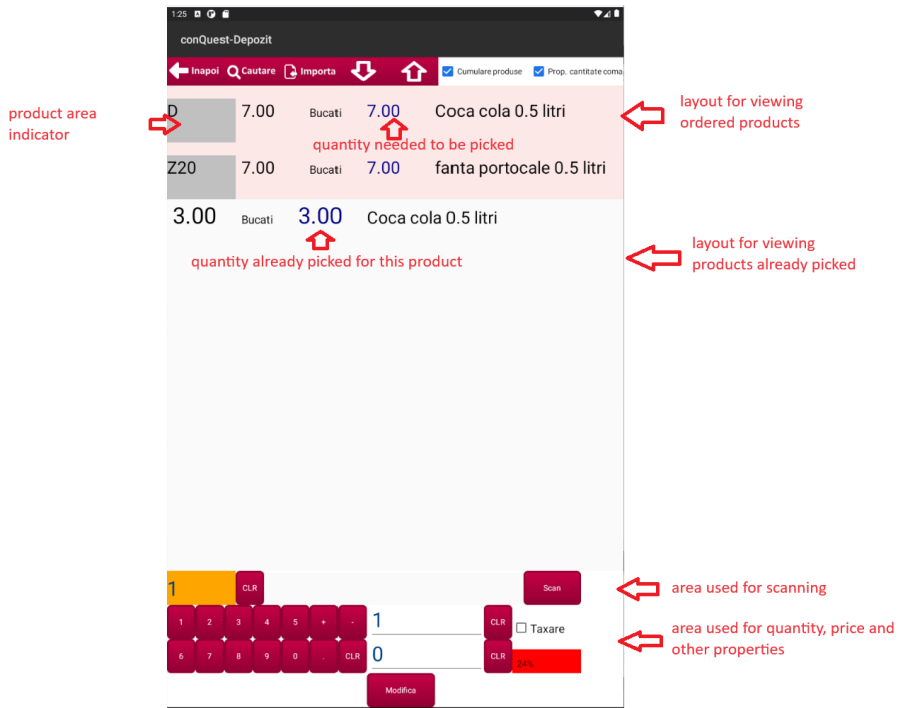
Fig 3. Operating page used for scan with an area used for viewing ordered products which need to be picked

For
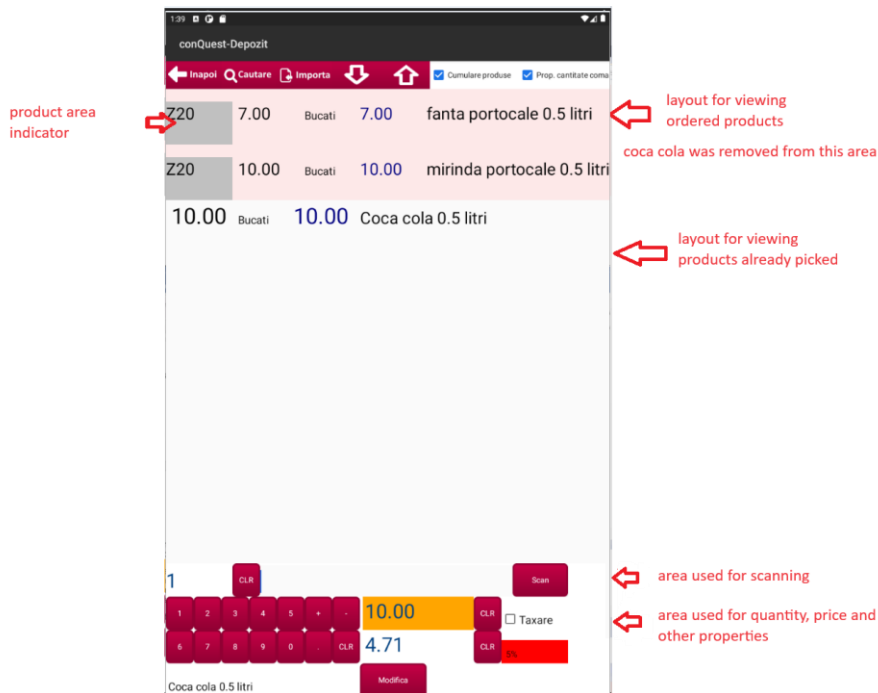
Fig 4 Operating page used for scan after selecting entire quantity

achieving this goal we has to create first a link to the order on picking details page to know which products has to be scan. This can be seen on Fig. 2.

As it can be seen on Fig 3 and Fig 4. there is a list in top part of screen with the product which i need to scan, and below this list there is another list with products which allready have been scanned. When we select the entire quantity from order thre product dissapear from top list.

The sixth need that appeared was that of making an inventory and breaking down the stock by lot number and shelf life for each individual product. This inventory is absolutely necessary because without it, the implementation of the solution could not be carried out. Any product scan requires an available stock with the same caracteristics, and if we did not find an available stock with the same caracteristics, the scan will fail, and product can not be send to the client.

The eighth necessity that appeared was that of Wi-Fi signal coverage of the entire warehouse, in order to connect the application from the module devices to the database server in order to reflect in real time any operation performed. Any scanned product will change the available stock, this will be reflected in the e-commerce website as well as in the management application.

Conclusions

The implementation of customized solutions brings benefits because the software adapts to the immediate needs of the company.

The customization of the software had implications at the database level, required changes to the application by including new fields to be filled in by the operator and by creating a new method for stock management discharge. It required the creation of an label integrated printing module. Also was needed to develop a new module for tablet to provide acces to information on the working area.

The implications are not only of a software nature, there are often investment needs in the modernization or purchase of equipment like 2D scanner, tablets and wifi routers and acces points.

There have been changes in informational circuits at the level of the company with direct implications on the structure and job description of the staff. New activities have appeared, others have acquired a greater degree of complexity, and other existing activities have decreased or even been eliminated. For example because picking activity is recorder directly into information systems, the time required to issue the invoice has been considerably reduced.

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PROJECT MANAGEMENT MATURITY MODELS. A REVIEW OF CURRENT CRITICISM AND OPPORTUNIEIS

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Abstract*: Project management maturity models (PMMMs) have evolved significantly over the years, eliciting both enthusiasm and critique from professionals in the field. The former reflects the promising prospects for enhancing organizational value through the adoption of refined practices, while the latter underscores concern regarding the associated costs, applicability challenges, and the resilience of these models. This paper embarks on a comprehensive exploration, surveying the landscape of established models while pinpointing the principal obstacles linked with their implementation. Acknowledging both the significance and the shortfall of current models, there is a growing consensus within the literature regarding the imperative for further advancements in project management practices. Criticisms directed towards existing models often revolve around economic feasibility hurdles, inflexibility, scalability issues, and overly prescriptive frameworks. This paper undertakes a critical examination, contemplating the integration of digital capabilities as a means to mitigate these drawbacks and refine project management maturity models. Central to our paper is the notion of leveraging digital affordances to enhance the efficacy of PMMMs. By amalgamating technological innovations with established methodologies, we endeavor to address prevalent criticisms and propel the evolution of project management frameworks. Our approach is multifaceted, encompassing a thorough exploration of the technological substrates underpinning PMMMs. In delineating the technological landscape, we identify three primary layers of technology integration in PMMM development: Microsoft Excel, Online Questionnaires, and Advanced Platformization Initiatives. Each layer presents distinct opportunities and challenges, underscoring the complexity inherent in modernizing PMMMs. Proposing a forward-looking strategy, we advocate for the development of PMMMs that capitalize on the latest digital affordances. By prioritizing user-friendly interfaces and streamlining the completion process, we aim to foster greater engagement and uptake among stakeholders. This approach promises to transcend the limitations of traditional models, catalyzing a paradigm shift towards more dynamic and responsive project management practices.*

Keywords: project management; maturity; organizational maturity; digital affordances

JEL Classification: G32, O22

1. Introduction

Organizations that are developing their business by implementing projects are project-based organizations (PBO) (Fauzi et al. 2021; Sundqvist 2019; Müller, Drouin, and Sankaran 2019; Simangunsong and Silva 2013). Projects are practical and unique artifacts such as products or services that implemented successfully assure business continuity, growth, value delivery and the accomplishment of strategic objectives (Kiani Mavi and Standing 2018; "PMBOK® Guide" 2021; Beleiu, Crisan, and Nistor 2015; Varajão et al. 2022; Görög 2016; Karim et al. 2022). Hence, PBOs require adequate project-related control systems and management practices (Müller, Drouin, and Sankaran 2019; Beleiu, Crisan, and Nistor 2015; Tereso et al. 2018) since successful project implementation is not always carried out entirely (Tereso et

al. 2018). Also, they are not project-confined and isolated; but rather reflect the organizational maturity (Fauzi et al. 2021).

Maturity typically refers to the extent to which processes and systems are formally organized and executed or operated to produce outcomes (Lacerda and von Wangenheim 2018; Tahri and Drissi-Kaitouni 2015). The state of maturity represents an ever-desired state of continuous evolving (Araújo and Ribeiro 2021; Görög 2016). In terms of business improvement and knowledge management, PBOs should pay attention to understanding their current organizational capabilities (Fredrik Backlund, Chronéer, and Sundqvist 2015). One option to measure those practices is through maturity models that offer a defined set of criteria and associated evaluation methods.

Maturity models (MM) can help organizations to measure their current state of technological competence benchmarked against industry standards (Arunachalam, Kumar, and Kawalek 2018; Araújo and Ribeiro 2021). The central aim of the maturity model is to serve as a diagnostic instrument utilized through a self-assessment survey (Jääskeläinen et al. 2020; Comuzzi and Patel 2016; Salah, Paige, and Cairns 2016). The assumption behind maturity models is that higher levels of maturity imply higher levels of quality of outcomes and business excellence (Boughzala and de Vreede 2015; Fredrik Backlund, Chronéer, and Sundqvist 2015; Fajsi et al. 2022).

Sets of standardized PM knowledge were constructed based on the idea that PM as a discipline shares similarities despite its dependence on the organizational context or the business specificities. PMMM aims to improve and/or upgrade the PM process (Görög 2016; Tereso et al. 2018). Project management maturity models (PMMMs) are instruments to assess and upgrade the existing organizational project management practices (Albrecht and Konrad 2016). They are not intended to provide rigorous metrics but to help identify best practices and trouble spots, and stimulate discussion among practitioners to initiate activities for continuous improvement (Boughzala and de Vreede 2015).

Project Management Maturity (PMM) benefits are of actual concern in the literature (Albrecht and Konrad 2016; Tereso et al. 2018; Tahri and Drissi-Kaitouni 2015). PMM mirrors the organization's experience and performance in implementing successful projects using various PM tools (Görög 2016; Bensberg, Buscher, and Czarnecki 2019).

Maturity models somehow forced organizations to seek to improve their overall efficiency and value delivery according to what seemed as best practices for success (Görög 2016; Bensberg, Buscher, and Czarnecki 2019). (Görög 2016) equals the maturity with preparedness/readiness of managing and implementing a suite of projects at organizational level. PMMMs have been associated with a best practice approach thanks to highly structured step by step recommendations which cover the project management process in a more simple way (Albrecht and Konrad 2016). The overall success of a company depends on its capability of managing/implementing a suite of projects. This management of multiple projects within an organization is called organizational project management or corporate governance system (Görög 2016).

In general terms, the goal of a PMM is to maximize benefits and bring added value to the organization by undergoing "improvement activities and re-assessment" (Albrecht and Konrad 2016; Rosenberger and Tick 2018). These benefits include saving costs, time, improving product/service quality, increasing clients' overall satisfaction, assuring the implementation of stakeholders expectations towards the project (Albrecht and Konrad 2016; Rosenberger and Tick 2018). The literature acknowledges that maturity models can positively impact organizational performance by delineating favorable operational characteristics, typically resulting in enhanced job satisfaction and work performance (Jääskeläinen et al. 2020). Project success is linked with project management maturity (Fauzi et al. 2021; Albrecht and Konrad 2016). (Heravi and Gholami 2018) links project risk management maturity and organizational learning to project success. Project management maturity is a way to measure and evaluate knowledge, learning and managerial capabilities on an organizational level.

2. Technologies used in PMMM for various domains.

2.1 Microsoft Excel

(Wagire et al. 2021) highlighted the importance of tailoring the cultural and geo-economic factors when designing a maturity model for Industry 4.0 readiness in developing countries. For dimensions and maturity levels validation, they adopted the triangulation method, which included extensive literature review, consultation with experts in the field, and structured interviews sessions with directors of institutes working in the field of Industry 4.0. Their MM was designed in Microsoft Excel in multiple sheets. (Niazi et al. 2020) used Microsoft Excel to develop a maturity model for secure requirements engineering in the context of software quality assurance.

Authors like (Sheikhshoaei et al. 2021) developed maturity models for niche domains like digital libraries. They developed a digital library maturity measurement tool based on an existing maturity model developed by the same author. Their questionnaires were collection in both printed and electronic (in Microsoft Word and sent via email) versions. (Hoseini, Hertogh, and Bosch-Rekveldt 2021)developed a customized version of the EFQM and together with literature review on risk management proposed a risk management maturity model developed in Microsoft Excel validated by experts from the domain. (Alam et al. 2022) started from two established maturity models in software assurance and coupled with multivocal literature review tailored their own Maturity Model for Secure Software Testing. The authors developed their MM in Microsoft Excel. However, one of the MM used as a starting point operate as a web platform presenting its maturity model in PDF: https://www.opensamm.org/roadmap/ .

2.2 Online questionnaire

Several authors employed digital affordances for implementing maturity assessments for Industry 4.0 readiness in organizations. (Schumacher, Erol, and Sihn 2016) developed web-based maturity model questionnaire for assessing Industry 4.0 preparedness in manufacturing companies. As a prerequisite for the development of the model, they employed semi-structured interviews with experts in the field to validate the need of a maturity model for Industry 4.0 in manufacturing companies. The answers to the web-based questionnaire were processed in the software tool that yields summarized maturity reports. After all the required data of the questionnaire are filled, the maturity results are displayed on a dedicated sheet.

Deriving from domestic and international standards (Almomani, Ahmed, and Maglaras 2021) conceptualized a cybersecurity maturity assessment framework for higher education institutions. Their lightweight tool is available both online and offline (as a downloadable artifact) to provide a convenient and confidential way of self-assessment. Results yielded after the assessment are displayed as visual charts or detailed report. However, to get a copy of the tool, an institution has to register with the tool's provider, fill a dedicated form and then get access to the assessment platform.

(Carvalho, Patah, and de Souza Bido 2015) designed an electronic maturity assessment tool for Hospital Information Systems (HIS) on an online platform that enables both overall maturity assessment of HIS and its influencing factors. The reporting feature of the tool provides graphic representation of results, benchmarking, and recommendations. Deriving from the established software engineering community standards, (Shrestha et al. 2020) transposed them into an online assessment survey. They survey consist in close-ended format required by Decision Support Systems to analyze survey response objectively. They also listed some of the best arguments for having an online assessment survey: low costs, easily accessible, enables fast responses and storage of the data in electronic format. (Akbar et al. 2023) used Google Questionnaire feature to host an online survey for a software requirement change management and implementation maturity model (SRCMIMM). Their questionnaire is available at:

https://docs.google.com/forms/d/e/1FAIpQLSfxkFi3xr3J5yoQWDOykgAuIA_gpc9TxMxgocCe_2Lie5zsQ/viewform.
(Araújo and Ribeiro 2021) adopted the existing Prado Project Management Maturity Model (Archibald and Prado 2014) in order to compare the maturity of project management teams in an educational context. This model was also used by (Scotelano et al. 2017) to assess the PMM of an automotive company. The questionnaire is freely available at https://research.maturityresearch.com/login. However, the tool is highly descriptive. (Storm et al. 2014) tried to reduce health inequalities in Dutch municipalities by developing a maturity model for health in all policies (HiAP). Municipal policies on health inequalities are used as base case study. A digital questionnaire with closed answers categories was developed to measure perceptions and practices of policy officers from different sectors. (Mufti et al. 2018) developed a security requirements engineering readiness model (SRERM) to enable organizations to assess their security requirements engineering (SRE) readiness levels. Following literature review, four case studies were applied to test the model.

2.3 Advanced platformization approaches of MM
(Siedler et al. 2021) adopted a platformization approach when creating a MM to assess digitalization maturity in product life-cycle phases. Their tool is hosted online but with limited access to the public. It gathers initial static data from the users, then displays the ML overview results. The tool was found at https://www.inaspro.de/.
(Lichtblau et al. 2015) developed an online platform for Industry 4.0 readiness assessment for manufacturing domain companies. The tool is available online and consists of multiple types of questions and responses options. After the self-assessment is done, a summary report is generated in the web page for each involved dimension with the possibility to download all the report as PDF. The tool was found at https://www.industrie40-readiness.de/index.php.

1. Main challenges
Although PMMMs have been developed (over 30) (Karim et al. 2022), scholars are calling for more such assessment tools since none as arose as the default accepted standard. Hence, the correlation between maturity models and projects success needs further research (Fredrik Backlund, Chronéer, and Sundqvist 2015; Röglinger, Pöppelbuß, and Becker 2012). Existing PMMMs faced criticism from some segments of the literature in terms of their relevancy and practicability (Hartono, F.N. Wijaya, and M. Arini 2014; Röglinger, Pöppelbuß, and Becker 2012). PMMMs are criticized for not taking into account the complexity of the project, the tacit knowledge or other adjacent variables when assessing maturity (Mullaly 2014). Often, PMMMs lack the prescriptive area, focusing mostly on assessing, identifying and pointing to the current maturity level reached. Also, they tend to focus on work processes and ignore the human resource or organizational aspects (F. Backlund, Chronéer, and Sundqvist 2014). These aspects made some label maturity models are oversimplistic (Röglinger, Pöppelbuß, and Becker 2012) and focusing on an end-state rather than on the multitude of factors that impact change and evolution.
The theoretical foundation validity of some PMMMs is also questioned, as some documentation is dissatisfactory and missing economic foundation (Karim et al. 2022). This let some to argue that PMMMs' application is feasible for bigger projects, where specifications and implementation methods are rather clear (Röglinger, Pöppelbuß, and Becker 2012). (Jaleel, Daim, and Giadedi 2018) criticized PMMMs for not evaluating the knowledge management processes within an organization and how such an organization shares knowledge-of-projects. (Besner and Hobbs 2012) have criticized maturity models and pointed out some of their limitative and overvalued characteristics.
Among the negative assertions towards project management maturity models, (Görög 2016) summarized their rigidity, static perks required (documents, templates that could be more

time-consuming) and explicit value focused orientation (tools and processes characterized by depersonalized assessments). Moreover, some studies highlight the lack of evidence between PMMM and the overall improvements in organizational capability and performance (Görög 2016; Tereso et al. 2018; Mullaly 2014). The fact that no particular maturity model arose as a highly adopted one and the multitude of maturity models that are available creates an excess that jeopardizes the relevance of research in this area (Albrecht and Konrad 2016; Tarhan, Turetken, and Reijers 2016; Karim et al. 2022; Simangunsong and Silva 2013).

Discussing PMBOK guidelines, (Mullaly 2014) raised concerns about the economic justification of adhering to standards. He argued that the rising costs associated with compliance might result in decreasing returns. To imbue project management maturity models with significance, it is essential for them to extend beyond a narrow theoretical emphasis on prescriptive and uniform processes outlined in standards (F. Backlund, Chronéer, and Sundqvist 2014). In addition, (Sanchez et al. 2020) research found that many PMMMs rely heavily on enumerations of project domains, vague categories, criteria, and practices rather than being grounded in models that offer clear, abstract, and concise foundations. This is in line with (Simangunsong and Silva 2013) found while analyzing the most common PMMMs. These models often lack standardized terms, exhibit incomplete integration of PM categories, and suffer from a lack of usability due to an excessive number of items requiring evaluation during a PMM audit (Tarhan, Turetken, and Reijers 2016; F. Backlund, Chronéer, and Sundqvist 2014). (Nikolaenko and Sidorov 2023) performed a systematic analysis on the most popular 9 PMMMs and identified their strengths and weaknesses. Their findings are in line with previous criticism like: the difficulty to adapt the models to Agile practices; difficulty to apply in practice due to unpublished (not free) materials; lack of proper recommendations and lack of assessing organizational culture. Below (Table 1), we have aggregated some structured PMMM criticism found in the literature:

Table 1 - Aggregated criticism of existing PMMMs.

Criticism	Paper
Unclear correlation between them and project success	(Fredrik Backlund, Chronéer, and Sundqvist 2015; Ibbs and Kwak 2000; Jugdev and Thomas 2002; Besner and Hobbs 2012; Mullaly 2014; Görög 2016)
Oversimplistic in terms of the assessment process	(Mullaly 2014; Röglinger, Pöppelbuß, and Becker 2012)
Rigid and inflexible to changes and improvement principles	(Pasian 2014; Karim et al. 2022)
Highly descriptive lacking prescriptive elements	(Fredrik Backlund, Chronéer, and Sundqvist 2015; Chambers et al. 1995; Cooke-Davies 2002)
Not taking into account a broader context	(Hartono, F.N. Wijaya, and M. Arini 2014; Fredrik Backlund, Chronéer, and Sundqvist 2015; Röglinger, Pöppelbuß, and Becker 2012)

Criticism	Paper
Focusing mainly on explicit knowledge rather than tacit knowledge	(Hartono, F.N. Wijaya, and M. Arini 2014; Young, Young, and Romero Zapata 2014; Röglinger, Pöppelbuß, and Becker 2012; Jaleel, Daim, and Giadedi 2018)
Overwhelmingly complex in terms of structure	(F. Backlund, Chronéer, and Sundqvist 2014)
Lack of solid theoretical foundation	(Mullaly 2014; Röglinger, Pöppelbuß, and Becker 2012)

2. Methodology

We contribute to the PMMMs literature by trying to address some existing criticism while reviewing the literature and proposed a digital-oriented model. We noticed a gap and improvement opportunity in developing a new digital PMMM. Following (Crawford 2006) view on maturity models as guidelines for beginning the cultural changes rather than merely rigorously assessing the maturity, the aim of this study is to present a theoretical model of a digital PMMM by harnessing the benefits of digital affordances (Kane 2019; Autio et al. 2018). (Karim et al. 2022) performed a review on PMMMs and identified a series of aspects that influence organizational PMM. They were: "organizational culture, stakeholders' differences and priorities, matured organizational structure, project complexity, motivation, and prerequisites for the next level of maturity". Besides those, they identified also a series of organizational practices that influence PMM as follows: "PMM integration with existing organizational strategic initiatives, the adoption of PM references, establishing a project management office (PMO), and PM software tools".

Although very well defined and structured in bodies of knowledge like the PMBOK ("PMBOK® Guide" 2021), PM practices are highly dependent on the business context and organizational environment and specificities. This aspect is recognized and acknowledged in these bodies of knowledge and parts of the literature and is not necessarily seen as a downside. The organization or the project management team is responsible to find out those practices that may be improved by using/applying maturity models (Tereso et al. 2018). Expected benefits from implementing PMMMs are improvement in project delivery and improved organizational reputation.

The literature on successful PM practices in SMEs is underdeveloped (Turner, Ledwith, and Kelly 2012) although SMEs account for 99 per cent of all businesses in the EU ("European Commission, Internal Market, Industry, Entrepreneurship and SMEs," n.d.). SMEs serve a good case for demonstrating the principles of (Fredrik Backlund, Chronéer, and Sundqvist 2015; Mullaly 2014) related to the need of tailoring PMM practices and processes since they unlike bigger companies need less bureaucratic and less formal PM practices.

(Sheikhshoaei et al. 2021) after performing a literature review to identify maturity models applied on digital libraries, they found the following weak points of some existing maturity models: not involving experts in the process of "instrument identification"; not recruiting faculty members in sampling to confirm the validity of the tool; no consideration of other digital library users; restricting the study to a single country. Accordingly, it is difficult to measure the maturity only by designing a digital library maturity model, because the maturity model is associated with complexity, high expenses, and time consumed as well as confusion for managers and assessors (Sheikhshoaei et al. 2021). To objectively assess the maturity of digital libraries, it is necessary to set criteria for each construct of a model to avoid different interpretations of each construct, and thus, correctly assess the maturity of digital libraries (Sheikhshoaei et al. 2021).

3. Conclusions

(Berssaneti and Carvalho 2015; Nikolaenko and Sidorov 2023) analyzed established PMMM like CMMI, Krezner's PMMM and PMI's OPM3 and pointed to their current limitations. In sum, established PMMM's limitation would consist in difficulty of evaluation; not providing sufficient next steps to enhance PM efficiency and high costs of application. Newer PM bodies of knowledge and practices are more customer-oriented, presenting a shift from the traditional process-oriented framework of established PMMMs. Besides the technical processes of established PMMMs, there is a need to capture within PMMMs factors such as culture, customer satisfaction, sustainability, and value delivery (Pasian 2014). Overall, all MMs are structured similarly (Siedler et al. 2021), but how they are displayed and how accessible or relevant they are might set them apart.

We noticed that most of the studies that develop MMs are focusing on its contents and besides this, a smaller attention is given to the user experience when filling in the self-assessment survey. Thus, a new path of MM self-assessment platformization (Crișan and Marincean 2023) is needed by providing PM an online tool that gathers data and yields output in an end-to-end flow. (Albrecht and Konrad 2016) describe three phases of PMMMs research: development, comparison along various industries and analysis of benefits. The research towards the digitalization degree of PMMMs could represent the fourth. (Belitski, Korosteleva, and Piscitello 2023; Ciarli et al. 2021) highlighted the importance of digital affordances that led to modernization of organizational structures and processes. The post-pandemic period led to significant digital opportunities that they expect to see transposed in business operations.

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THE PRODUCTIVITY PUZZLE: INVESTIGATING THE IMPACT OF HOURS WORKED ON PRODUCTIVITY

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Abstract: *This paper presents an investigation into the correlation between hours worked and productivity, synthesizing insights from an in-depth analysis of scientific literature spanning the past 10 years. The aim of this study is to gain a nuanced understanding of how work hours impact productivity across diverse industries and occupational settings. Drawing from an array of empirical data on productivity metrics and hours worked, our analysis reveals a consistent trend: a strong inverse correlation that exists between the two variables. The primary highlight of our study is the discovery of a robust inverse correlation between hours worked and productivity. This implies that as hours worked increase, productivity tends to decrease, a finding that could challenge conventional assumptions. Our study delves into the implications of this inverse correlation, discussing factors such as burnout, fatigue, decreased motivation, and impaired cognitive function associated with long working hours. The findings underscore the importance of reevaluating traditional notions of work hours and productivity. Rather than focusing solely on the number of hours worked, organizations can benefit from prioritizing tasks, setting clear goals, and implementing effective time-management strategies. Recognizing the benefits of working smarter rather than longer hours can lead to improved efficiency, employee well-being, and organizational success. This study contributes to the ongoing discourse on work optimization strategies and offers valuable insights for individuals, organizations, and policymakers seeking to enhance productivity in the modern work environment.*
Keywords: *productivity, hours worked, Pearson correlation index, work-life balance, burnout.*

JEL Classification: *J24, M12*

Introduction

Within the contemporary work environment characterized by rapid acceleration and intense competition, the interplay between work hour expenditure and productivity has emerged as a focal point of inquiry for researchers, policymakers, and organizational leadership. Traditional perspectives often equate extended work hours with superior productivity, cultivating a culture that valorizes lengthy workdays as a prerequisite for achievement. However, a growing body of empirical evidence suggests that this paradigm may warrant reevaluation. The postulation that a direct correlation exists between increased work hours and augmented productivity is increasingly contested by a burgeoning corpus of research that indicates an inverse association.

The contemporary workforce is undergoing significant transformations driven by technological innovations, the evolution of job functions, and shifting employee expectations. These transformations necessitate a critical reevaluation of what constitutes efficacious work practices. As organizations endeavor to optimize both performance and employee well-being, a comprehensive understanding of the intricate interplay between work hours and productivity becomes paramount. This study aims to elucidate this relationship through a systematic synthesis of insights gleaned from an extensive review of the scientific literature

published over the past decade. This analysis will encompass a diverse range of industries and occupational contexts to provide a holistic perspective.

Using data from a diverse sample of industries and occupations, we conducted a comprehensive analysis to explore this relationship. The analysis reveals a robust inverse correlation between the number of hours worked and productivity levels, suggesting that longer hours may in fact detract from overall efficiency. These findings challenge conventional wisdom and highlight the potential pitfalls of overwork, including burnout, fatigue, diminished motivation, and impaired cognitive function.

By examining the nuances of this inverse relationship, this paper aims to elucidate the variables that contribute to a decline in productivity as work hours are extended. This study emphasizes the imperative for organizations to re-evaluate conventional work scheduling and productivity optimization paradigms. Our findings suggest that prioritizing tasks, establishing well-defined goals, and implementing efficacious time-management strategies, rather than simply extending work hours, may lead to superior outcomes.

This research investigates the ongoing dialogue surrounding work practice optimization and seeks to generate implementable strategies for individual, organizational, and policy-oriented stakeholders. By acknowledging and integrating the paradigm of working efficiently (maximizing output while minimizing effort), we posit the potential for substantial advancements regarding productivity, employee well-being, and overall organizational efficacy. This study endeavors to establish a cornerstone for subsequent investigations and practical applications designed to augment productivity within the contemporary work environment.

Data and methods
For this article, an in-depth exploration of the relationship between work productivity and hours worked was conducted using scientific articles from Web of Science published within the last 10 years. The selection of articles was meticulously curated using the keywords "work productivity" and "hours worked" to ensure a focused and comprehensive analysis. Leveraging the analytical tool VOSviewer, this study synthesized a diverse range of research findings, methodologies, and perspectives from the selected articles. The objective was to gain a holistic understanding of how varying work hours impact productivity across different industries, occupations, and organizational contexts. By employing VOSviewer, which facilitates visualizations and analyses of bibliometric networks, this study was able to map out key themes, trends, and connections within the body of literature. This approach not only allowed for a systematic review of the literature but also enabled the identification of emerging patterns and areas of consensus or divergence among researchers. The use of Web of Science ensured access to a reputable and comprehensive database of scholarly articles, contributing to the rigor and credibility of the analysis. Through this meticulous examination, the study aims to shed light on the complexities of the work productivity-hours worked relationship, offering valuable insights for individuals, organizations, and policymakers seeking to optimize productivity and well-being in the modern work landscape.

In addition to examining scientific articles from Web of Science, this study delved into a comprehensive analysis of metrics from reputable sources such as the OECD and World Bank. These metrics included data on GDP, GDP per capita, GDP over hours worked, and hours worked across more than 40 countries worldwide. By integrating these diverse datasets, this study aimed to gain a broader perspective on the correlation between hours worked and productivity at a macroeconomic level. The inclusion of GDP and related indicators provided valuable context for understanding how variations in work hours impact overall economic output and efficiency. GDP over hours worked, in particular, served as a crucial metric for quantifying productivity on a national scale, allowing for comparisons across countries with varying labor practices and policies. The analysis of hours worked in conjunction with GDP metrics allowed for the examination of efficiency and productivity

trends on both a global and country-specific level. This multi-faceted approach not only enriched the understanding of the inverse correlation between hours worked and productivity but also offered insights into the economic implications of work-hour practices. By drawing on these authoritative datasets, this study contributes to a comprehensive exploration of the complex dynamics between work hours and productivity, with implications for policymakers, economists, and organizations seeking to optimize workforce efficiency and economic growth.

Bibliometric analysis of the scientific literature on the correlation between work productivity and hours worked

In recent years, there has been increasing interest in flexible work arrangements, such as hybrid work, remote work and flexible scheduling. These arrangements aim to enhance productivity by allowing employees to work when they are most productive and to better accommodate personal commitments. Studies have shown that such flexibility can impact productivity positively by reducing commuting time, improving work-life balance, as well as increasing job satisfaction. Potentially resulting in a reform of work, a growing number of businesses are signing on to test a four-day working week (Spencer, 2022).

To gain a holistic understanding of how varying work hours impact productivity across different industries, occupations, and organizational contexts, a bibliometric analysis to identify prominent research themes within the chosen dataset was conducted. VOSviewer software was employed for network visualization and analysis of keywords extracted from a corpus of 2,099 publications. A minimum co-occurrence threshold of 15 was established to focus on frequently appearing and potentially significant terms. Following the automated term extraction, a manual curation process was undertaken by the authors to remove terms deemed overly general or exhibiting substantial semantic overlap with other identified keywords. The results of this refined analysis are visually represented in Graph no. 1.

Graph no. 1. Cluster analysis of keywords co-occurrence from WoS papers
Items: **Cluster 1** - red (30 items): education, employment, motivation, job satisfaction, innovation, growth, flexibility, hours worked, work-life balance; **Cluster 2** – green (25 items): climate change, efficiency, environment, productivity, technology, safety,

optimization; **Cluster 3** - blue (22 items): burden, anxiety, disease, depression, sick leave, productivity loss, presenteeism; **Cluster 4** - yellow (19 items): ergonomics, exercise, mortality, pain, fatigue, sleep; **Cluster 5** - purple (14 items): mental health, stress, physicians, consequences, well-being.

Working long hours can lead to burnout and decreased motivation, which in turn can significantly impact workers' efficiency and productivity. Long hours, combined with high levels of stress and pressure, can lead to burnout—a state of emotional, physical, and mental exhaustion. Burnout can manifest as feelings of fatigue, cynicism, and detachment from work, causing employees to struggle with finding the energy and motivation to perform their tasks effectively. Over time, working excessively long hours can erode employees' motivation, especially if they are unable to spend time on activities they enjoy outside of work. If employees perceive that their efforts are not adequately recognized or rewarded, their motivation to perform at a high level may diminish.

Burnout and chronic stress can impair cognitive function, including memory, attention, and decision-making abilities. When employees are mentally exhausted or overwhelmed, they may struggle to focus on tasks, make sound judgments, or solve problems efficiently (Koutsimani, Montgomery, Masoura, & Panagopoulou, 2021). Additionally, burnout can stifle creativity and innovation within an organization. Exhausted and disengaged employees are less likely to generate new ideas or approach challenges with fresh perspectives, hindering the organization's ability to adapt to changing circumstances and stay competitive in the market. Also, when employees are tired or mentally drained, there is a greater probability they will overlook essential details, make careless errors, or take longer to complete tasks, leading to decreased overall efficiency and productivity.

Addressing issues linked to burnout and overwork is fundamental for maintaining a healthy and productive workforce. Organizations can support their employees by promoting work-life balance, providing opportunities for rest and relaxation, offering resources for stress management, and recognizing and rewarding employees for their contributions. (Albulescu, și alții, 2022). By prioritizing employee well-being, organizations can cultivate a positive work environment where employees feel valued, motivated, and able to perform at their best.

Some trials across different countries, including the UK, New Zealand, Ireland, the US, Australia, and Spain, have shown promising results reporting increased productivity, improved employee well-being, and reduced stress levels. For example, the UK's trial, one of the largest, revealed that 91% of participating companies intended to continue with the four-day workweek after the trial period, citing benefits such as a 35% increase in revenue compared to previous years and significant reductions in employee burnout and stress. Employees reported various benefits, including reduced stress and burnout, improved work-life balance, and enhanced job satisfaction. The reduction in work hours did not negatively impact productivity; in fact, some companies saw an increase in productivity levels. Additionally, there was a notable reduction in the number of sick days taken by employees. (Turner, 2023) (Wellable, 2023) (The Washington Post, 2023)

Many companies reported higher employee satisfaction and retention rates. Employees expressed improved work-life balance, less fatigue, and higher job satisfaction. For example, in Valencia, Spain, a pilot program involving four consecutive Mondays off showed improvements in self-perceived health and happiness among workers (World Economic Forum, 2023), (Joly, Hurst, Walsh, & Carbonaro, 2024)

Various countries are exploring or have implemented four-day workweek policies. Belgium introduced a flexible four-day workweek option, allowing employees to condense their work hours without loss of pay. Germany has also begun a six-month pilot program involving 45 companies to test the feasibility and impacts of a shorter workweek. (Joly, Hurst, Walsh, & Carbonaro, 2024)

From a business perspective, the four-day workweek can enhance talent attraction and retention, as it is seen as a significant benefit by job candidates. Organizations like Gartner

highlight that flexibility in structuring the four-day workweek (such as choosing between condensed or reduced hours) can address specific operational needs while still achieving the desired positive outcomes. (Turner, 2023)

These findings suggest that the four-day workweek is not only viable but also beneficial for both employees and employers, fostering a healthier work-life balance and improving overall productivity.

Perspectives on the correlation between hours worked and productivity

Western Europe has exhibited a comparatively steeper trajectory in productivity growth relative to the United States in recent years. This divergence can potentially be ascribed to several critical factors. Firstly, Western Europe may implement more efficacious labor market policies. Secondly, these nations might allocate greater resources towards technological advancements and automation. Thirdly, stronger worker protections within these countries could contribute to heightened employee motivation and efficiency. Additionally, a focus on achieving a work-life balance in Europe, exemplified by shorter workweeks and extended vacation periods, may culminate in a workforce characterized by greater recuperation and resultant productivity. Furthermore, economic policies in Western Europe that prioritize education and training initiatives might have significantly bolstered the skillset of their workforce, further propelling productivity growth. However, Western Europe must grapple with ongoing challenges such as the imperative for continuous innovation and adaptation to the shifting dynamics of the global economy. By reevaluating its labor policies and investment strategies, the United States has the potential to narrow the productivity gap. (The Economist, 2023).

The correlation between labor productivity and hours worked is a complex subject that has been studied extensively in economics. Generally, there is a positive correlation between these two variables up to a certain point, after which the relationship may become more nuanced or even negative. Initially, increasing the number of hours worked can lead to higher productivity. This is because more time spent working can allow employees to complete more tasks, leading to higher output. In many industries, there is a direct relationship between time invested and output produced. However, there comes a point where additional hours worked may not result in proportional increases in productivity. This is due to the law of diminishing returns, which states that beyond a certain point, the marginal productivity of labor decreases. Fatigue, stress, and burnout can set in, reducing the efficiency and quality of work despite the extra hours put in. In some cases, working excessively long hours can actually lead to a decline in productivity.

Our analysis incorporated a robust dataset of metrics derived from the OECD and World Bank. These metrics encompassed Gross Domestic Product (GDP), GDP per capita, and national working hours data for over 40 countries. By integrating these diverse datasets, the study aimed to elucidate the correlation between work hours and productivity at the national economic level.

Graph no. 2 shows a strong negative correlation between productivity and hours worked from 1990 to 2023. The Pearson correlation coefficient of –0,62 indicates that as work hours increase, there is a statistically significant decrease in productivity.
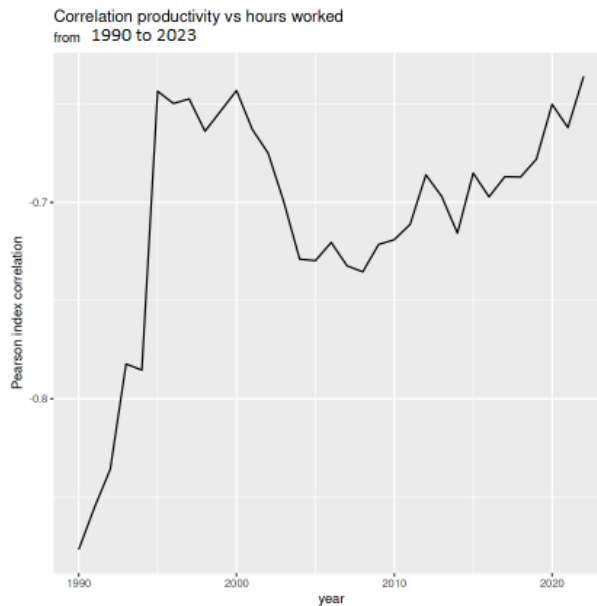
Graph no.2. Pearson correlation index: Productivity vs Hours worked from:

It also appears there is a negative correlation between GDP per capita (gross domestic product per person) and hours worked. This means that countries with higher GDP per capita tend to have fewer working hours. But it doesn't necessarily mean that working fewer hours causes higher GDP per capita. There may be other confounding factors at play. For instance, wealthier countries may be able to afford shorter workweeks because they are more productive overall.
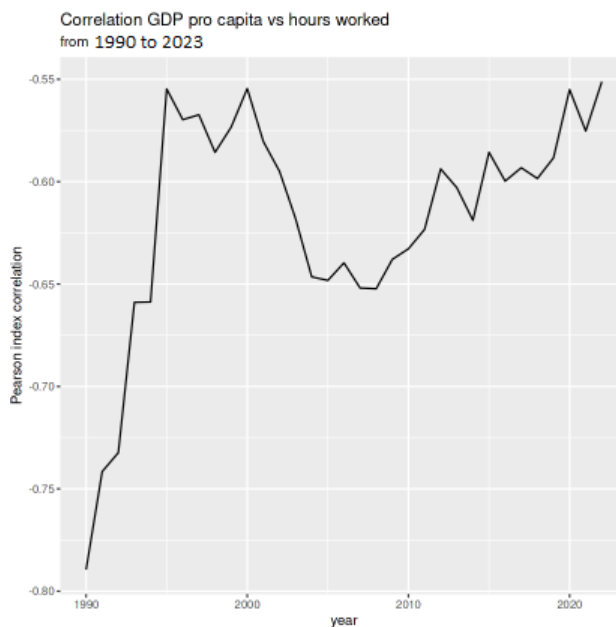
Graph no.3. Pearson correlation: GDP pro capita vs hours worked from 1990 to 2023

This finding aligns with the observation that countries with longer working hours, such as Colombia, Mexico, and Costa Rica, tend to exhibit lower GDP per working hour compared

to nations with shorter workweeks, exemplified by Luxembourg, Norway, Switzerland, and Ireland.

Discussion

The observed inverse correlation between labor productivity and extended work hours represents a complex phenomenon with well-documented contributing elements. It is hypothesized that prolonged work periods can induce physical and mental fatigue, consequently compromising cognitive function. This decline manifests as: diminished concentration, hampered problem-solving abilities, and a reduction in processing speed. The cumulative effect is a demonstrably negative impact on worker productivity.

Furthermore, extended work hours have been associated with decreased employee motivation, potentially leading to a state of burnout. This phenomenon can significantly diminish worker efficiency and contribute to an increase in errors. Additionally, excessive work hours are a well-established risk factor for elevated stress levels, which can have a demonstrably detrimental impact on both mental and physical health. Stress can manifest in reduced concentration, anxiety, depression, and a multitude of other health concerns, all of which can act as barriers to optimal productivity.

The ability to recover from work demands is crucial for maintaining peak performance. Unfortunately, working long hours often leaves workers with insufficient time for adequate rest and recuperation. This cumulative fatigue and stress can further exacerbate productivity decline.

Work-life balance is another critical factor influencing productivity. Extensive work hours can disrupt this balance, potentially leading to increased stress, interpersonal conflicts within personal relationships, and a multitude of other personal challenges. These issues can have a significant negative cascade effect on an individual's work performance.

It is important to note that simply extending work hours does not necessarily translate to increased efficiency. In many instances, additional hours may be dedicated to tasks of lesser importance or may be a consequence of underlying organizational inefficiencies.

Parkinson's Law posits that the amount of work allotted for a task tends to expand to occupy the available time. This principle suggests that when workers have more time to complete a task, they may inadvertently take longer to finish it.

Technological advancements can play a crucial role in optimizing productivity. Automation of certain tasks allows for increased output with a reduced requirement for work hours.

Individual worker characteristics, such as age, gender, health status, experience level, and educational attainment, can also influence labor productivity.

External factors, including the prevailing economic climate, the specific industry or job type, and company policies, can further exert a significant influence on labor productivity.

Potential Advantages of Implementing a Four-Day Workweek

The current research landscape is witnessing an increasing number of studies investigating the implementation of a four-day workweek in diverse work settings (Chung, 2022) (Hamermesh & Biddle, 2023). One reason for this is also the possible job scarcity that automation may lead to and to which a shorter workweek could be the solution (Kamerade, Wang, Burchell, Balderson, & Coutts, 2019).

Some of the advantages associated with the compressed work schedule could include:

- *Enhanced Worker Productivity*: A growing body of research suggests that a reduction in work hours can lead to a counterintuitive increase in productivity. Employees on a four-day workweek may exhibit heightened focus, improved energy levels, and greater intrinsic motivation during their designated work hours. This phenomenon is potentially attributable to reduced fatigue and stress, allowing for more efficient cognitive processing and task completion.

- *Improved Work-Life Balance:* By enabling employees to dedicate more time to personal pursuits, relaxation, and familial obligations, a four-day workweek can foster a healthier work-life balance. This improved balance has been linked to increased job satisfaction, reduced burnout rates, and enhanced mental well-being among employees, potentially leading to a more positive and engaged workforce.

- *Enhanced Talent Acquisition and Retention:* Organizations implementing a four-day workweek may gain a competitive advantage in attracting and retaining top talent. This schedule can be viewed as an attractive perk by potential employees, demonstrating a commitment to employee well-being and a progressive approach to work culture. Furthermore, a satisfied and less stressed workforce may be more likely to remain with the organization.

- Potential Environmental Benefits: Studies on companies implementing a four-day workweek suggest environmental advantages, such as a reduction in greenhouse gas emissions due to decreased commuting times and lower energy consumption in office buildings. These potential benefits align with growing environmental concerns and sustainability efforts (Broom, 2023).

Challenges of Implementing a Four-Day Workweek
The potential benefits of the four-day workweek highlight its feasibility across various industries and geographical locations. Ongoing research and pilot programs are likely to provide further insights into the effectiveness and broader applicability of this alternative work schedule. However, transitioning to a shorter workweek is not without its challenges.

Many industries and countries function within established work structures predicated on the traditional five-day workweek. Shifting these deeply ingrained norms necessitates significant alterations in organizational culture and management mindsets.

Also, organizations, particularly larger ones, may exhibit resistance to such a fundamental change due to concerns surrounding disruptions to operational efficiency, worker productivity, and profitability. Specific businesses may require aligning their operations with the expectations of customers, which may not always be compatible with a shortened workweek. For instance, businesses with specific operating hours may struggle to maintain customer service coverage.

Anxieties concerning potential financial burdens associated with implementing a four-day workweek could arise. These concerns may include costs for overtime pay during extended hours on working days as well as increased staffing to compensate for the additional day off.

Laws and regulations on labor existing in various countries may not provide adequate support or legal frameworks to accommodate a four-day workweek. Modifying these laws could turn out to be a prolonged process contingent upon political will and collaborative negotiations.

The national cultural factor also plays a part in implementing the four-day workweek, because the attitude towards work exhibits significant variations across different regions (Matei & Abrudan, 2017). In some cultures, long working hours are deeply ingrained, and societal expectations may prioritize physical presence in the office ("face time"). Also, some industries, like manufacturing or hospitality, may face greater challenges in implementing a four-day workweek due to the inherent nature of their operations and customer service demands.

Some employers and managers may erroneously equate long working hours with greater productivity. This perception necessitates a paradigm shift, fostering trust in employees' ability to deliver results within a shorter timeframe.

Despite these challenges, a growing interest persists in the four-day workweek as a potential solution to improve work-life balance, enhance employee talent acquisition and retention, and potentially raise productivity levels. As successful case studies arise, and societal attitudes toward work evolve, a wider adoption of this alternative work structure in the future

is possible. However, overcoming existing barriers and instituting the four-day workweek as a more prevalent global practice will necessitate a concerted effort from organizations, legislators, and society.

Conclusion

This article presents a significant contribution to the existing body of knowledge concerning the interplay between work hours and productivity. By employing a multi-pronged approach, the study offers a holistic and comprehensive analysis of this complex relationship.

Firstly, the authors leverage a systematic synthesis of findings gleaned from scientific articles meticulously curated from the Web of Science database. This meticulous selection process ensures the inclusion of high-quality research. Furthermore, the integration of metrics derived from reputable sources such as the OECD and World Bank data bolsters the analysis with a robust macroeconomic perspective. This strategic combination of empirical research and macro-level data bridges the crucial gap between micro-level studies focused on individual worker behavior and broader national economic trends.

The inclusion of data encompassing over 40 countries worldwide expands the scope of the analysis beyond regional or industry-specific limitations. This global perspective allows for a deeper understanding of how diverse labor policies and operational practices implemented across these nations influence their respective economic outputs.

The study further strengthens its quantitative foundation by incorporating metrics such as GDP, GDP per capita, and GDP relative to work hours. This quantitative approach provides tangible measures of both productivity and economic output, facilitating robust statistical analyses to explore the correlation with work hours.

The findings of this research hold direct implications for policymakers and organizations striving to optimize both workforce efficiency and employee well-being. Understanding the purportedly inverse correlation between work hours and productivity can inform the development of more efficacious labor policies, regulations governing work hours, and effective strategies to promote work-life balance.

The methodological rigor and innovativeness of the study are further underscored by the utilization of VOSviewer software for bibliometric analysis and the seamless integration of diverse datasets from credible sources. This meticulous approach significantly enhances the credibility and reliability of the study's conclusions.

By systematically identifying trends, recurrent patterns, and areas of both consensus and divergence within the existing body of literature, this research offers invaluable insights that can guide future research endeavors. The study highlights existing knowledge gaps and proposes potential avenues for further exploration, such as investigating the impact of flexible work arrangements and technological advancements on the complex dynamics between work hours and productivity outcomes.

While a growing body of research supports the benefits of a four-day workweek, additional research and empirical case studies are necessary to persuade skeptical employers and policymakers.

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VALUES AND GOALS IN THE MANAGEMENT OF ROMANIAN FAMILY BUSINESSES

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Abstract: *The paper discusses the issues related to the connection between the family values and the family firm goals in Romanian family businesses. The values of the family are the foundation of the values of the family firm and they represent the core of the firm's culture according to the 7S model of McKinsey. The goals of the firm are an important component of its strategy and are influenced by the values. The family business goals are structured as a multidimensional concept combining two scales: economic versus non-economic orientation and family versus business orientation. The research method is qualitative, using the interview instrument. The analysis of the interviews indicate that the family values are characteristic to traditional family aspects and that the firm's values are reflecting important ethical values such as trust, respect, responsibility, hard work, openness to communicate, fairness, mutual understanding, and mutual support. They also reflect business values such as efficiency, effectiveness, focus on client, quality, innovation, cooperation, accountability, and professionalism. Several conclusions and recommendation for future quantitative research were formulated.*

Keywords: *family business; values; goals; management; Romania*

JEL Classification : *L21; L26; M10; M14*

1. Introduction

The researchers define a family business as "an enterprise owned by minimum one of family members having control and hierarchical power in the company, and managed by at least one member of the family, with family members having the majority of the company ownership (social capital or shares, demanding on legal form of the company." (Musca et al., 2024)

Family businesses represent a large part of the economy in every country. Every family business is an organization, a company, a social and technical system. a family business is made of a business and a family, intimately connected, and intertwined. Subsequently, it can be analyzed using the 7S organizational model of McKinsey. This model describes the functioning of any organization as an open system being made of seven subsystems interconnected between them and interacting as an unique entity with the surrounding environment. The seven elements are divided into two categories: first, hard subsystems, more formalized, composed of three subsystems: Strategy, Structure and Systems, and second soft subsystems, composed of four subsystems: staff, skills, style and shared values. Each subsystem is biunivocal connected with each other of the seven systems, leading to the fact that when one subsystem changes all the other six are impacted to a certain extent and change themselves.

Each subsystem has its own role in the functioning of the whole system of the organization. However, the subsystem called ~shared values~ is situated in the center of the organization because these values ensure the cohesion of the organization and is the most stable over time. Although, called "shared values" the content of this subsystem indicates that it is about the organizational culture of the organization.

2. Literature review

The Hofstede's "onion" model of organizational culture, presented in Figure 1, differentiates between four types of cultural phenomena, i.e. from inside to outside, "Values", "Rituals", "Heroes", and "Symbols".
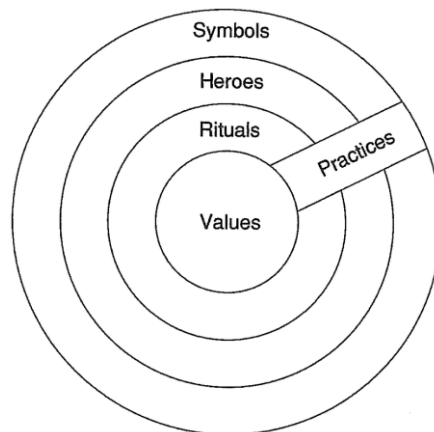
Figure 1: Hofstede's onion model of culture (Hofstede et al., 1990: 291)

Source http://www.thejournalofbusiness.org/index.php/ site 3 Richter, IJBSR (2016), 06(03): 01-19

The definition given by Geert Hofstede to "Values" is that values are 'broad tendencies to prefer certain states of affairs over others'(e.g. preferring equality over hierarchy)" . Therefore, the meaning given to "Values" is that they are " 'feelings', which are perceived as dialectical phenomena between two extreme poles (e.g. good vs. evil, dangerous vs. save, ugly vs. beautiful)" (Hofstede et al. (2010: 8). However, Hofstede uses the category "Values" as including values, beliefs, and norms.
Shalom Schwartz (1994: 88), has an opposed approach to basic values considering them to be 'desirable goals varying in importance that serve as guiding principles in people's lives' (Schwartz, 1994: 88). His model of value types, see figure 2, considers "values voluntarily enduring standards or benchmarks that provide stability between one's needs, fluidity and effectiveness of social interaction, and group survival" (Woodward and Schaffakat, 2014, p.5).

Schwartz (2012) identified six characteristics which are common, enlarging what a human value is. The value theory (Schwartz, 1992, 2006a) considers that the concept of values has six important features. These are the following: "(1) Values are beliefs linked inextricably to affect. When values are activated, they become infused with feeling. (2) Values refer to desirable goals that motivate action. (3) Values transcend specific actions and situations. (4) Values serve as standards or criteria. Values guide the selection or evaluation of actions, policies, people, and events. People decide what is good or bad, justified or illegitimate, worth doing or avoiding, based on possible consequences for their cherished values. (5) Values are ordered by importance relative to one another. People's values form an ordered system of priorities that characterize them as individuals. (6) The relative importance of multiple values guides action. Any attitude or behavior typically has implications for more than one value. Values influence action when they are relevant in the context (hence likely to be activated) and important to the actor" (Schwartz, 2012, p.3-4).
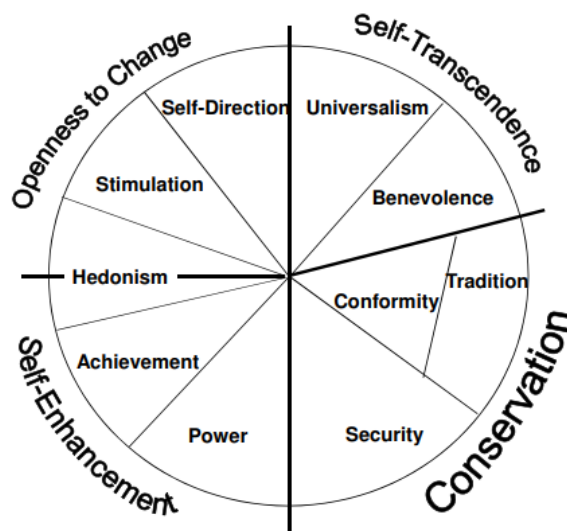
Figure 2. The Schwartz theoretical model of relations among ten motivational types of value
(Schwartz, 2012, p.9)

Consequently, there is no agreement between researchers about the definition of values. However, most of the researchers, including Kluckhohn and Rokeach, conclude that," basic values are characteristics for human behavior that, in implicit agreement of the society, are relevant to be met in order to maintain the society" (Tuulik et al., 2016, p. 153. In general, values are interpreted as beliefs, standards, principles, and preferences, but different authors mostly agree that values play an important role in human behavior and are influenced by the external environment (Toolik et al., 2016).

Rokeach (1973) identified and described a number of 36 basic human values which in his opinion describe any human group culture, from societal level to organizational level and community level, in a comprehensive manner. Rokeach (1973) defines values as "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence". He considers that there are two sets of values, the first set is named "terminal values" which are referring to life time goals of a person, desirable and end-state of an individual existence; and, the second set, instrumental values (those which are actually the means of achieving terminal values of a person and are therefore the individual's preferred ways to behave (Tuulik et al., 2016).

The terminal Values (End-States) are divided into two categories: the first, The Social (Focus on Others) values and the second, Personal (self-focused) values. The Social (Focus on Others) terminal values are the following nine: A World at Peace, A World of Beauty, Equality, Family Security, Freedom, Mature Love, National Security, Social Recognition and True Friendship. The Personal (Self-Focused) terminal values are he following nine: A Comfortable Life. An Exciting Life, A Sense of Accomplishment, Happiness, Inner Harmony, Pleasure, Salvation, Self-respect and Wisdom (Toolik et al, 2026).

The second type of values is the Instrumental Values (Behavioral) and it is divided into two categories: the first, the Moral (Focus on Morality and Relations) values and the second, Competence (focus on competence) values. The first category, the Moral (focus on morality and relations) instrumental values consist of the following nine values: Broadminded, Forgiving, Helpful, Honest, Loving, Cheerful, Obedient, Polite and Responsible. The second category, the Competence (focus on competence) instrumental values are the following nine: Ambitious, Capable, Clean, Courageous, Imaginative, Independent, Intellectual, Logical and Self-Controlled.

Schein (1985) recommends a general distinction between basic assumptions and norms. While both can represent basic values, they differ in terms of visibility. Schein (2010, p. 19) considers that "basic assumptions are taken for granted within a society" and "create the patterns of cognition, perceptions and feelings displayed by the members of the group' (Schein, 2010, p. 35). He defines norms as rules which are formalized (explicit) as well as non-formalized (implicit) and defined within a society, which if not followed by the members of that group, leads to sanctions.

Woodward and Shaffakat (2014), have identified several common elements to several different approaches to the concept of human values such as "they are understood as standards and guiding principles, they are abstract and connected to many other concepts, they are learned and remain relatively stable over time, and they exist in hierarchy and influence people's choices" (Woodward and Shaffakat, 2014, p. 8). According to Hofstede (2010), values represent the core element of the organizational culture and is one of the most important factors determining family business effectiveness and efficiency. The role played by its culture establishes how things are done in by the people of that organization and influences every subsystem. Therefore, having an adequate organizational culture is paramount to the success of its strategy. On the contrary, getting the culture and its values wrong could impact negatively on the organization's performance. Values (basic assumptions) of the family's firm influence beliefs of people working in it and the organizational and social norms and influence the behavior of its people.

The relationship between family values and family business management differentiates by their complexity. These relations demonstrate that family values can influence the goals of the family firm, both financial and non-financial, the family firm culture, the professionalization of the firm's management, the succession process, its management practices, the strategic thinking and management, and the innovation processes.

Consequently, the authors of this paper consider that family values are having a strong influence on family business values and norms and that they represent the foundation of family business management. Thus, the basic principle of the functioning of family entrepreneurial business is to be 'values driven'. In managing a family business, it is also highly important to specify the norms and appropriate behavior in relationships between all managers and employees, family members and non-family members of the company. As discussed, when defining a family business, its owners and managers are members of a family, nuclear or extended who are both working in the family firm, as managers and/or executing non- managerial tasks. Therefore, a family business is a blend between on one hand the family, and on the other hand, the firm. What happens in the family group influences the family firm, cohesion of the family provides support to the firm, and any crisis, success or failure of the firm impacts the family and its members. A consistent and loving family represents a strong basis for the firm of the family and when its management is

effective and efficient, both the short-term and long-term goals are achieved and the chances for the long -term survival of the firm are high. In this case, the process of succession from one generation to the next can happen, thus satisfying a long term goal of the family [Stavrou, 1999; Olejniczak, 2014).

Family business values are divided into two categories: business values and ethical values. The business values include effectiveness, efficiency, quality, entrepreneurial spirit, reliability, focus on the customer, punctuality, cooperation, professionalism, passion for innovation, durability, meritocracy, accountability, adding value, risk taking, social value, social purpose, valuing stakeholders. Family business ethical values include trust, loyalty, openness, respect, clarity, fairness, responsibility, credibility, objectivity, altruism, (Olejniczak, 2014), attachment, mutuality, support, belonginess to the family, values driven, justice, practical realism, collective good (Aronoff &Ward, 2016).

The values of family business such as trust, durability, attachment, mutuality, being driven by values, support in difficult situations, family atmosphere and others are influencing the connection between family interest and the interests of the family firm, the sharing and awareness of the firm's mission and strategy, the loyalty towards the company, the ambitions and need for achievements, the attitude of aiming at development the willingness to share knowledge, the ability of teamwork, interpersonal skills, a favorable environment for recognizing mistakes and ignorance.

The implementation of family values and norms in the family firm provides the sense of trust, mutuality, help, involvement, safety and certainty and responsibility to members and especially to workers nonmembers of the family working in the firm.

Several researchers have found that members (parents, children, kin) in most of families that own and manage a family firm are having strong personal bonds of loyalty, affectivity, trust one another and share information openly and other values they share between them. Some parents managing the family firm have long-term family-centered goals such as involving their children if the family business to ensure their economic well-being and security and also to ensure the generational transition to preserve the firm robust for a long period and to keep it in the family and also business-centered goals such as to ensure its long-term survival and development (Le Breton-Miller & Miller, 2015).

Organizational goals are "defined as desired organizational outcomes that can be used to guide action and appraise organizational performance, but distinct from measurable targets" (Kotlar et al., 2018, p. S3). Also, the concept of purpose is defined as 'the reason for which a business is created and exists, its meaning and direction' (Hollensbe et al. 2014, apud (Kotlar et al. 2018, p. S3).

Binz et al (2017) propose a multidimensional approach to classifying goals of family business making a distinction between family-centered and business-centered goals, both of which may include financial and non-financial elements" (Binz et al., 2017, p. XX). In their approach the family-centered goals are defined by the members of the family who own the firm, and which are related to the benefits of the family. Family centered goals are both financial and non-financial goals. The second category, the business centered goals is defined as the goals set by the members of the family owning the firm which are related primarily to the family firm, both financial and nonfinancial elements.

The family centered non-financial goals are gathered by some researchers under the concept of socioemotional wealth (SEW) which "refers to the emotional value and non-financial utility that an owning family derives from firm ownership and control, which serve to meet the family's affective needs, such as identity, the ability to exercise family influence and the perpetuation of family dynasty~ (Gómez-Mejía et al., 2007, p.106) apud Binz et al. 2017, p.39). The five components of SEW are known under the FIBER acronym. The first is "Family control and influence" expressing the fact that a family business ownership is controlled in majority by the members of a family and consequently they have the power to decisively influence its management, goals and activities. The second element is named "Identification of the family members with the firm" and refers to the strong bond between

family members and the firm they own, manage and also work. The third component is "Binding social ties" and the fourth Emotional attachment of family members". The final component is "Renewal of family bonds" which refers to the dynastic succession process, from one generation to the next.

The stronger is the family control and influence, and the identification of family members with the firm, the stronger are the binding social ties and the emotional attachment of family to the family's firm and the mor likely the goal of ensuring the dynastic succession process will be. Consequently, preserving and increasing SEW is an important goal of the owning family (Binz et al., 2017). Binz et al. (2017) propose additional components of the FIBER model, such as the willingness of family members to remain in charge of managing the family firm, and the family emotional sustainability. These goals are based on values such as loyalty, harmony, cohesion, and belongingness.

The family centered non-financial wealth goals refer to preserving and increasing family reputation and family status in the community to protecting and ensure the continuity of the family's values and legacy and having pride in the family firm.

The family centered financial goals such as income, financial security, and various benefits such as using firm assets such as cars, buildings, equipment, or going in holidays, vacations) are usually linked to the financial dependence of family members on their firm.

The business centered financial goals are mainly sales revenues increase, net profit, sales profitability, return on assets, return on equity, market share growth, financial independence, financial stability.

The nonfinancial business centered goals of family firms mostly encountered in other researches are the following: long-term firm survival. excellent quality of relation with customers, delivery of high quality products and services, great customer service, employee satisfaction.

William et al. (2018, p. S63) identified as antecedents of family business goals such as "family presence, role of individual family members, founder influence and leadership, family history and culture, socio-emotional wealth, organizational identity, succession intentions, and national culture and ethnicity". For example, the values of family members often results in a more unified pursuit of non-financial goals relative to financial goals (Fang et al. 2013, apud Williams et al., 2018)

The consistency between the firm's goals and the owning-family and the business culture (Kelly et al. 2000), as that consistency may moderate goal outcomes (Riordan and Riordan 1993). Indeed, the family may impose social governance mechanisms (i.e. communication with family, or inclusion in activities) to moderate leaders' pursuit of goals not consistent with family culture or norms (Pieper et al. 2008).

3. The research methodology

The researchers used a qualitative research methodology based on interviews with 12 owners of family firms from Romania. The interview was focused on identifying the family business values and goals. The interviews were conducted during the month of march 2024 through Zoom on-line conference, face to face or written questions and answers from the interviewee, when the person was not available for a direct discussion.

The authors developed a list of questions based on the literature review aimed to get the opinions about the existing situation in Romanian family businesses focusing on the values and goals of family firms. The list of questions had questions referring to demographic data about the respondent and its business, founders and year of founding, ownership structure, and specific questions about the values and the goals of the family business, both long-term and short term goals. The respondents were asked to express their opinion about the importance (on a scale from 1 very little importance to 5 extremely important) for their own family firm of each goals from a list of 25 goals. Out of this list 13 goals belonged to the

category business centered goals, financial and non-financial, and 12 goals belonged to the category of family centered goals, financial and non-financial.

The researchers also used the interview as an opportunity to test a standardized questionnaire about the fundamental family values, developed by Byrne & Van de Vjer (2014). The questionnaire comprised 14 statements, such as "The father should be the head of the family", "The mother place is at home", " The father should handle the money", Children should obey their parents" an others. Respondents were asked to provide their accord or disaccord with each statement, on a scale from 1 total disaccord to 5 total accord. The names of respondents and the name of their company were not made public because their desire to remain anonymous. Thus, researchers used letters instead, from A, B, C, D, E, F, G, H, I, J, K, L and M. The data obtained was analyzed, compared, and synthesized.

4. Findings and discussion

The 13 family businesses were enterprises from various industries such as agriculture, logistics,transportation, wholesale trade, consulting, software, public relations, manufacturing. 11 firms were small size and 2 were medium size family firms. All companies reported being profitable in 2023.

The respondents were 10 male and 3 female indicating that the sample was biased. 3 respondents have high school level studies, the other 7 finished bachelor studies and 3 have finished master studies. All respondents worked previously in their current firm for various durations. All respondents are owners and managers of their family firm.

They were asked which are the main values which form the foundation of their family business and another question referred to which is the role of these values in the management and decision making process in their firms. The main goal for asking these questions was to address the issue of the family business culture. The researchers synthesized their answers about the values of each company. They have found that family firms values are highly diverse, ranging from respect, responsibility, accountability and trust (11 firms A, B, C, E, F, G, H, I,K, L and M), support and cooperation (11 firms A, B, C, D, E, I, J, K, L, M and N), focus on customers, seriousness, transparency, open communication (10 firms A, B, D, E, G, H, K, L, M and N), risk taking, sincerity, fairness, honesty (9 firms B, C, E, G, H, J, K, L and N), entrepreneurial spirit, efficiency and quality (8 firms A, B, D, E, G, H, L and N), hard work and innovation (5 firms D, F, L, M and N), punctuality (3 firms J, K and N), and realism (firms G). The values with the highest frequency (11 firms) were respect, responsibility, trust, support, and cooperation which reflect their nature of family businesses.

The above results indicate that the respondents indicated that they have a set of business values including accountability (11 firms), cooperation and focus on customers (10 firms), risk taking (9 firms), entrepreneurial spirit, efficiency, and quality (8 firms) innovation (5 firms) and punctuality (3 firms). The structure of this set of values are specific to firms with positive business results in general and they show a clear orientation of the family firms involved in the research towards being business oriented.

On the other hand, the results indicate that the Romanian family firms are having also a quite large set of moral values. These are the following: trust and support (11 firms), seriousness, transparency, open communication (10 firms), sincerity, fairness, honesty (9 firms), hard work (5 firms) and realism (3 firms). These values provide a strong moral foundation for their activities.

The respondents answers to the second question about the role played by the values in the management and decision making process of their family firm indicated a unanimous opinion that they have played a major role, being both guiding principles and the basis for the rules of functioning for family members and also for all non-family employees. Manager of firm H declared "they allow me to harmoniously combine the management of the business and the management of employees", while the manager of the firm B stated "they played a

primordial role in company. The principles and rules of the family are implicitly applied within the company, too". Manager of the firm L stated "they had quite a big role. If we, the family members, were not united, we would not be able to make important decisions".

The findings from the questionnaire related to the business centered financial 6 goals of the family business indicate that the most frequent goal is 'sales increase" with the score of 59, followed by "cash flow' with the score of 58, and by "net profit" and "sales profitability rate" with the score of 56. The other two business financial goals are 'market share' with the score of 50 and "return on investment" with the score of 48. Since the maximum score is 65, we conclude that all the 6 business financial goals are considered important for the Romanian family business involved in the research. The results were quite expected since from the interviews they stated that making money from the family firm is very important.

The results for the family firm business centered non-financial 7 goals indicate that the most frequent one is 'market development' with the score of 58, followed by 'adapting to customer needs" with the score of 56, "product/ service development" and "service quality for customers" with the score of 54. Close to these is 'customer satisfaction' with the score of 53. The conclusion is that the most important nonfinancial business goals of the family firms are all related to market and   customers aspects. The next goal is "employee development' with a score of 51 and the last one is 'environment protection' with the score of 45. Although their score indicate that these goals are also important, our conclusion is that the development of employees and the protection of the environment are not high priorities of the managers of the Romanian family firms involved in the research.

Next the results related to 12 family centered goals are presented. There are 3 financial family centered goals which were introduced in the questionnaire. The goal "Income available for family" has a score of 59, indicating that it is extremely important. Actually, 9 respondents considered it extremely important, 2 important and 2 average important. The second goal was "family interest in the family business" with a score of 56, and the third was "Financial security of the family generated by the firm" with a score of 55. These results indicate that respondents consider that the family firm should contribute to the financial interests in the short and long term of the family members, both for those who work in the family business and also for those who are not employees of it. It is relevant to quote the manager of company D "we started the family business with the clear plan to make money". Other managers stated less bluntly the same goal, such as manager of company M stating "high sales revenues and high profits are our most important goals".

There are 9 non-financial family centered goals which were introduced in the questionnaire. The highest score (59) is for the goal "quality of life at work", followed by the goal "family unity" with a score of 58, "loyalty and support of the family" and 'development of skills of family children" with a score of 56. The goal "respectability of the family name in the community" has a score of 55, while the goal of "having time to be together with the family" has a score of 53 and the goals "good reputation of the family in the business community" has a score of 52. Somewhat less important is the goal "loyalty of clients for the family name" with a score of 50 and the goal 'generating possibilities for the children of the family' with a score of 47.

First, non-financial family centered goals are reflecting clearly the main values declared in the interviews by the owner managers, such as loyalty, support, trust, unity, togetherness. Second, the respondents are valuing as important goals related to the position and image of the family business in the business community. The third aspect is highly interesting since respondents give a high importance to the development of business skills of their children by exposing them to issues of managing the family business both at home, discussing around the kitchen table with their family members (wife/ husband, children) and also by involving them directly, by working for the family business. From interviews, we found also that they are doing this for a future transfer of the family business to their children, and for a future professional life as entrepreneurs.

The results of the pilot research about the Family Values Sale indicate that for the dimension "family roles hierarchy" the score is 5,14 on a scale from 1 to 7. This value indicates that in Romania there is a paternalistic family in which that the role of the father is to be the head of the family (score 5,30), to earn money (score 4,69) and the mother's role is to mediate between family members in case of disagreements (score 5,44) and her place is at home (score 5,08). The score for the second dimension "family / kin relations" is 5,44, indicating that the relations between the family members are quite strong. The highest score (5,92) was given to the statement "Children should help with the family chores", followed by the statement "Children should take care of old parents" with the score 5,62 and the statement "problems should be resolved within family" with the score 5,46.   The results indicate that the questionnaire we used is appropriate for further use for a larger sample in a future quantitative research study.

5. Conclusions

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All the 13 companies investigated are family businesses. In all the companies, family members have the role of the general manager of the company. In 10 companies family members are also working in operational activities.

The qualitative research focused first on identifying the values of each family firm and their role in the management and decision making process in the firm based on the responses of their managers.

The first conclusion is that family firms values are highly diverse, and some of them are common to more than 9 to 11 firms out of 13 participating family firms. Another conclusion is that the category "business values" including accountability, focus on customers, cooperation, risk taking, efficiency quality and entrepreneurial spirit are common to 8 to 11 of the 13 family firms. It indicates a clear business orientation of Romanian family businesses. The third conclusion is that the most of the Romanian family firms have also a quite large set of moral values including trust and support (11 firms), seriousness, transparency, open communication (10 firms), sincerity, fairness, honesty (9 firms). This indicates that they have a strong moral foundation for their activities.

The fourth conclusion about the role played by the values in the management and decision making process of their family firm is that they have played a major role, being both guiding principles and the basis for the rules of functioning for family members and also for all non-family employees.

The next set of conclusions refers to the goals of the Romanian family businesses. The first conclusion is that all the 6 business financial goals (the first four being sales increase" with the score of 59, "cash flow' with the score of 58, and "net profit" and "sales profitability rate" with the score of 56) are considered important by the managers of Romanian family business involved in the research. The results are corroborated by answers from the interviews which stated that making money from the family firm is very important.

The second conclusion is that the most important 5 out of 7 nonfinancial business centered goals of the family firms are all related to market and customers aspects of their activity, ('market development' with the score of 58, followed by 'adapting to customer needs" with the score of 56, "product/ service development" and "service quality for customers" with the score of 54. And 'customer satisfaction" with the score of 53. The third conclusion is that the 3 financial family centered goals are highly important for 9 of the 13 respondents. This indicates that the family firm should contribute to the short and long term financial interests of family members, both for those who work in the family business and also for those who are not employees of it. The fourth conclusion related to the 9 non-financial family centered goals is that they reflect clearly the main values declared in the interviews by the owner managers, such as loyalty, support, trust, unity, togetherness. The fifth conclusion is that respondents are valuing as important goals related to the position and image of the family business in the business community. The sixth conclusion is that respondents give a high

importance to the development of business skills of their children by exposing them to issues of managing the family business both at home, discussing around the kitchen table with their family members (wife/ husband, children) and also by involving them directly, by working for the family business.

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PRINCIPLES FOR LEADING REFORMS AND POLICY CHANGE IN EDUCATION SYSTEMS *(The Israeli case)*

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Abstract: *The increasing processes of globalization and competitiveness, and the increasing complexity of organizations and the goals they promote, make changes necessary in the last decades to adapt the public systems to internal and external changes. Therefore, promoting organizational changes and performing change moves are the main part of modern organizational activity, policy, and leading reforms, and considerable resources are allocated for them. This article presents and analyses various innovative opinions and perspectives of approaches to educational policy and focus on principles for implementing educational policy reforms in the countries. this analysis is made through a critical literature review, which analyzes professional literature based on empirical research in education, national policy approaches, and organization management. The analyses mainly present pragmatic aspects that influence on a day-to-day basis strategy characteristic from a macro and micro point of view in educational policy management. The global McKinsey report (from 2018) is deeply reviewed and so are the sources from the OECD international library. This expanded mix is integrated with the researcher's approach and accumulated experience, which will be reflected in an interdisciplinary analysis of the proposed reform, emphasizing the Israeli case. The summarizing part includes a comparative discussion, divided into conclusions between the McKinsey report conclusions and the required operation for implementation in Israel and a final summary*

Key Words: Education Policy; Globalization; Organizational Changes; Competitiveness.

JEL Classification: I2, L38, P11.

Introduction

The increasing processes of globalization and competitiveness, and the increasing complexity of organizations and the goals they promote, make changes necessary in the last decades to adapt the public systems to internal and external changes. Therefore, promoting organizational changes and performing change moves are the main part of modern organizational activity, policy, and leading reforms, and considerable resources are allocated for them (Brunsson, 2009). According to Rice (2012), education is the cornerstone of societal progress, and governments worldwide are continuously reforming their education policies to meet the demands of the modern era. Payne (2012) adds that despite these challenges, education policymakers are striving to create flexible, innovative, and inclusive education systems that empower students to succeed in an ever-evolving world. The professional literature on this subject is broad, diverse, and in-depth. The current article, in its methodologic approach, will focus on a critical review of the literature and the Israeli case study. The wide picture also includes the writer's opinion which is based on his experience in the Israeli education system. The source analysis will lead to a fruitful academic discussion examining philosophical perspectives in educational policy reforms, but mainly pragmatic approaches that can influence the challenging coping with urgent changes, including international crises and technological progress such as artificial intelligence. The research

conclusions will be handed over to opinion leaders and decision-makers in the Israeli Ministry of Education and the local authorities.

Reforms of education policy

The difficulties in leading a change in the education system cause education systems to stay very traditional and unchanged despite many worldwide reforms and changes that were launched (OECD, 2017b; OECD, 2016). Pont (2017) claims that the contradiction between dealing with a change and the lack of actual change is also caused by the fact that most of the research deals with the aspects that require change and thoughts about the desired change nature, rather than with the practical and systematic aspects involved in implementing the change, such as monitoring the reform effects and using various policy tools to carry them out (Rice, 2012). Despite the difficulty in leading a change, it is often a necessity, and there is no way but to try to change even if it may not succeed. Researchers and policy leaders do continue dealing with issues related to planning and leading changes. Extensive and diverse research performed in recent years continues to examine the principles increasing the chance of success in implementing reforms and changes and the reasons for their failure. Based on experience, the researchers make their best to propose a modest approach and point to general principles that have to be adjusted to each reform and each change according to each one's unique nature and context.
Namely, the approach of "one size fits all" is wrong in designing and applying changes (Payne, 2008). Therefore, many researchers see a reform application to be more "art than science" (McKinsey, 2018). The current article deals with formulating principles that contribute to success in leading reforms and changes in public systems in Israel, especially the education system. The necessity to make changes is expressed in most public systems, but it seems especially prominent in the education system. Many factors are motivated to promote change in the education system for many reasons, but as presented above - the actual application of a change is complex and it is hard to point to clear successes. The gap between the strong desire to make a change and the few successes, if any, emphasizes the need to perform ordered learning processes when making reforms and changes, including learning the success and failure factors (McKinsey, 2018; Nilsen, 2015, Nilsen, 2020).
The article writer will herein present two reforms that were launched as extensive projects that sought to outline principles for implementing policy changes and reforms based on practical experience and international research. The first reform-change was performed by the strategic consulting company McKinsey, and included an analysis of significant changes in public systems and were the basis for formulating various principles (2018). The second project was performed for the OECD and was based on the analysis of research and case studies of reforms and policy implementation in education systems in the organization countries, aspiring to adjust it to the Israeli system.

Reform in public organizations in Israel - Mckinsey 2018

The strategic consulting company McKinsey conducted extensive research to examine the characteristics of successful policy changes. The research methodology included several components: a questionnaire answered by about 3,000 public servants who have participated in the attempt to lead big changes in the public sector in Israel; 13 in-depth interviews with over 30 public servants who led successful changes; and an examination of more than 80 change case studies in public systems in Israel. Based on the analysis of various information sources, the researchers formulated five main principles required for the effective implementation of policy change. According to the researchers, the principles are universal and generic - they are relevant in different policy areas for settlements similar in their demographic, economic, social, and cultural composition. The research conclusions

may be implemented at different government levels (for example, at the city, and the local authority level). The main principles for any organization's success include the following elements. The *first* is the leaders / leadership commitment - having a person who leads the outline, out of a complete commitment to the change. His conduct and actions that show leader commitment due to the report are: a) The leaders should be dominant to their subordinates and role models for those who participate in leading the reform. b) The leaders have to invest time and effort that will be noticed by the other stakeholders of the reform (the subordinates to the leaders, the public affected by the reform, and the political level), and listen to the public affected by the reform. c) The leaders must show personal responsibility for successes and failures. d) The leaders are required to be prepared to re-examine assumptions and conventions that have already been established, even if the change seems radical. e) Going to change moves will be performed only when it will be certainly and fully politically supported.

The *second* is defining clear goals and priorities - in many cases, the key to a successful change was concentrating the effort on a few focused goals that achieving was the change core. Setting clear priorities is required - more is less. Herein few practical steps recommended which in the report: a) Priorities should be set after finding out what are the issues that are most important to the public and the public servants. b) Few focused and accurate goals should be set rather than setting wide and vague goals. c) The potential benefits of achieving the goal must be illustrated, as well as the damages that will result from not achieving it. A clear presentation of the reform benefits guarantees the participant's commitment. d) The set goals have to be based on clear results while presenting the current situation in the areas planned for improvement. One of the key aspects is the ability to reliably assess the defined goals and the occurred changes. The inputs required for change and their effects on the change process must be linked.

The *third* principle is continuous and systematic work - continuous cooperation between units: to have the reform applied and maintain its initial momentum, it has to be advanced continuously while emphasizing the synergy between all partners. Therefore, reform leaders should be able to work with a variety of parties and solve problems that arise even if it is not in their standard area of responsibility. The practical steps recommended in the report are: a) Relevant stakeholders must be shared in the goal definition and policy planning. Sharing contributes to the continuity and conduct of the implementation process — "participatory planning is better than perfect planning". b) Budgeting all the stages of the reform implementation must be sufficient for the entire plan. This will avoid frictions and stoppages arising from the need to raise budgets for the reform during it. d) Quick victories should be produced to create a sense of success and momentum. It is recommended to set some easily achievable goals in the first stages. e) The bureaucratic barriers that could delay the change must be examined in advance to allow continuous work on the reform. Here, too, joint planning can help to locate the barriers and prepare solutions.

The *last* principle refers to professional ability in leading change - leading changes requires expert professionals. This expertise includes three main layers: ability and experience in leading complex changes on a large scale; Skills and experience in program and project management; and analytical and digital skills. The practical steps include: a) The implementation plans must not be general but specifically adapted to the needs. b) The reform leaders' abilities must match their specific needs. Therefore, resources must be invested in employee training programs in the organization. If there is still a gap between the capabilities and the needs, employee recruitment should be considered from outside the organization and even outside the public sector. c) To make a change, there is often a need for a perceptual change among the employees regarding the regular conduct of the organization. To encourage change, changes must be made in the system structure, for example in the training, reward, and evaluation system, and the organization executives must change their behavior and set an example. d) For the change implementation, the technical and strategic professionals must participate in leading it from the beginning.

In summary, in new changes, reforms and policy setting the policy goals or the undesired phenomena seek to reduce should be accurately defined and the policy should be shaped in accordance. The leaders / leadership have a very important part in leading a change in the education system. The change levers must be identified, namely, the Archimedean points in the short, medium, and long term that will lead to change by defining clear goals and priorities. Systemic thinking on the change theory, namely, the main vectors that are essential for promoting the desired results in the education system, must be promoted through systematic and continuous work. The system bottlenecks must be identified and the exact tools to reduce them and help in achieving the goals must be found.

A proposal for reform in the education system in Israel - OECD, 2019

The reform proposal for the Israeli education system was designed and written by the OECD in 2019, and its implementation began during the first months of 2020, before the COVID-19 pandemic. The proposal dealt with the practical aspect of innovative policies in education systems. The proposal outlined a practical framework of principles for a successful implementation of an educational policy. The framework was based on a review of many literature sources, including peer-reviewed studies that dealt with the implementation principles of education policy, as well as policy papers written for the OECD that examined the reform implementation in the organization's countries in the years 2015-2020. The review was based on 150 publications of which 18 were theoretical frameworks for policy implementation mechanisms and 20 policy papers that dealt with the implementation of reforms that were performed (Nir, 2017). All the sources were analyzed using a method presented by Nilsen et al (2020) to convert the theoretical research findings into applicable principles. Four main motifs were drawn out of the reform. These motifs are repeated in the context of policy design; the stakeholders and their commitment level; the institutional policy and the social context; and a strategy to lead the actual implementation. Herein the article writer will present the four motifs and their characteristics. The first is the Policy shaping. The method in which the policy goals are set and framed is defined while shaping the innovative education policy for the whole system. These actions will greatly influence how officials and stakeholders perceive and act upon the new policies. The article author believes that some issues have to be considered in policy shaping phase:

Policy justification. The need that the policy is meant to meet must be clearly defined. In the education area there are many issues that policy promoters are required to deal with, and clarifying the need for allocating resources to a specific issue is essential to make it a top priority. Beyond presenting the needs that the policy faces with pedagogical processes, it is better to present the purposeful aspects of the economy, civil society, culture, demographic composition, and the political factors of the policy (Haddad & Demsky, 1995).

Presenting the policy logic. Introducing the coherent process of defining the goals, objectives, and how they will be achieved. A systematic definition of the goals and objectives creates a thinking framework and delimits the resources to implement the policy (at the level of time resources, organizational attention, and financial resources). The lack of clear goals and priorities may lead different factors to perceive the policy differently and not be synchronized or even contradict it. In addition, the article writer claims it is important to present a theory that explains how the goals and objectives will be achieved to make all stakeholders understand how their specific actions contribute to the policy goals implementation.

Presenting the change feasibility. The stakeholder perception of the educational policy change program feasibility, both practical and political aspects, greatly influences their recruitment to promote it. It is essential to convince the stakeholders that there is an ideological and political mobilization to promote all the program stages and to respond to those who present barriers and failures that may prevent the program's promotion.

Stakeholders and their commitment level. The factors involved in the policy implementation are the main element of its success. Each stakeholder that is required to participate in the policy implementation is an agent who represents personal goals and values and contributes to the program implementation. Herein are some important points to strengthen the identification and commitment of stakeholders:

Identification. There is a great advantage in stakeholder identification to promote pedagogical policy. The main stakeholders relevant to the reform are those who are influenced by it, the principals, teachers, parents, and students. However, there are stakeholders in other circles that are influenced by and influence the reform, and having their identification is very important: the staff in the Ministry of Education, including supervisors from various units; the teacher training institutions, including teaching schools and institutions for advanced training; local authorities; worker organizations; civil society organizations; business sector; media; and policy researchers - local and international. Making these bodies identify or soften their objections are essential for policy implementation.

The implementation abilities of the partners-stakeholders. The stakeholders' ability to influence the policy is expressed in their possibilities and resources (including budgetary, political, and imagery resources), and their will to contribute to the policy. The article emphasizes the need to ensure that all stakeholders have the required abilities and that they are willing to cooperate in the times and cases it is required. If there are no reliable and properly skilled stakeholders, stakeholders should be trained in advance to perform the actions.

Reactivity. Adapting the reform to the needs raised by the stakeholders during its implementation: to maintain the stakeholders' support and adapt it to the needs arising from the field, **the literature emphasizes the vitality of mechanisms of policy consultation and adjustment during its implementation**. It is recommended to identify in advance the stakeholders relevant to the policy implementation and to examine its implementation in real-time to adjust through dialogue (Sabatier & Mazmanian, 1980).

The institutional policy and the social context. The policy context refers to the environmental characteristics where the educational policy is implemented: the operating institutions, the existing policy, events that precede the policy formulation, and changes simultaneous to the policy implementation. The local context, which the policy makers can influence, and the global context, which the policy makers cannot influence, may be distinguished.

Institutional frameworks. The institutional frameworks define the formal and informal social barriers involved in the implementation process. These barriers may include laws, social conventions, habits, etc. For example, the school's organizational culture affects the implementation of intra-organizational changes (local context), and the structure of the Ministry of Education affects the policy change implementation feasibility (global context). The institutional frameworks define how quickly and how deep policy changes can be. The policy promoters must know the institutional framework structure and its barriers and set realistic policy and implementation methods that must be determined according to the policy leaders' ability to implement the change within the system.

Parallel policy measures. Implementing many reforms and policy changes simultaneously burdens the system and hardens to exhaust each change. Accordingly, situations in which the actions and messages resulting from the policy do not overlap and even contradict may occur. For reform to be effective, it must be coordinated with reforms and other policy moves that the ministry and the government are implementing.

A strategy for leading the actual implementation. The implementation strategy refers to the aspects to be included in an executive plan for reform and change implementation. This section presents concrete actions emphasized by literature as essential for effective policy implementation.

Task division and accountability mechanisms establishment. Policy implementation requires clarity of all participants' responsibilities and the consequences of failures in the implementation process on the employees. Therefore, in the policy formulation phase, the partners and the responsibilities division must be indicated according to areas and times. It is also recommended to examine the possibility of defining the formal responsibilities of key stakeholders as part of the policy planning documents.

Goals. The goals, vision, and reasoning underlying the policy should be formulated in operational terms. Defining the priorities as part of the goals and objectives is essential for adequate resource allocation. Defining a limited number of measurable, ambitious but possible goals that do not harm the present school conduct is essential for the successful implementation of a reform (OECD, 2016). Policy tools. An extensive variety of policy tools that allow for achieving pedagogical goals was presented during the last decades. The selection of policy tools greatly influences the reform dynamics and the policy. We can use tools of strict and binding regulation based on binding laws and punishment in cases where the laws are not followed. These tools are effective when the government can monitor and punish violations. However, there are soft regulation tools that attempt to encourage those who are supervised to follow the regulatory goals without obliging them. These tools are effective when cooperation can be expected. The tool selection affects the interactions between the supervisors and the supervisees and the will of those who are supervised to cooperate with the supervisors in other contexts.

Resources. To implement a policy, resources of knowledge, budget, and technology are often required, but in addition to the resource availability, an outlined strategy is also required for their use - how it will be done and for what needs. In establishing an education policy strategy, several things must be considered: having the required resources, the sources that provide the resources, the certainty that they will be provided during the policy implementation, how the budget is allocated, and defining minimal budgeting needed for the program.

Collecting and tracking information. Collecting information and using it effectively is an essential aspect of leading and implementing education policy. We may refer to various types of information: information on student achievements (in national and international tests), teacher attitudes, student attitudes, etc. Objective information provides feedback to stakeholders regarding the policy implementation. Thereby, it allows the partners to adjust their behavior to the policy requirements, make the participants commit, and allow even those who are not active to be updated on the policy products. In addition, collecting information allows for managing the policy implementation effectively and systematically by making changes during the implementation process.

Timing. When planning the policy, it is important to examine when it should be started, the duration of effective implementation, and when it should be stopped, whether due to its implementation in the system or the need to shelve it. There is often a tension between the desire to implement policies quickly to reap political achievements and the professional needs that take a longer time. Research indicates that a too fast policies implementation often results in stakeholders that are not keeping up, and therefore do not succeed or are not interested in participating in the implementation process; On the other hand, when the implementation pace is too slow, the support for the policy and its momentum are lost (Tummers, 2012).

Comparison between the McKinsey model and the OECD model and conclusions for application.

Analyzing and comparing the two models show that they share some principles, almost completely, reflected in the following conclusions. The *first* conclusion refers to the responding to a need. A principle that both international models share and is suitable to implement in the Israeli model is that the policy change should be based on an agreed public

need. When all partners see the need, the ability to lead change increases. The need that policy response, which is based on data that shows the expected benefits from the policy change, may justify the policy and place it as a top priority for decision-making, recruit partners, and make them commit even during the implementation phase.

The *second* describe the selecting the most effective and appropriate policy tool to meet the needs. After we have identified the public need that the policy is meant to meet, it is important to select the most effective and appropriate policy tool to meet the needs. This is an additional principle repeated in the international models. There are many policy tools, on the spectrum between regulation, incentives, and advocacy, and it is important to adapt the exact policy tool to each public need. Sometimes more than one policy tool is required or combining several tools. Another conclude, the *third*, is about creating and priorities. An additional principle that is mutual to the two models is a clear and public presentation of the policy objectives. A clear formulation of the objectives allows the stakeholders and the operators to understand what is expected of them, deriving the actions of all the participants, and creating accountability.

Another conclusion becomes clear, the *fourth* conclusion, is on the stakeholder involvement issue. The repeated principle concerns the partners. Systematic and continuous work with the relevant stakeholders must be created by strengthening their commitment to contribute to advancing the policy. The main emphasis is on open and continuous communication channels and on understanding the unique contribution and profit of each participant. McKinsey's model cleared that it is not necessary to please everyone and that the focus should be on the most relevant stakeholders.

The *fifth* conclusion shows the need to update the teaching staff training process because. other principle that is mutual to the two models is referring the officials who will be required to implement the new policy. It is necessary to make sure that the officials can lead the change and have the resources to do it. Sometimes they have to be trained or there is a need to recruit new officials. Both models emphasized the need for all officials, especially those in the field, to identify with the policy change.

The *sixth* conclusion refers to the aspect of proper and appropriate resource allocation. This principle presented in the models is that adequate resources to lead the change must be allocated in advance, both in the budgetary aspect and in the aspects of physical and technological infrastructures and knowledge resources. In addition, a strategy must be outlined for how the resources are used, among other things from the aspect of budgetary flexibility for all ranks. The next conclusion, the *seventh*, emphasizes a significant component, reexamining the evaluation methods, measuring, and the learning factor out of experiencing. Another common principle for both models is the need for constant learning and updating the policy guidelines accordingly. In this context, it is important to maintain an open dialogue with the field, along with systematic data collection that will enable learning and improvement. Furthermore, both models emphasized the importance of measurement as a tool for learning, improving, and motivating all the change promotion partners.

The *eighth* conclusion discusses the importance of having leadership that can change and lead processes conclusion discusses the importance of having leadership that can change and lead processes. Two principles that were part of the McKinsey model and also expressed in the European model are the leaders' commitment and professional ability in leading change. The McKinsey model highlighted the role of policy change leaders and the necessity for them to publicly demonstrate their commitment to change by investing time and effort, as well as by showing a personal responsibility for successes and failures. Both the OECD and McKinsey models referred to the general political mobilization for the change promotion all the way. The McKinsey model emphasizes the professional ability in leading change. According to this model, leading a change is an expertise that includes systemic management skills and analytical skills, since it also requires changes in the system structure and harnessing all the system employees to action.

The *last* conclusion refers to the need to build a change-promoting organization**.** A principle expressed in both models is the need to adapt the organizational structure of the system in general and of the schools in particular to the desired change. The OECD model emphasizes institutional frameworks, such as organizational culture and organizational structure, which may be a barrier to leading change. The sources that will be the basis for the Israeli model, also greatly attribute the projector as having powers that bypass the many units in the Ministry of Education, to the lack of coordination and cooperation between the units, and to the need for flexibility in the manager's decision-making.

In summary, shaping an educational policy as an adequate response to the globalization challenges requires a holistic approach to several aspects: immigration, economy, environment, and technology. The assumption is that to shape a policy that will respond to many of these challenges, coordination between key areas in education: curriculum planning, teaching, and teacher training, and of course, appropriate leadership from all stakeholders is required. As discussed in both models and the recommendations for implementation for the Israeli system, the transition from an education system that emphasizes learning-defined content to a skill-oriented education system poses a significant challenge arising from the ambiguity of the qualifications statement. As the article writer has described above, the great majority of policy makers and educational paradigms in Israel share the desire to lead a change in pedagogy and make it deeper, but it seems that they are unable to put the policy into effect, unless they adopt insights such as the models presented.

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ETHNICITY AS AN ASPECT OF WORKPLACE DIVERSITY AT ORGANIZATIONS AND INTERNATIONAL SOCIETIES

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Abstract: Ethnic diversity stands as a hallmark of human civilization, shaping societies, cultures, and interactions in profound ways. In an increasingly global company environment, hiring and managing a staff that is diverse in terms ethnicity is essential to accomplishing strategic business goals. The article begins by delineating the conceptual underpinnings of ethnic diversity, elucidating its complex interplay with factors such as history, migration, socio-political dynamics, and globalization. Through an exploration of various theoretical frameworks and empirical studies. Using a variety of databases, including Science Direct, Springer, Google Scholar, EBSCOhost, JSTOR, and Elsevier, this article employed a qualitative methodology to thoroughly evaluate the body of existing literature in order to find numerous research articles pertaining to ethnic diversity at workplace. This article's conclusion promotes a comprehensive understanding and appreciation of ethnic diversity and ethnic variety that goes beyond oversimplified narratives and embraces the diversity of human experience.

Introduction

The acceptance of ethnic diversity has been significantly influenced by globalization and workforce diversity programs like affirmative action policies. Cities with varied populations may grow quicker for a variety of reasons. One of the most salient dimensions of team heterogeneity is ethnicity (Alesina and La Ferrara, 2005). Ethnic diversity can boost productivity through a variety of approaches to problem-solving or ethnic minority entrepreneurship, as well as draw in human capital, visitors, and businesses. Furthermore, ethnicity is one of the elements of diversity. It is among the most important aspects, traits, indicators, and components of a person's, a group's, or a community's identity (Žagar, 2019). Ethnic diversity has been a major economic force in international business because of its benefits. Makokolo (2005) defined ethnicity as a collection of tribalistic individuals. Migration and growing ethnic diversity's effects on social cohesion and in particular, generalized trust have been a contentious topic among academics, decision-makers, and the general public in recent years. (Campbell, 2007; Cheong, Edwards, Gouldbourne, and Solomos, 2007; Putnam, 2007; Schildkraut, 2007). Furthermore, the demographic developments that have coincided with the rise in ethnic diversity have a significant impact on the composition of the labor force (Oerlemans et al., 2008). Nevertheless, the degree of ethnic diversity is seen to have a big impact on a countries' political and economic growth (Ahlerup and Olsson, 2012). Most firms now have a workforce that is ethnically varied due to growing rates of globalization, development, and migration these organizations' human resource management must operate within the framework of a very ethnically diverse team. The composition of the workforce has shifted both domestically and globally due to

globalization and dispersed workforces. Global demographic trends suggest that low birthrates and elderly populations in many industrialized countries may lead to labor shortages that cannot be filled without bringing in immigrants and migrants, further diversifying the labor force (Heitner, 2018). Hence, a rising amount of study is being done on the advantages and successes of hiring employees from different cultural, nationality. The main objective of this study is to examine recent studies about ethnicity as a dimension of workplace diversity. In particular, thirteen articles published between 2011 and 2020 were analyzed.

Literature Review and theoretical background
1.1. Ethnicity definition
Ethnicity is a complicated term, encompassing not just physical characteristics but also aspects of culture including nationality, religion, and identity (Aspinall, 2009).
Heterogeneity in mother languages, religions, races, and civilizations is implied by ethnic diversity (Alesina and La Ferrara, 2005). It is typically determined by the person's or his or her parents' country of birth. Diverse conventions, knowledge bases, skill levels, and information sets are also coinciding with ethnic diversity (Lazear, 1999; Morgan and Vardy, 2009). A team that is ethnically diverse may have members from a variety of languages, faiths, races, and cultures (Katsiaficas et al., 2013). It may also refer to a socio-cultural team made up of several individuals from various ethnic groups inside a business or organization.
The definition of "ethnicity" is "the social group to which an individual belongs and with which they either identify or are identified by others, due to a mix of cultural and other factors, such as language, diet, religion, ancestry, and physical characteristics (Bhopal, 2004) that are shared by individuals in the same group (European Commission, 2017). Ethnic diversity is also called cultural diversity and it represents a group of individuals with different national and cultural backgrounds.

1.2. Benefits of Ethnic diversity
Ethnic diversity may improve corporate performance, through the introduction of a larger range of ideas, improved scrutiny, or improved access to international markets (Nathan, 2016). Furthermore, because a broader pool of talents and knowledge fosters complementarity and (mutual) learning, ethnic diversity would improve team effectiveness. For instance, teams with a diversity of ethnic backgrounds tend to be more creative and innovative because of their complementarities and learning opportunities (Alesina and La Ferrara, 2005; Lee and Nathan, 2011; Ozgen et al., 2013).Ethnic diversity has been widely adopted as a result of globalization and the use of workforce diversity programs like affirmative action policies. Ethnic diversity has been an economic engine in international business due to its benefits (Makokolo, 2005).
Additionally, increased productivity (Ager and Bruckner 2013), higher rates of new start-up intensities among highly skilled workers (Rodríguez-Pose and Hardy ,2015), and larger increases in wages and rents (Ottaviano and Peri 2006) are all effects of ethnic diversity on the performance of organizations in the regional economy. These effects are particularly pronounced in the presence of well-grounded informal institutions like social trust (Kemeny, 2012). Hence, effects of ethnic diversity increased productivity in the regional economy that impact the organization performance (Ager and Bruckner, 2013), greater rates of fresh start-up intensities among highly qualified workers (Rodríguez-Pose and Hardy 2015), as well as greater rises in wags and rents (Ottaviano and Peri, 2006). These effects are particularly pronounced in the presence of well-grounded informal institutions like social trust (Kemeny, 2012).

1.3. Ethnicity importance

Because ethnicity is a highly delicate political and social phenomena, researchers must assess the social context in order to determine the continued applicability of any study that uses ethnicity as a diversity feature (Pitts and Jarry, 2009). Organizational diversity in terms of race and ethnicity is rapidly increasing. Because of this, academics are becoming increasingly interested in the effects of growing diversity, and effectively handling ethnic diversity is now regarded as a crucial strategic requirement for organizations (Leslie, 2017).

The demographic changes that have coincided with the increase in ethnic diversity have a significant effect on the composition of the workforce (Oerlemans et al., 2008). Thus, diversity in ethnic and migrant is increasingly viewed as crucial to innovation (Ozgen et al., 2013; Østergaard et al., 2011; Kemeny, 2012; Nathan and Lee, 2013; Parrotta et al., 2014). Additionally, an alternative perspective posits that ethnic diversity could facilitate enterprises' access to international markets through personal relationships or local knowledge (Docquier and Rapoport, 2012). Additionally, ethnic diversity can increase productivity through a variety of approaches to problem-solving or ethnic minority entrepreneurship, as well as draw in human capital, visitors, and businesses (Lee, 2011). The sociocultural mixed embeddedness hypothesis (Kloosterman and Rath, 2001) states that interactions between people with various cultural backgrounds might result in advantageous results like more creativity, productivity and innovation (Ozgen et al, 2014).

1.4 Diversity and Ethnicity

Managing diversity in the workplace has become essential in the twenty-first century due to the rise in the number of varied persons, especially ethnic minorities, joining businesses (Carrim, 2019). The increasing ethnic diversity in organizations over the last 20 years has drawn more attention to this topic from academics. Businesses can only be successful if they can effectively courage ethnic diversity. Additionally, we live in a diverse world every day. We constantly interact with people from a variety of various backgrounds wherever we live and work. Here, "diversity" is used as a catch-all term to acknowledge that, despite their numerous similarities, people differ in their life experiences and attributes, including gender, age, race, ethnicity, physical ability, religion, and beliefs. Consequently, ensuring that ethnic diversity is fully embraced within the company in a borderless mindset and a core commitment are essential for any firm to succeed (Kirop and Wanjere, 2017).

The phenomenon of cultural diversity is growing across many nations due to migration and globalization. It is difficult for service providers in these nations to comprehend and meet the linguistic and cultural needs of varied populations. Because of this diversity, service providers must understand the cultural needs of their clients and be able to offer services that are appropriate for their cultural context (Stauss and Mang 1999, Sharma et al., 2009). Furthermore, migration, globalization, social justice movements, and other trends have made it a crucial issue for organizations in many nations to address the representation of diverse groups and their interactions (Choi, and Rainey, 2014).

Diversity is becoming more and more trendy in countless countries as the globe gets closer to becoming a more globalized place. Previous studies have addressed the reasons against and in favor of increasing ethnic diversity in the workplace (Ahmed, 2019). Figure (1) illustrates domains of practice for managing cultural ethnic) diversity.
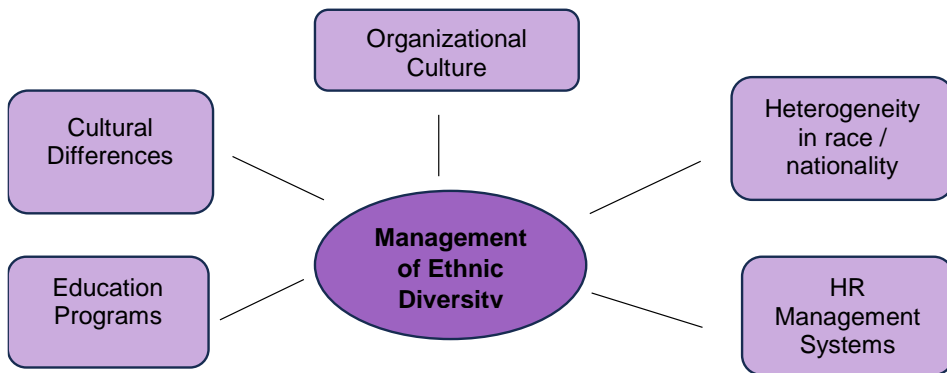
Figure 1: Spheres of Activity in the Management of Cultural Diversity
Source: Author construction based on (Cox and Blake, 1991) The Executive, Vol. 5, No. 3 (Aug. 1991), pp. 45-56*,*

1.5 Diversity management
The concept of diversity refers to the fact that people differ on a wide range of visible and invisible aspects, including gender, ethnicity, race, religion, age, marital status, social status, handicap, and sexual orientation (Kossek et al., 2006). Diversity management gives the organization a competitive edge in a number of areas, the primary ones being organizational flexibility, creativity, talent acquisition, and problem-solving (Botika, 2018). Furthermore, it poses concerns regarding how to quantify and operationalize the effects of ethnic diversity in businesses and society at large (Ozgen et al., 2013). Diversity management recognizes and benefits from individual differences, enabling each person to realize their greatest potential. Moreover, it has been suggested that addressing disparities based on personal characteristics, such gender and race, will help to reduce labor market segregation (Tatli, 2011).

1.6 Challenges of Ethnicity
Research indicates that companies use ethnic minorities as a personnel tactic to maintain low salaries (Soni-Sinha and Yates 2013; Ortlieb and Sieben, 2013). However, employing immigrant labor is associated with higher profitability and reduce wage increases for businesses (Alt and Iversen , 2017). Minorities often have lower positions, temporary employment, and lower incomes than the majority, even in organizations that support and value ethnic diversity (Bendick et al., 2010; Romani et al., 2018). Accordingly, organizations can also create value by using only labor (Ortlieb and Sieben, 2013). Employers typically view immigrants as flexible, hardworking, and submissive, especially in entry-level positions without formal requirements, where they are perceived as less demanding than native workers (Waldinger and Licher, 2003; Friberg and Midtbøen, 2018; Orupabo and Nadim, 2020). Thus, Umblijs et al. (2023) find in their study imply that paying immigrants less than native workers in order to discriminate against them will not boost business productivity or promote economic growth. Since many immigrants these days are highly qualified professionals entering western firms, organizations now have particular challenges in embracing the ethnic identity of migrants into organizational cultures. They encounter discrimination and are not given the support they need to grow in their careers (Carrim, 2019).

2. Research Methodology
This research is a literature evaluation of academic publications published in the last fourteen years (between 2011-2020), with the goal of critically evaluating and summarizing

the peer-reviewed studies regarding ethnicity as dimensions of workplace diversity. This research uses qualitative methodology because it is a descriptive study. We conducted a systematic literature review to review the literature on ethnicity diversity. Thus, this study does a thorough evaluation of the literature on "ethnicity diversity" According to Tranfield et al. (2003), the creation of a systematic literature review is distinguished by the application of a rigorous and objective research process designed to reduce researcher bias.

2.1 Methods of Search and Sources of Data
This study has attempted to systematically analyze the existing literature on ethnic diversity, Initially, the data were extracted by first scanning through the abstracts of the study, before having an in-depth study to identify the appropriate themes (issues) as well as discuss them. The methodology is summarized in this section. In order to provide the most accurate and broadly applicable statements on a given topic, issue, or question, systematic literature reviews synthesize the available data in a transparent manner (Waddington et al., 2012).

The literature review method used in the current study involved five steps: identifying the time horizon, database selection, article selection, article classification and analyses.

Step 1 − Time horizon: The period of analysis covered the 14 years from 2011 to early 2024.

Step 2 – Database Selection: We used the most commonly used databases as a source to identify the relevant articles: Science Direct, Springer, Google Scholar, EBSCOhost, JSTOR, and Elsevier.

Step 3 − Article Selection: Since Ethnicity and ethnic diversity were the core of this literature analysis, they used for Kew words in addition, we used a combination of search terms with the word diversity management to identify as broad a sample of articles we could find. So, the stage of selection involved a careful screening of the identified articles, selecting the most eligible articles that seemed relevant to the goal of the study at the end of this stage, 12 articles were selected, while 45 articles were excluded.

Step 4 − Article Classification: The review's goal was met by classifying the articles into two groups: ethnicity related to economy, migrant and political issues, and ethnicity as workplace diversity.

Step 5 – Analysis of Classification: Comprehending ethnicity as workplace diversity research was the ultimate goal of the phase. In line with earlier evaluations of the literature Chen et al., 2012), the following sub-topics were generated (1) subject themes, (2) year, nature of research. Table (1) summarizes the selected literature for the research analysis and provides a general overview of many key findings.

Table 1: Summarizes the selected literature for the research analysis

Author/ Year	Research Outcomes
Abdullah and Ku Ismail (2017)	Ethnic diversity should be encouraged because the stakeholders, and more importantly the consumers, are from various ethnic groups.
Chaudhry and Sharma (2016)	The diversity in terms of gender and ethnicity both represents an opportunity as well as a challenge for the organization to make a significant place in the global market**.**
Janssens and Zanoni (2014)	The study demonstrated how important HRM is in ensuring ethnic equality inside the company.
Hsiao (2020)	The results supported the mediating roles of job satisfaction and affective commitment in the association between employees' turnover

	intention and their perception of ethnic diversity. The aforementioned study validated the value of ethnic variety in Asian hospitality establishments and underscored the global significance of diversity management.
Kirop and Wanjere (2017)	The study also demonstrated that employees from diverse ethnic backgrounds can provide a company with a greater range of solutions to issues related to resource allocation, sourcing, and service. In addition, ethnic diversity also positively affects the organizational performance
Kifordu and Ejindu (2022)	Banks should maintain and improve their ethnic diversity management since it will significantly boost organizational performance. Ethnic diversity has positive and significant effects on organizational performance
Leslie (2017)	The study revealed that differences in ethnic status are likely to enhance both the cohesion or social experiences and performance of the work unit.
Nathan (2016)	The research reveals favorable relationships between cultural (ethnic) diversity and performance for larger, knowledge-intensive businesses, as well as good firm-city interactions for both younger, smaller businesses in secondary metro areas and larger, knowledge-intensive businesses in London.
Ozgen et al. (2014)	For firms, the capacity to hire qualified immigrants from a variety of cultural backgrounds will boost their competitiveness and innovation-generating potential
Parboteeah, et al. (2014)	The outcome demonstrated the importance of HRM in managing ethics and ethnic diversity.
Verma (2020)	The study shows how various diversity factors such as age, gender, and ethnicity can impact and contribute to an organization's competitiveness by improving employee productivity, performance, and job satisfaction through enhanced attitudes, creative thinking, and inventive employees' abilities.
Zoogah (2016)	The findings demonstrated how human resource management affects both ethnic (tribal) diversity and organizational performance.

Source: Authors' editing

3.Discussion and findings of the studies

Based on the systematic literature review conducted for this paper, the results of the systematic literature review revealed the significance of ethnic diversity to organization's competitiveness employee productivity, organization performance, cohesion or social experiences and performance of the work unit and how important human resources management HRM is in ensuring ethnic equality inside the company also the results proved the influence which human resource management has on ethnic diversity. Total of 3 out of the 12 articles focused on the relationship between human resource management and ethnic diversity in different organizations, the rest of the articles (9) articles discussed focused on different issues about managing and adopting ethnic diversity those issues as follows:

-Ethnic diversity should be encouraged because the stakeholders, and more importantly the consumers, are from various ethnic groups.

- Ethnicity gives opportunities for organizations to make a significant place in the global market**.**

- job satisfaction and affective commitment in the association between employees' turnover intention and their perception of ethnic diversity.

-Employees from diverse ethnic backgrounds can provide a company with a greater range of solutions to issues related to resource allocation, sourcing, and service. In addition, ethnic diversity also positively affects organizational performance.
-The differences in ethnic status are likely to enhance both the cohesion or social experiences and performance of the work unit.
-Companies that adopt ethnic diversity boost their competitiveness and innovation-generating potential.
-Ethnic diversity can impact and contribute to an organization's competitiveness by improving employee productivity, performance, and job satisfaction through enhanced attitudes, creative thinking, and inventive employees' abilities.
In summary, these articles collectively emphasize the importance of ethnic diversity for organizational success and highlight HRM's pivotal role in managing ethnic diversity and fostering inclusive workplaces.

4.Limitations
While this study provides valuable insights into the benefits of ethnic diversity in the workplace, it is not without limitations. First off, the range of viewpoints and approaches that were taken into consideration might have been limited by the dependence on a systematic review technique. In order to gain a deeper understanding of the intricate dynamics surrounding ethnic diversity within businesses, future study could investigate different approaches, such as qualitative interviews or quantitative approach through surveys and questionnaires, and longitudinal studies. Furthermore, there is potential for investigating the difficulties and negative effects of ethnic variety, such as unconscious prejudices, intergroup disputes, and communication hurdles, even if the main focus of this study is on its benefits. To give a more thorough understanding of how ethnic diversity affects different organizational concerns, such as leadership, decision-making procedures, and organizational culture, social cohesiveness, sense of belongings connectedness, community ethnic diversity future research could focus on these areas. This is due to the importance of ethnic diversity in companies from all sectors and all international societies around the world.

5. Conclusion
Ethnic diversity in the workplace is crucial in an increasingly globalizing world as marketplaces are growing more varied and interconnected. It is clear from a review of several research findings which are presented in the table that encouraging ethnic diversity in organizations has several advantages and offers special unique opportunities.
As globalization, development, and migration continue to rise, organizations must deal with workers from a variety of linguistic, cultural, ethnic, and orientation backgrounds who must collaborate to achieve the organization's goals.
Additionally, it becomes clear that HRM plays a critical role in managing ethnic diversity in organizations. In addition to advancing equality and diversity, effective HRM techniques also create a nurturing atmosphere that allows varied talent to flourish. Research highlights how employees' perceptions of ethnic diversity are shaped by elements including job satisfaction, dedication, and cohesive work units, which in turn affect organizational outcomes. Moreover, the findings highlight the strategic advantage of ethnic diversity in enhancing organizational competitiveness and market adaptability. By leveraging diverse factors such as age, gender, and ethnicity, organizations can cultivate a dynamic workforce that drives innovation, productivity, and customer satisfaction.
Eventually We believe that this evaluation will help future scholars have a thorough grasp of the state of the field's research as well as potential directions for future investigations into ethnic diversity. Our findings will motivate additional worldwide research in the domains of diversity and diversity management.

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BEYOND THE HASHTAG: EXPLORING THE MULTIFACETED WORLD OF BOOKSTAGRAM

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Abstract: *In the ever-evolving world of digital technologies, bookstagram is taking over the literature landscape, with the phenomenon of digital book lovers sparking a variety of research. Thus, the online space created specifically for readers around the world starts from its emergence as a hashtag and is shaped by the evolution of social media applications and, by extension, consumer demands. In such manner, keywords and themes relevant to a better understanding of the Instagram trend are established in articles from online databases that this study aims to examine. In other words, the research investigates the nature of bookstagram present in the literature through a quantitative analysis of bookstagram articles from their first appearance to the present, starting with 90 and narrowing our study to 15. Thus, the VOSviewer software is chosen as a tool, which provides a bibliometric map of all implemented papers from the Web of Science database interpreting data about the aforementioned trend. Therefore, the aim of the paper is to better understand the #bookstagram phenomenon since its first appearances in the literature, laying the foundations of relevant concepts and ideas to characterize it. So, bookstagram is relatively new in the Internet ecosystem, but it is strengthening every day the interest of digital users to discuss and learn about books, regardless of the social media platform used. There is also a growing interest in the impact the trend is having on modern literary culture. Moreover, the research will be an important pawn in the growing value of information encompassing the modern phenomenon of reading lovers on the social media platform Instagram.*

Keywords: *bookstagram, digital influencer, book influencer, book trends, social media influencer.*

JEL Classification: *M30, M31, M37, M39.*

1. Introduction

The 21ˢᵗ century daily is being introduced from a completely different perspective thanks to social media, which has recently changed more and more important aspects of consumers' lives online. In this way, both interaction and browsing on the Internet are continually changing, with literature being an example of an area affected by the amalgamation of web technologies. So people actively participating in the field of books on Instagram are part of the #bookstagram subculture, the community created for readers. Through this online medium, book lovers share information, suggestions and visually qualitative visual content (Tolstopyat, 2018; Wiederhold, 2022).
Thus, we can imagine an active digital space, where in addition to captivating photographs, there are also strongly supported recommendations from book-oriented community members (Darma, et al., 2020). In other words, reading enthusiasts have created the opportunity for other readers to share their experiences with people who understand their cultural pleasures, from anywhere on the globe (Jaakkola, 2019; Albrechtslund, 2020).

Hence, the bookstagram community breaks down geographical and cultural barriers, laying the foundation for a welcoming home for any individual who wants to improve their knowledge of books, discuss editorial upcoming books, or discover literary titles and genres they would not have tried before.

We can also highlight as a key feature of the phenomenon created around the hashtag #bookstagram the constant movement that is registered in the community. So, in addition to the traffic sustained by the medium being frequented several hours a day, social media platforms provide a place where the visual thrives. More importantly, the bookstagram community is built on Instagram's quality of providing content through images, but also the realm of books (Witari, 2023). In this way, what was born out of love for reading and grew organically has evolved into a globally known, complex trend that in turn creates opportunities for the individuals and people involved to grow.

On that account, #bookstagram not only aims to provide content about books, but also to create connections between participants of the hashtag in the Instagram environment. Thus, the community created is a digital space for promotion, both through active advertising and discussion between members. In other words, purchase decisions are influenced in tandem with the fluctuations of conversations and recommendations within the bookstagram online community.

2. Research approach

In particular, in order to better understand the concept presented above, starting from the decisive moment in the literature and up to the present, it is proposed to make a comprehensive analysis of the literature on the bookstagram phenomenon. In this way, the evolution of the trend, its characteristics, and its actual impact on the modern literary world will be observed. In particular, the present study will be based on a systematic method of collecting and analyzing articles accessible in a wide range of digital academic databases. Then, in order to identify the substrates that the phenomenon offers to literature, existing keywords in the articles under analysis will be collected and trends in the literature on bookstagram will be identified.

With regard to the literature on the modern bookstagram phenomenon, we can point out that in order to present a thorough synthesis we will focus our research on a systematic approach to specific articles. In other words, as we have observed in various works oriented towards the same methodology, this study succeeds in providing a better understanding of the defining characteristics of the phenomenon, but also in identifying the existing gaps with respect to content (Ye, et al., 2021). Next, in order to describe the #bookstagram hashtag and its digital implications in social media communities, we follow the steps that Vrontis et al. (2020) outlined in his paper, adapted to match the requirements also applied by Ye et al. (2021) and Ao et al. (2023) in their research.

Thus, data selection was performed by accessing nine electronic databases, some more massive than others, including: Emerald, EBSCO, ScienceDirect, DOAJ, Science Open, JSTOR, Lens.org and by default, Web of Science and Scopus. This was primarily aimed at identifying as many papers as possible that would help us to strengthen the already existing knowledge in the field about bookstagram and the implications of the phenomenon in the digital environment. Therefore, figure number 1 illustrates the process we followed from the identification of relevant articles for the research to the final extraction of the most significant studies that have the keyword "bookstagram".

Accordingly, the steps implemented in the present research consist of examining the
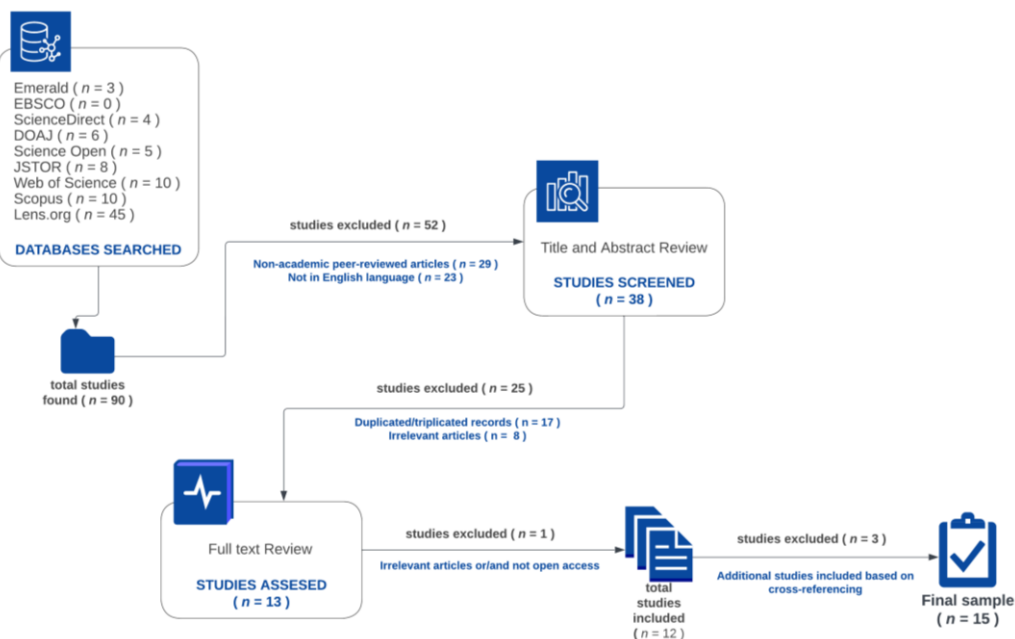
Figure 14: Organizational scheme analysis articles database
Source: own processing

literature through relevant digital databases, where in addition to scientific articles and book chapters, books, conference proceedings and non-academic peer-reviewed articles are found. Initially, all information was highlighted, reaching a potential of 90 papers with and about bookstagram published at the time of February 2024, i.e. 27 February 2024. Since we want to ensure the quality of the data analyzed, we limited the search to English-language scholarly articles only, thus excluding more than half of the papers that do not meet the publication type criterion, with a total of 38 studies viewed.

Next, duplicate or triplicate articles, i.e. articles irrelevant for a better understanding of the above mentioned hashtag were removed from the analysis and we reached a total of 13 documents. As reading the title and abstract did not provide clarity for all identified studies, we conducted a full analysis of the published text, thus eliminating one article whose content did not contain significant information for inclusion in the research. Subsequently, by analyzing the bibliographic references of these scientific papers, we added 3 such materials that did not appear in previous searches of the nine databases. In total, we arrived at 15 articles that reinforce the characteristics of the bookstagram phenomenon.

Moreover, the scientific articles identified as relevant to our study introduce a number of keywords into the literature that are closely related to the field we study. Therefore, the 15 scientific articles mentioned above have been analyzed from the keyword perspective, and we highlight the keywords identified by figure number 2, where it can be seen that most of

them are in the lexical field of our main keyword. Moreover, they create the major themes that sprinkle the literature on the trend present in Instagram.

Figure 15: Word Cloud generated with keywords from the final sample of the articles
Source: own processing

In order to provide clarity to the subdomains born from the bookstagram analysis, we created a comprehensive list of all 76 words, thus marking the importance of the keywords: "reading" (8 occurrences), "bookstagram", "social media" and "Instagram" with 6 occurrences each, but also "book" and "social" with 5, respectively, 4 occurrences. For the word "marketing" there are three such occurrences in the selected articles. Thus, the universe of literature in which bookstagram is present can largely provide important data and insights for further current research, but the limited number of scholarly papers is noted. In this way, all these words help us to lay the groundwork for future detailed research, and they become the starting point in the broad analysis of keywords associated with bookstagram.

In order to carry out this thorough bibliometric analysis, we used the VOSviewer program as the main pawn in the keyword presentation. In this way, the landscape created by the data amalgamation provides new information, identifying potential gaps in the literature and, moreover, contributing significantly to enriching both current and future research in the field. As the bookstagram phenomenon is still relatively new, with its characteristics making their mark on the Instagram community only in the last few years, the research will focus on the keyword "bookstagram". For the next section examined, we chose the Web of Science online database, since it represents one of the most highly recommended and relevant for deepening qualitative content in the currently existing literature. Thus, in March 2024, i.e. 5 March 2024, a series of revealing information on the birth, evolution and implication of the bookstagram phenomenon and the defining elements of this trend in modern marketing, the one actively involved in social media, have been identified.

2.1. Web of Science database

An important perspective to understand is the growing trend itself, bookstagram. It is a phenomenon of particular significance among digital reading enthusiasts since it guides a safe and welcoming space for readers to discuss and share books. As it is shaped by the intersection of literature and online, bookstagram marks its presence in social media through its significant influence on reading habits, the marketing developed around the core product, the book, and the community itself born around the hashtag.

As noted in Figure 3, the emergence of the phenomenon among research proposals is relatively new, with the first wave occurring in 2020 with 3 publications. Implicitly, we can state that the pandemic period marked the need for such a study oriented towards digital readings since the global impulse was to translate traditional activities online (Hrib, 2020). Notably, bookstagram appears in the literature and since then continues to grow and make its mark on the variation of works.
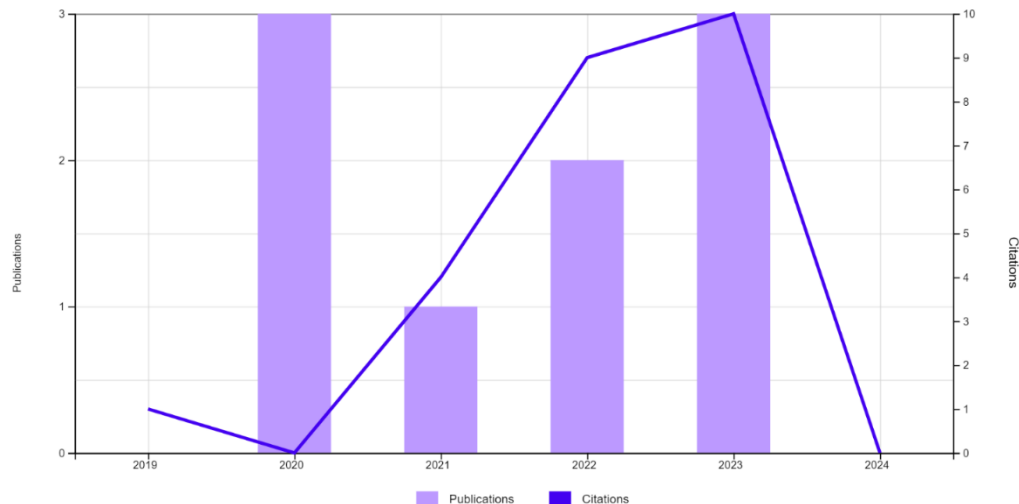
Figure 16: Publication years and Citations for keyword "bookstagram"
Source: retrieved from Web of Science

So far in 2024 there is no work registered for "bookstagram".

In previous years, although the actual number of articles does not exceed the peak of the initial year, the number of citations increases considerably, with 10 academic mentions in 2023. At the same time, the year 2023 is also marked by the expansion of the literature, with the number of articles on bookstagram steadily increasing between 2019 and 2023.

Figure 17: Countries where "bookstagram" articles were published
Source: own processing with data retrieved from Web of Science

Also, in Figure 4 we can see the diversity of countries where this trend has been researched, with scholarly study existing over a considerable area of the globe, but in limited numbers.

In other words, although the phenomenon is a novel topic that is increasingly studied in depth, the variety of work remains low.

2.2. VOSviewer's way of bookstagramming

In order to be able to outline the current landscape of the study of the aforementioned phenomenon, we will focus on the bibliometric analysis of the aforementioned keyword, i.e., we will use VOSviewer as the main tool in visualizing and exploring the academic works surrounding the term "bookstagram".

Notably, the VOSviewer map resulting from the collection of data identified in existing articles in the Web of Science database reveals several distinct groupings in Figure 5. These are intended to mark the dynamics and evolution of the information resulting from various studies in the field of bookstagram (Rosário & Dias, 2023). Also present is the highlighting of the keyword network that appears in close relation in each scientific article entered and, moreover, the remark in a particular way of the frequency recorded for each such keyword.

Next, we note the differences in the color palette of the bibliometric map and thus highlight the clusters created that are intended to provide future research trends. In other words, cluster 1, highlighted in light blue, includes keywords such as *bookstagram*, *digital reading*, *social media* and *influencer*, all of which suggest a particular focus on the theme of digitally promoted reading.

Similarly, cluster 2, shown in yellow, focuses on digital social media and the diversity it offers in terms of product marketing, as evidenced by the relationship of the keywords *social media*, *Instagram*, *BookTok* and *marketing*. Notably, the presence of a smaller cluster size than those mentioned above indicates a growing interest in better understanding the culture of reading in the everyday 21ˢᵗ century, as shaped by keywords such as *social reading*, *participatory culture* or *digital book culture*.
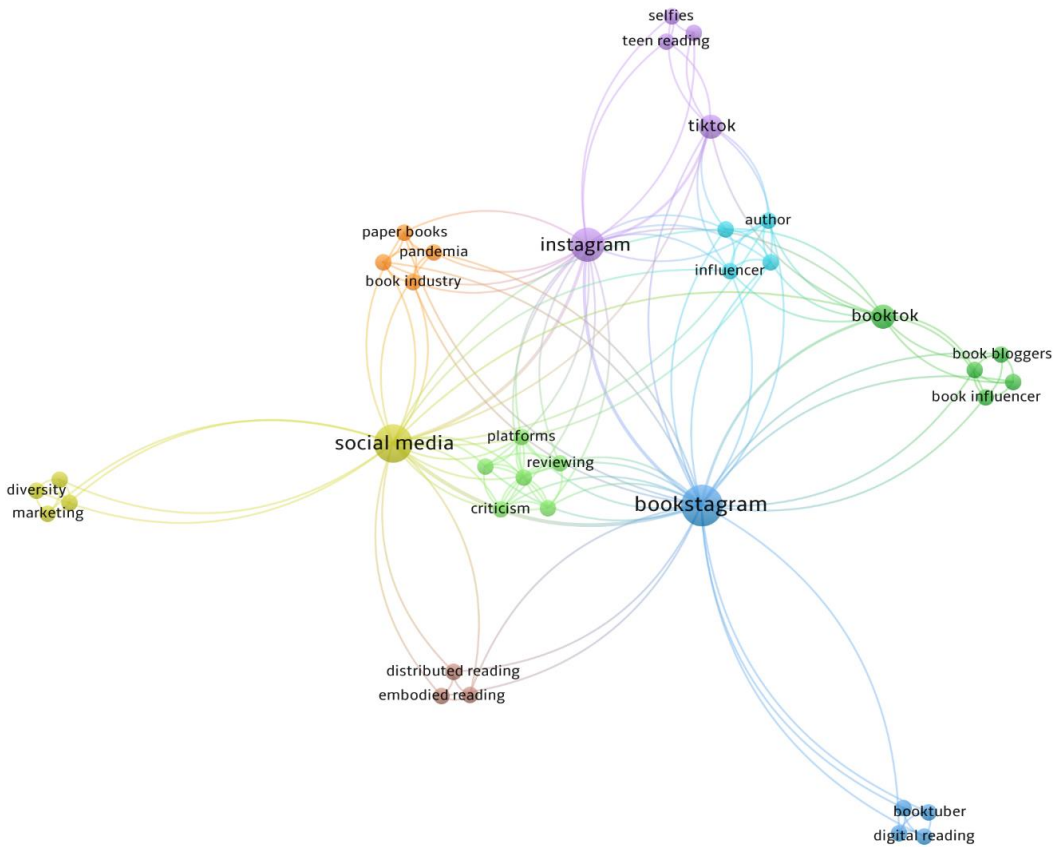
Figure 18: Network of Keywords for "bookstagram"
Source: VOSviewer program

In such way, we note that the data resulting from the present research supports the existing literature, highlighting the close link between digital platforms and the promotion of habits and different cultures, in this case books.

Moreover, attention is increased on the bookstagram phenomenon (6 mentions, meaning a total of 35 links created), present on Instagram (5 mentions, with a total of 30 links created) which is a social media app (4 mentions and 26 links created). Therefore, these three keywords stand out as the most important ones in the present analysis since their bubble has a much higher volume than the rest of the bubbles present in the map.

3. Results and Conclusion

As bookstagram is more than just an area to view books, it encourages interactions both between participating individuals and with the book itself, as well as exploring conversations, recommendations and content inspired by the personal reading experiences of online community members. Thus, the bookstagram influence marks an important point in researching Instagram user behavior with respect to book product consumption.

The study also investigates how keywords identified throughout the analysis of existing articles in the literature project individualized themes of the characteristics of the aforementioned phenomenon. Notably, bookstagram is a prime space for connection, engagement and influence in terms of both consumer behavior and economics (Thomas,

2021). In this vein, the present study succeeds in highlighting the multifaceted nature of the relatively new trend in the online landscape of social media platforms.

Hence, through the methodology presented in this paper we capture an in-depth understanding of the impact of the bookstagram community on the literary world in terms of shaping the reading habits of Instagram members. In other words, the phenomenon gives a particular importance to online platforms in terms of their use in the approach of interacting with book lovers and, moreover, connecting with respect to sharing information, opinions and reviews (Martens, Balling & Higgason, 2022). Therefore, with each passing moment, the interest in digital, social media variety and 21ˢᵗ century literary culture is growing alongside the development of technologies and the desire of reading enthusiasts to delve deeper into the subculture created by bookstagram (Albrechtslund, 2020).

In terms of future prospects, we can affirm that bookstagram will continue to be a central pawn in shaping the contemporary landscape of the book domain, as well as providing an online starting point for new ways to interact, consume and enjoy books (Darma, et al., 2020). In essence, by recognizing and embracing the potential that the bookstagram phenomenon implements in the literary every day, we can leverage its involvement in enhancing the literary experiences of readers present on online social media platforms.

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UNLOCKING ONBOARDING SUCCESS: ESSENTIAL KEYS TO EMPLOYEE INTEGRATION

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Abstract: *Onboarding, the process of integrating new employees into companies, involves a wide range of techniques and opinions in academic literature. This study explores the complex aspects of onboarding, analysing several terms such as "employee onboarding," "organizational socialization," "orientation," "assimilation," and "hazing." This research tries to clarify the conceptual landscape of employee integration by drawing from a thorough review of the literature. This study provides a structured classification of determinants that lead to successful onboarding, offering valuable insights into key elements that enhance staff integration. Organizations may enhance their onboarding procedures by comprehending these determinants and how they interact, creating a conducive environment for new employees, which can lead to successful onboarding.*

1. Introduction

The process of integrating new employees into organizations has a multitude of names in the academic literature. The term "onboarding" has been referred to by a variety of names throughout the literature. The term "Employee onboarding", is defined in literature as the process of familiarizing newly hired employees with the organization, its principles, and their specific roles and responsibilities (Bauer, 2010; Bauer & Erdogan, 2010; Cable et al., 2013; Caldwell & Peters, 2018; DR Pranita Sonar, 2021; Heimburger et al., 2020; Klein et al., 2015; Shufutinsky A. Cox R., 2019). The objective is to provide new employees with the necessary information and resources to effectively adjust to their new work environment (Stratone et al., 2022). Other researchers refer to the new employee integration process into a company as "Organizational Socialization" emphasizing the integration of new employees into the social framework of the company as it involves helping new members establish relationships with their colleagues and understand the informal practices and networks within the firm (Bauer et al., 2007; Cooper-Thomas & Anderson, 2006; Gupta et al., 2022; Kowtha, 2018; Maanen & Schein, 1977; Perrot et al., 2014; Schein E.H., 1968). "Orientation", another term to describe onboarding, is commonly particularly when it involves familiarizing new employees with the company's organization, rules, perks, and facilities (Bauer et al., 2019; Bauer & Erdogan, 2014). Typically, it includes formal presentations, tours, and introductory meetings with key staff members (Wanous & Reichers, 2000; Zung, 2020). It refers to the formal process of introducing new employees to the firm, its policies, procedures, and work environment. It frequently includes initiatives to help newcomers become familiar with their new jobs and surroundings, such as orientation programs, training sessions, and mentorship opportunities (Wanous & Reichers, 2000). In addition, the term "assimilation" is often used to describe the process of new

personnel integrating into the current organizational structure and social networks. This viewpoint emphasizes the significance of social interactions and relationships in helping the newcomer adapt and feel included within the organization (Saks et al., 2007). Onboarding is also referred to as induction: "We define induction as any arrangement made to familiarize the new employee with the organization, safety rules, general conditions of employment, and the work of the section or department in which they are employed' (Gherardi and Perrotta, 2010; Skeats J., 1991). Another term to describe onboarding is "Hazing". Although not an officially recognized term for onboarding, it refers to the initiation rites or activities that certain groups engage in to integrate new members into the group. While hazing is often associated with negative connotations and is rarely promoted in professional settings, it provides insight into the social dynamics and hierarchies within various organizational cultures Mawritz et al., 2022; Sweet et al., 2023). As seen, various terms and concepts are used to explain the process of onboarding, but they all have the same objective of helping new employees move and integrate into the business smoothly. Understanding these many viewpoints allows firms to create inclusive onboarding plans that consider the social, cultural, and practical elements of welcoming new employees.

The goal of the study is to provide insights into the various aspects of successful onboarding procedures by systematically categorizing determinants and identifying common patterns. By doing so, the study aims to guide organizations in improving their onboarding processes for new employees. This article highlights the importance of examining how different determinants interact to make onboarding successful. By investigating these determinants, we can better understand how to design onboarding programs that support new employees, leading to smoother transitions and better outcomes.

2. Literature review

2.1. Onboarding, organizational socialization, employee induction, and other similar concepts

Onboarding has gained a high level of attention in both academic literature and organizational practice. Studies have examined various aspects of onboarding, such as its definition, theoretical frameworks, factors, measurements, results, and practical consequences (Bauer & Erdogan, 2010; Cable et al., 2013; Gruman & Saks, 2011; Morrison-Smith & Ruiz, 2020; Sharma & Stol, 2020). Onboarding includes a range of activities and processes designed to help new workers adapt to their jobs, teams, and corporate culture (Bauer & Erdogan, 2014).

Commonly referred to as organizational socialization or employee induction, onboarding includes a range of activities and processes designed to help new workers adapt to their jobs, teams, and corporate culture (Bauer & Erdogan, 2010). These usually involve orientation programs, mentoring, socialization strategies, and role modelling to assist new employees in comprehending and adjusting to their new work setting (Bauer & Erdogan, 2010). The onboarding process is crucial for new employees to integrate into organizations and establish a basis for their future success. Understanding effective onboarding factors, evaluations, and outcomes can enhance the onboarding process, leading to increased productivity and retention through customized strategies (Bauer & Erdogan, 2010; Gruman & Saks, 2011; Simon et al., 2019). Successful employee orientation not only improves employee happiness and involvement but also adds to the effectiveness and competitiveness of the firm in the market ((Brown L., 2021; Morrison-Smith & Ruiz, 2020). Thus, it is crucial for firms seeking sustainable growth and success to engage in thorough onboarding strategies (Saks & Gruman, 2014; Bauer & Erdogan, 2010; Brown L., 2021; Cable et al., 2013; Morrison-Smith & Ruiz, 2020; Saks et al., 2007).

2.2. The fragmentation of the literature concerning onboarding determinants

Researchers from various fields, including human resources, psychology, and general management, are increasingly exploring the determinants, measurements, and impacts of successful onboarding processes. Human resources professionals contribute by examining organizational practices and policies that facilitate effective onboarding (Saks et al., 2007). Psychologists bring insights into individual behaviours, motivations, and cognitive processes that influence onboarding outcomes (Bauer et al., 2007). Meanwhile, management scholars contribute by investigating leadership strategies, organizational culture, and structural factors that affect the onboarding experience (Allen T. & Tammy D., 2015). This interdisciplinary approach enhances our understanding of onboarding's complexities and offers comprehensive insights for practitioners and scholars alike. Organizations recognize the crucial role that effective onboarding plays in employee retention, engagement, and performance (Bauer, 2010). As a result, there is a growing demand for evidence-based practices and strategies to optimize the onboarding experience. Acknowledging the varied backgrounds and viewpoints from other disciplines in the study of onboarding has promoted cooperation and information sharing among scholars, stimulating future interest and research in this topic (Bauer & Erdogan, 2010). Overall, the combination of these factors has contributed to the increased attention and research activity surrounding the determinants, measurements, and impact of onboarding.

3. Methodology

3.1 The search process

During November 2023, we conducted a comprehensive search using pairs of specific keywords. We executed our search in the Web of Science (WoS) database to retrieve relevant articles related to onboarding and organizational socialization. The word pairs that were used have included "onboarding success" along with "determinant," as well as "onboarding" with "employee." Additionally, we searched for "organizational socialization" paired with "determinant," and "induction success" with the same variations. The results for each pair of words were various. Among the searches, "onboarding" and "employee" yielded 51 results, indicating a substantial body of research on the onboarding process and its impact on employees. Similarly, the pairing of "organizational socialization" and "determinant" resulted in 31 findings, suggesting a certain interest in understanding the determinants of organizational socialization. In contrast, the search for "induction success" and "determinant" returned only 2 results, and the search for "onboarding success" and "determinant" returned zero results indicating a relatively smaller focus on these factors in the literature. These searches are presented in the table below:

Word Pair	Number of Results
"onboarding" and "employee"	51
"organizational socialization" and "determinant"	31
"induction success" and "determinant"	2
"onboarding success" and "determinant"	0

Table 1: Search process

3.2 The selection of the sources

In our selection process, we examined the abstracts of articles retrieved from the initial search to determine their relevance to our study. Specifically, we retained articles if their abstracts mentioned any of the following terms: "determinants for successful onboarding," and considered the article relevant to our research objectives and included it in our analysis.

3.3 The analysis

We adopted a systematic approach similar to the one used by (Crisan et al., 2021) searching for determinant factors contributing to successful onboarding. After reviewing the abstracts, we identified 61 articles from our search. These articles met our inclusion criteria, aligning with our focus on exploring the determinants, associated with successful onboarding processes. We have read and thoroughly analyzed these 66 articles to extract relevant insights and findings for our study. Furthermore, based on references found within these articles, we have delved into an additional 6 articles. By applying this systematic approach to selection and analysis, we ensured that the articles included in our study were directly relevant to our research aims, thereby enhancing the validity and rigor of our findings.

4. Results

The determinants identified in these articles were categorized into eleven distinct categories based on their commonality across the literature. These categories include (1) work relations connection, found in 34 articles, emphasizing the importance of fostering positive relationships in (2) the onboarding process (support, training, feedback & well-being), identified in 29 articles, highlighting the crucial role of comprehensive onboarding processes in facilitating successful transitions (3) formalized/structured onboarding process & feedback, present in 27 articles, underscoring the significance of structured onboarding procedures and effective feedback mechanisms (4) Job Formulation & Clarity / Attributes /Employee Value & Meaningful Work: Featured in 24 articles, stressing the importance of clear job roles and meaningful work experiences. (5) Culture-Related Factors: Present in 24 articles, emphasizing the influence of organizational culture on the onboarding experience (6) Personal Attributes: Found in 24 articles, highlighting the role of individual traits and characteristics in successful onboarding (7) Role of Mentor: Identified in 23 articles, emphasizing the importance of mentorship in supporting new employees (8) HR Policies: Present in 11 articles, indicating the significance of human resources policies in shaping the onboarding process. (9) Technology, Location & Equipment, and Online Work Environment: Found in 7 articles, highlighting the impact of technology and work environment on onboarding (10) Additional/Extended Benefits: Identified in 5 articles, stressing the importance of providing additional benefits such as social support and professional development opportunities. (11) Workers' Representative Structures: Present in 2 articles, indicating the role of representative structures in advocating for the interests of new employees. The table below summarizes the categories:

	Determinant	No. of articles the determinant was found in
1	Work Relations/Connection	34
2	Onboarding Process (support, training, feedback & wellbeing)	29

3	Formalized/Structured Onboarding Process & Feedback	27
4	Job Formulation & Clarity / Attributes /Employee Value & Meaningful Work	24
5	Culture-Related Factors	24
6	Personal Attributes	24
7	Role of Mentor	23
8	HR Policies	11
9	Technology, Location & Equipment, and Online Work Environment	7
10	Additional/Extended Benefits	5
11	Workers' Representative Structures	2

By grouping these determinants into specific categories, we were able to identify common patterns and elements contributing to successful onboarding across diverse organizational contexts. This systematic approach provides valuable insights into the various aspects of successful onboarding procedures and guides ways to improve the onboarding process for new employees.

5. Discussion

In our research, we've gathered key factors from previous studies that determine successful onboarding. The identified determinants include necessary aspects for effective onboarding, ranging from fostering positive work relations to providing structured processes and feedback mechanisms. By focusing on these factors, organizations can find out what they're doing well and where they can improve. For example, they can compare how clear a job is with how well someone understands their role to see where adjustments are needed to make roles clearer during onboarding.

5.1 Synergistic Contributions to Successful Onboarding

By addressing key determinants identified in the literature organizations can achieve desirable outcomes and foster a supportive work environment for new employees. We selected determinants that were referenced in up to 30 percent of the articles, a notable proportion indicating their significance (Work Relations/Connection, Onboarding Process/support, training, feedback & well-being, Formalized/Structured Onboarding Process & Feedback, Job Formulation & Clarity / Attributes / Employee Value & Meaningful Work, Culture-Related Factors, Personal Attributes, Role of Mentor). By integrating these determinants in their organizations, we offer practical implementation strategies for organizations to achieve successful onboarding outcomes.

5.2 Examples of implementations

Below are some examples of implementations based on the determinants identified to achieve successful onboarding: Work Relations/Connection (34 articles): Implement team-building activities, encourage social interactions among new hires and existing employees, and establish mentorship programs to foster connections within the workplace. Onboarding

Process (support, training, feedback & wellbeing) (29 articles): Develop a comprehensive onboarding program that includes support mechanisms for new employees, such as mentorship, training sessions, regular feedback sessions, and initiatives promoting employee wellbeing. Formalized/Structured Onboarding Process & Feedback (27 articles): Establish a structured onboarding process with clear guidelines and milestones. Incorporate mechanisms for gathering feedback from new hires and managers to continuously improve the onboarding experience. Job Formulation & Clarity / Attributes / Employee Value & Meaningful Work (24 articles): Clearly define job roles, responsibilities, and expectations during onboarding. Emphasize the value of each employee's role within the organization and provide opportunities for meaningful work assignments aligned with their skills and interests. Culture-Related Factors (24 articles): Introduce new hires to the company culture through orientation sessions, cultural immersion activities, and communication of organizational values. Encourage cultural integration by promoting inclusivity and diversity initiatives. Personal Attributes (24 articles): Tailor onboarding experiences to accommodate individual differences and preferences. Provide flexibility in training methods and support systems to address the unique needs of each new hire. Role of Mentor (23 articles): Assign experienced employees as mentors to guide new hires through the onboarding process. Encourage regular interactions between mentors and mentees to facilitate knowledge transfer and social integration. HR Policies (11 articles): Ensure alignment between onboarding practices and HR policies. Communicate relevant policies and procedures to new employees during the onboarding process and provide resources for addressing policy-related inquiries. Technology, Location & Equipment, and Online Work Environment (7 articles): Equip new hires with the necessary technology, tools, and resources to perform their job duties effectively, especially in remote or virtual work environments. Provide training on using company-specific software and platforms. Additional/Extended Benefits (5 articles): Offer additional benefits or perks during the onboarding process to enhance employee satisfaction and engagement. This could include wellness programs, flexible work arrangements, or professional development opportunities. Workers' Representative Structures (2 articles): Establish mechanisms for new employees to voice their concerns or suggestions through representative structures, such as employee councils or forums. Encourage participation in decision-making processes to promote employee empowerment and engagement.

6. Conclusions and future research

Studying the different terms related to the onboarding process shows a diverse range of determinants designed to help new employees integrate into firms. Terms like "onboarding," "organizational socialization," "orientation," "assimilation," and "hazing" highlight the significance of thorough onboarding strategies that cover social, cultural, and practical aspects of integrating new employees. This study highlights various factors essential for effective onboarding, including promoting positive work relationships, implementing organized processes, and establishing feedback mechanisms. Organizations can acquire important insights into improving their onboarding processes by categorizing variables and identifying common patterns in the literature. By implementing specific tactics to target these factors, firms can establish conducive environments that promote employee assimilation and set the stage for future achievements. Future studies should delve deeper into the interactions between determinants and their long-term impact on employee outcomes. Longitudinal research across industries can shed light on context-specific factors affecting onboarding success. Collaboration between disciplines can further enrich our understanding of effective onboarding practices in diverse organizational contexts.

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CASE STUDY ON MEDIA ETHICS IN FRANCE

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Abstract: *Carried out as part of an educational project by Hugo Saez under the supervision of Doina Muresanu, this case study focuses on ethical aspects linked to the field of journalism. It can be used for undergraduate or graduate students in the field of organizational management or communication. The present case study takes as a subject of analysis the situation of the French media, given Hugo's work experience in this profession and in this country. For this reason, the case is written in the first person. More concretely, students will learn about the regulations governing this profession in France, the misconduct that continues to persist in the field, and end with lessons to be learned. After having gone through the description of the situation, students are invited to think about questions relating to ethical issues linked to the French media sphere, to the errors of conduct encountered when searching for information as well as to causes which could explain the distancing of journalism from its ethical principles anchored in practice for several decades. Basically, the case study aims to raise students' awareness of issues related to the study of applied ethics in a particular context, which is the practice of journalism in France.*

Keywords: *journalism, media ethics, misconduct in the profession of journalism*

JEL Classification : *M14*

1. Introduction

At the heart of their work entitled *Managing the ethical dimension in business* and published in 2017, Michel Séguin and Marie-Ève Lapalme define ethics as a "discipline covering all the rules of conduct and standards considered good and be followed with a view to establishing harmonious relationships in society, giving meaning to one's actions and feeling good about oneself" page 5. In the context of ethics courses, we make the distinction between fundamental ethics and applied ethics, and it is more the second dimension in which we will be interested. Indeed, this scenario concerns the ethics applied in the branch of journalism because many of my past experiences come from France.

By relying on concrete situations that reflect the current realities of the profession, I will demonstrate that the rules of conduct as well as the standards that fall within the ethical dimension are not always respected. This sometimes fades away in favor of various interests, of an economic and political nature much of the time. So, the problem is as follows: how can immoral practices flout and call into question the principles linked to journalistic ethics?

On the one hand, it will be appropriate to study the ethical system which surrounds the exercise of journalism. On the other hand, I will provide concrete examples to illustrate phenomena that go against applied ethics. Finally, the outcome of this scenario will be an

opportunity to open the doors to a debate about the potential causes of the ills experienced by the profession.

2. An ethically framed profession

2.1 Governing texts

Unlike certain professions where ethics can sometimes be an element that is still vaguely defined today, is not the case for the journalism. Indeed, it has now been more than a hundred years since ethics first appeared in the French press. Through a mixture of deontological and ethical approaches, journalism turns out to be a profession framed by texts exposing the missions, rights, and duties of those who practice it.

It was in July 1918 that a first version of the Charter of professional duties for French journalists saw the light of day. Created from scratch by the National Union of Journalists (SNJ), it has been revised twice in the past: a first time in January 1938, then a second time in March 2011. It is also at this last date that it became what today we call the Charter of Professional Ethics for Journalists. These two revisions, during which adjustments were made, demonstrate a certain desire on the part of journalism to evolve with the times, in reaction to the multiplicity of contemporary changes. The ethical dimension being a factor which is not fixed in time, the profession is therefore sending clear signals as to its desire to remain closely linked to ethics and wishes that professionals have all the necessary tools.

Furthermore, French journalists are required to pay particular attention to the ethics of European journalists. Indeed, ethics has also been established on a European scale to the extent that the Declaration of the Duties and Rights of Journalists, also known as the Munich Charter, appeared in 1971. This is the European Federation journalists who adopted it and it is also the French Charter of Professional Ethics which served as its foundation.

2.2 Established standards

Consequently, several fundamental values inherent to journalistic practices arise from the texts cited above.

The first of these is objectivity. "A journalist cannot be 100% neutral, but he can be objective," keeps repeating Fabrice Poisblaud, professor of media knowledge at the École Supérieure de Journalisme de Lille. Information must therefore be processed without judgment, without taking a position. For example, if a journalist is sent to a demonstration against a reform, the latter must in no way support or undermine the cause of the demonstrators. The objective is to maintain a certain form of perspective and not to lose sight of the fact that our sole mission is to report information.

The second concerns integrity and respect for privacy. If the person whom we are speaking asks us to remain anonymous, this is a request that must be respected. This is often the case when we question individuals on sensitive subjects such as suicide or addictions.

Added to this is the presumption of innocence. This is a point that is aimed more at legal journalists, who cover court cases. In this context, it is essential to use appropriate terms so as not to be accused of defamation. If the judge has not yet rendered his judgment, it is impossible to write that the accused person is guilty. Using the conditional to the detriment of the present tense is also a way of not making mistakes and not putting forward something about we are not sure.

Let's conclude with truthfulness and accuracy. With this in mind, the journalist must be vigilant before disclosing the information. In order to satisfy this requirement, it must be based on facts whose sources must be verified. If he likes to have the exclusivity of the news, he must not confuse rush with haste. By taking the risk of publishing it without accompanying it with facts, the journalist exposes himself to deviating from this golden rule: the notion of urgency does not take precedence over the scoop.

3. Persistent misconduct

3.1 The problem of sensationalism

Whether due to causes linked to the organizational environment or to the individual himself, some professionals tend to accentuate the news. To increase radio ratings, TV audiences or bring more readers to the written press, the media adopt behavior geared towards sensationalism. This practice, with respect to which the objectivity and veracity of information can be called into question, consists of shocking the citizens in order to capture their attention. This case responds to the following ethical dilemma: treat the news as it is by agreeing to sell less or treat the news by seeking the reader's emotion even if it means giving up on morality.

The reasons that push editorial staff to act in this way is mainly economic. The rise of new technologies is causing changes, and the written press is the first victim. The population is getting more and more information on the internet, and this is why several editors-in-chief of paper newspapers are ready to do anything to sell more.

This is a scourge that I was confronted with during an internship at a local weekly. In addition to the content manager's desire to opt for shocking photos on the front page of the newspaper, journalists' texts were sometimes modified on the website. One morning, my mission was to go to a village to produce a report on the existence of illegal dumping in several places in the town. So, I went to meet the mayor and residents to gather their testimony. Not having sensed excessive anger from the latter about these events, my title was "The Valmontois annoyed by illegal dumping". However, when I went to the newspaper's website, it had become "Valmontois can't take any more illegal dumping". A seductive title which was modified without my agreement or consent. The objective is simply to provoke more reactions on social networks so that traffic to the website increases.

3.2 The emergence of fake news

Another scourge of the contemporary press concerns the disclosure of false news, also called fake news. Here again, the truth of the information is the principle that is not respected. This is a direct misconduct towards consumers, to the extent that they find themselves confronted with the circulation of false information whose sources are unreliable. It is a phenomenon that is growing in response to the multiplicity of new technologies. At a time when consumers are getting more and more information on social networks, anyone can call themselves a journalist and publish information. Everyone believes what they see, and this endangers the credibility of those who are truly journalists.

The official media are sometimes themselves responsible for their dissemination. Let's take a concrete example. This concerns the interception of Xavier Dupont de Ligonnès, a fugitive on the run for more than ten years. The events took place in 2019. One evening, Le Parisien broadcast information stating that Xavier Dupont de Ligonnès had been found at Glasgow airport, in Scotland. A madness then took hold of the media. All reported that the information was confirmed by specialists and only used assertions in their comments. However, two days later, these same media apologized because it turned out that the man found was not

Xavier Dupont de Ligonnès at all. In this story, the newspaper La Provence is the only press title to have taken the news with a pinch of salt by headlined "Arrested? » on the front page of its edition.

This example demonstrates the desire, on the part of the media, to circulate information quickly. A way of doing things which, however, pushes them to make mistakes and stray from journalistic ethics. This is why consumers should exercise caution.

4. Some lessons to learn

4.1 A detrimental concentration?

As with any misconduct, there are multiple causes, and it is up to everyone to base their own critical view on the situation. The phenomenon of media concentration could hold its share of responsibility.

At the heart of article 34 of the Constitution of the Fifth French Republic, it is written that "The law establishes the rules concerning civil rights and the fundamental guarantees granted to citizens for the exercise of public freedoms; freedom, pluralism, and independence of the media. ". However, because 90% of the press is owned by 9 billionaires, this notion of pluralism is threatened. "Self-censorship has gained ground. Formerly rough interfaces of chief editorial staff have disappeared in favor of chief editorial staff which are often transmission belts between the shareholder and the editorial staff," regrets Olivier Goujon during an interview carried out for France Culture on the occasion of a program questioning the ills known to the profession.

In other words, there are subjective conflicts of interest based on relationships. During an election period, for example, certain editors-in-chief will decide to offer preferential media treatment to a candidate, because they have a special friendly relationship with the latter. This is an unethical practice and this is why the Audiovisual and Digital Communication Regulatory Authority (Arcom) continues to take legal measures so that the principle of fairness is not violated.

4.2 Increased distrust

For the work of a journalist to be recognized for its true value, the latter must build credibility. However, this credibility is increasingly affected: the population is losing confidence in journalistic productions due to the proliferation of unethical practices which are skyrocketing and for fear of what we call disinformation. "The crisis of confidence is the most serious aspect of the crisis in journalism," Olivier Goujon was indignant during this same interview for France Culture cited above in this scenario.

The latest barometer of French people's trust in the media reveals that 54% of them believe that most of the time, we should be wary of what the media say on major current affairs issues. A convincing statistic, which demonstrates that the French press is sick, and its symptoms remain persistent.

It is this loss of confidence that I sometimes experienced in the field. When I was an intern for Sun FM83 and I walked through the streets of Brignoles with my microphone in my hand to get the population to react to current issues, it happened to me on several occasions that people refused to respond to my questions for fear that I would distort their words.

Questions for reflection:

Thanks to this overview of the ethical issues related to the French media sphere, you can now rely on this basis to exchange ideas with each other. It's up to you!

1) In the past, have you ever been confronted with these errors of conduct mentioned above during yours searches for information? If so, were you aware of it? Share your experience with the rest of your colleagues.

2) Has reading this scenario changed your view of journalistic ethics and the idea you may have had of them before?

3) In your opinion, are there other causes that could explain the fact that journalism is moving away from its ethical principles that have been anchored for many decades?

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ROMANIAN STUDENTS' KNOWLEDGE, ATTITUDES AND BEHAVIORS REGARDING SUSTAINABILITY. TESTING AN ASSESSMENT INSTRUMENT

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Abstract: *Universities' role in promoting sustainability and the sustainable development goals (SDGs) is increasingly highlighted in the recent years. The high number of academic papers published in this field stands as proof of the attention received by these subjects. The integration of sustainability in education implies the transmission of principles, values and practices in teaching-learning activities, research and in institutional operations. While studies focus on the type of educational and extracurricular actions that universities may promote in order to develop more sustainability aware students, less attention is devoted to the actual impact of these practices. The Education for Sustainable Development (ESD) approach starts with the assessment of the current state: what is being done in universities and what is the level of sustainability awareness among the main actors, mainly students. Having a concrete picture regarding the students' level of sustainability literacy, we can identify opportunities to develop new implementation practices that address the sustainability issue within higher education. Currently, there is no consensus over a tool to evaluate the knowledge, attitudes as well as behaviors of students regarding sustainability and the SDGs. Nevertheless, efforts were made in this line of research. Our study focuses on the methodologies to assess these aspects. Based on previously used tools, we developed and tested a questionnaire on Romanian student population. The tested scales for sustainability knowledge, attitudes and behaviors highlight the different pillars of sustainable development, namely: social, economic and environmental, revealing that more focus is given to the latter.*

Keywords: Education for Sustainable Development (ESD), Higher education (HE), SDGs, students knowledge, attitudes and behaviors.

JEL Classification: Q01, Q56, A20, I21, I23, I25

Introduction

The responsibility of universities to engage with the overall society development go beyond their traditional roles of teaching and research. This is the "third mission" of higher education and involves activities such as innovation, knowledge transfer, community outreach and

contributing to economic and social development by fostering engagement with community partners and building capabilities for mutually beneficial interactions (Compagnucci & Spigarelli, 2020). This mission also includes the responsibility that universities have in ensuring sustainable development. Universities should play a key role as active contributors to the progress and well-being of society that goes beyond the boundaries of their campuses and act like a crucial tool for local responsibility and transformative change.

Towards this aim, University of Oradea took an active role in the *EU Green Alliance*, a nine European universities' alliance promoting the partners' contribution to sustainability from education and research areas to developing sustainable campus, community engagement and many more areas (https://eugreenalliance.eu/bitacora/).

1. Theoretical overview

1. 1. Education for Sustainable Development (ESD) in Higher Education (HE)

While there are many layers of universities' involvement in implementing sustainable development, many studies emphasize the importance HE has in at least promoting and teaching of SDGs at University level (Zamora-Polo et al., 2019). Consequently, concepts such as education for sustainable human development, sustainability literacy or education for sustainable development gained more and more attention both from policy makers, practitioners and academics.

Education for Sustainable Development (ESD) refers to a structured approach directed towards developing students' knowledge, skills, values, behaviors and attitudes to confront the challenges of sustainability (UNESCO, 2017). Within universities, the implementation of ESD involves the infusion of sustainability principles across academic curricula, the cultivation of a sustainable ethos within the institution's culture, and active participation in practical experiences such as Service-Learning. The main actions for universities include incorporating sustainable management practices, integrating sustainability policies into teaching, learning, research, and outreach activities, and developing key competencies for sustainability among students. The main actors involved in ESD are teachers, who lead in incorporating ESD pedagogies and curricula, students, who demand and take forward a sustainability focus, and sector-wide higher education organizations that provide support and guidance for ESD initiatives.

"ESD aims at developing competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts, from a local and a global perspective. Individuals should also be empowered to act in complex situations in a sustainable manner, which may require them to strike out in new directions; and to participate in socio-political processes, moving their societies towards sustainable development" (UNESCO, 2017, p. 7). The main role of ESD is to provide students the knowledge and the competencies that enables them to actively involve in the achievement of the sustainable development goals in all areas (UNESCO, 2017, p. 8).

The benefits of Education for Sustainable Development (ESD) for students and universities are significant. For students, ESD promotes critical thinking, problem-solving skills, environmental awareness, responsibility, and social and economic equity. It equips learners with the knowledge, skills, values, and attitudes necessary to understand the interconnections between social, economic, and environmental systems and take action towards a more sustainable world. Additionally, ESD can help cultivate a new generation of leaders who are prepared to address complex sustainability challenges. However, before designing action plan relevant for HEIs, assessment is needed on the current level of knowledge, along with the attitudes and behavior of students regarding SD (Chen et al., 2022).

Students are main actors in ensuring education for sustainable development by actively participating, advocating, adopting sustainable behaviors, fostering innovation, collaborating, developing critical thinking skills, and embracing their role as global citizens committed to a sustainable future. One first step in ensuring the achievement of the main objectives of the ESD is the assessment of students' knowledge and awareness of sustainable development goals (Waltner, Rieß & Mischo, 2019). Students can advocate for sustainability within their educational institutions, communities, and beyond. They can raise awareness about environmental issues, encourage sustainable policies and practices, and advocate for the integration of ESD into curricula. However, first they need to be actively engaged in learning about sustainability concepts, environmental issues, and social responsibility.

For universities, integrating or extending ESD in the curriculum and student experience offers various benefits. It provides students with interdisciplinary practices, opportunities for intellectual gain, practical skills enhancement for employability, and collaboration with colleagues from different disciplines. In this line of thought it is important to remember that not only SDG number 4 – Quality education is relevant for the educational system, but equally all SDGs need to be understood by students (Zamora-Polo et al., 2019). ESD also allows academic staff to develop innovative approaches, engage in collaborative research projects, reduce environmental impact, improve community relations, and demonstrate commitment to sustainable development to current and prospective students.

1. 2. Main actions and current state

Due to their functions and fundamental role in society, universities are compelled to take concrete steps towards integrating SDGs, aiming to foster a more resilient and sustainable society. The integration of sustainable development into university frameworks has undergone several phases since the 1970s. However, the initial phase, notably in 1980, marked a clearer and official adoption of the concept. Subsequently, during the 1990s, there was a notable expansion in the inclusion of sustainable development within study programs and university activities. In the early 2000s, a new phase emerged wherein various declarations underscored the imperative of integrating sustainable development into higher education missions and structures. Despite these efforts, sustainability has yet to be fully assimilated into the fabric of university culture (González Gaudiano, Meira-Cartea & Martínez-Fernández, 2015). Following the launch of Agenda 2030 and the SDGs, a fourth stage was inaugurated, leading to the institutionalization of Agenda 2030 within higher education.

To effectively assess the extent of SDGs integration within higher education institutions (HEIs), it is imperative to maintain continuous awareness of ongoing initiatives. However, the current state indicates there is still much required in this area. While scholarly literature underscores the pivotal role of universities in engaging with and implementing SDGs, there remains a dearth of scientific evidence elucidating which SDGs receive greater emphasis, the specific actions employed by universities to enact SDGs, or the dimensions that are prioritized. A literature review conducted by Alcántara-Rubio and colleagues (2022) revealed that universities often address SDGs in a general and descriptive manner, without delineating the specific SDGs incorporated into HEIs' strategies or detailing practical measures for SDG implementation. Consequently, there lacks a comprehensive approach at the institutional level within universities concerning SDGs.

Universities are pivotal in research, education, management, and social leadership, predominantly advancing Sustainable Development Goals (SDGs) through research and education (Alcántara-Rubio et al., 2022; Mallow, Toman & van't Land, 2020; SDSN, 2020). However, a unified approach across these areas is imperative (Alcántara-Rubio et al., 2022; Owens, 2017). Hence, universities must integrate SDGs into governance and management practices, incorporating them into institutional reports, aligning strategies, addressing

response disparities, fostering collaboration, and prioritizing values management (Pérez, Fernández & Aguilar, 2018).

While universities commonly raise awareness and integrate SDGs into curricula, project-based learning, co-curricular activities, leadership programs, and student-led initiatives (SDSN, 2020), true SDG implementation necessitates innovation beyond traditional actions. A five-step strategy is proposed: 1) mapping current initiatives; 2) fostering skills and commitment for SDGs; 3) determine key focus areas, potentials, and shortcomings; 4). Incorporate, execute, and integrate the SDGs; 5). track progress, assess effectiveness, and disseminate findings (SDSN, 2020; Alcántara-Rubio et al., 2022).

Recent research findings suggest that attention to social sustainability in the context of achieving the Sustainable Development Goals (SDGs) lags behind that of environmental sustainability (Manolis & Manoli, 2021). This implies a tendency to prioritize SDG implementation primarily through environmental perspectives, potentially neglecting their interconnectedness with social and economic dimensions. In essence, addressing the SDGs necessitates not only recognizing the interplay between the social, economic, and environmental dimensions but also fostering synergy among the goals themselves.

The absence of an integrated approach to the Sustainable Development Goals (SDGs) poses a barrier to their implementation within university settings. Additionally, the lack of a dynamic, participatory, and engaging approach to SDGs in higher education environments, aimed at fostering innovation, along with the failure to consider all SDGs when pursuing one, are recognized as additional barriers to SDG implementation by universities (Manolis & Manoli, 2021; Leal Filho et al., 2019; Serafini et al., 2022). These barriers manifest at personal levels, such as mindset limitations, resistance to change, time constraints, and insufficient knowledge of sustainable development, as well as organizational levels, including rigidity in processes like curriculum development and inconsistency across organizational tiers. Externally, barriers encompass social, cultural, political, and economic factors, as well as complex regulatory frameworks that universities must navigate to secure legitimacy and resources (Alcántara-Rubio et al., 2022).

1. 3. Sustainability literacy

UNESCO defines 8 key-competences for sustainability structured on ways of thinking: systems thinking competency, anticipatory competency, critical thinking; ways of practicing: strategic competency, collaboration competency, integrated problem-solving competencies, and ways of being: self-awareness competency, normative competency (Advance HE, 2021). All these competencies are equally important and must be inter-connected to contribute to a better life (The Council of the European Union, 2018).

Universities play a key role in fostering sustainable development competences among students through both formal academic instruction and non-formal extracurricular activities (Wendlandt Amézaga et al., 2022), embedding a modern and creative approach (Aktas et al. 2014; Sibbel, 2009; Eizaguirre, García-Feijoo & Laka, 2019). This dual approach is essential in preparing individuals to address the complex challenges of sustainability in the modern world (Sady, Zak & Rzepka, 2019).

However, prior to evaluating the extent to which activities linked to sustainable development yield tangible positive outcomes among students, it is imperative to measure the concept of sustainable development itself. Although scholars have proposed diverse assessment methodologies for education for sustainable development (Michalos et al., 2015; Biasutti & Frate, 2017; Atmaca, Kiray & Pehlivan, 2019; Marcos-Merino, Corbacho-Cuello & Hernández-Barco, 2020; Wendlandt Amézaga et al., 2022; Cheng et al., 2022), there remains a lack of consensus regarding a singular instrument for measuring this construct. Michalos and colleagues have put forth, validated, and refined a standardized questionnaire aimed at assessing this construct, encompassing items on knowledge, attitudes, and behaviors concerning sustainable development among students (Michalos et al., 2011; Michalos et al., 2012; Michalos et al., 2015; Michalos et al., 2017). Their findings indicate

that tenth-grade students are inclined to adopt positive behaviors toward sustainable development when they possess stronger knowledge and favorable attitudes in this domain (Michalos et al., 2015). Furthermore, understanding of the social and environmental aspects of sustainability seems to surpass comprehension of its economic dimensions (Michalos et al., 2015).

The questionnaire proposed and developed by Michalos and colleagues (2015) served as the foundation for subsequent research endeavors on sustainable development undertaken by numerous scholars. In a recent investigation, Wendlandt Amézaga and team (2022) conducted a study involving management students at a public university in Mexico to assess their knowledge, attitudes, and behaviors regarding sustainable development. Their findings underscore the necessity for increased integration of this topic within both academic curricula and extracurricular activities.

As in other fields, there is a strong correlation between knowledge, attitudes and behaviors regarding the SDGs (Chen et al. 2022). Zamora-Polo and colleagues (2019) highlight an important distinction of the impact on SDG students may have: the professional vs. personal life style impacts. The motivations to learn about SDGs may vary depending on which impact is perceived as stronger, however in their study it was proved that when considering all SDGs students consider that there is more impact from the personal lifestyle than from future professions (Zamora-Polo, et al., 2019).

Sustainability literacy constitutes a foundational element in the pursuit of SDGs, encompassing the knowledge, competencies, and mindsets required for individuals to actively contribute to a sustainable future and make informed decisions towards this objective (Mason, 2019). The Sustainability Literacy Test (Sulitest) is a collaborative online tool that assesses awareness and knowledge of sustainability issues. It is available to any higher education institution, in any field of study and for all levels, and is now being made available to other stakeholders. Developed by a community of volunteers, Sulitest is designed to raise awareness and track the progress of sustainability literacy. After a pilot phase between 2014-2016, as of February 2017, it has been used by 553 universities and organizations from 57 countries, with 55,627 candidates taking the test (Décamps et al., 2017).

2. Methodological framework

The aim of our study was to test and validate on Romanian population instruments to assess the knowledge, attitudes and behavior of students. After a careful review of the studies conducted in this area, we selected the most used measurement scales for each of the three components: knowledge, attitudes and behaviors regarding sustainability and the SDGs. The most complex work is that of Michalos et al. 2012 who constructed scales with 24 items for knowledge, 18 for attitudes and 17 for behaviors - the number of items were reduces in consequent works to 21, 15 and 16 respectively (Michalos et al 2017). Another extended survey structured on the three components was validated on Chinese primary, secondary and high-school students, by Chen et al (2022) with 8 items for knowledge, 9 for attitudes and 11 items reflecting sustainability behaviors. Marcos-Merino and colleagues (2020) validated similar scales on Spanish students in educational sciences, using 9 items scales for each of the three components. Specifically, for the attitudes component we reflected on the 20 items scale validated on Italian students by Biasuti and Frate (2017) and the 36 items scale tested by Atmaca, Kiray and Pehlivan (2019) on Turkish students. For the elaboration of the list of items, we made sure that each of the three pillars of sustainability (economic, social, environmental) are well covered. After the analysis of all items, the overlaps and clarity of the statements, and verifications by external experts, the authors of this paper decided to validate the three scales based on 25 items for knowledge, 39 items for attitudes scales and 25 the behavior scales (the list of items are presented in the analysis section). As our tool was specifically designed to validate the scales, we kept more items under each

component specifically to be able to choose based on student responses the most relevant ones.

The information comprised in these three scales were complemented with more general questions regarding the sources of information on sustainability and the SDGs, the access to such information from school, self-assessment regarding the knowledge of SDGs and similar aspects. The final questionnaire comprised of 20 questions, however only the three scales are the object of the current paper.

The questionnaire was sent online, using google forms, to students from management, marketing and social science fields from bachelor and master level from Faculty of Economy Science and Faculty of Social Science from University of Oradea. Data collection took place in March 2024. There was a total of 114 valid responses recorded (54 from economic sciences and 60 from social sciences). The sample included 77% females, students with ages from 18 to 59.

The data was analyzed used SPSS software, by the authors of the paper.

3. Analyses
3.1. Knowledge, attitudes and behavior of Romanian students regarding sustainability
In this section we first describe the scales with all the initial items, while in subsequent analyses we will discuss which items we propose to exclude from the final scales.

All initial scales have a good internal consistency, with Cronbach Alpha above threshold, presented in Table no. 1.

Table 1: Validity test of the three scales

Scale	Cronbach's Alpha	N of Items
KNOW	.960	24
ATTIT	.966	39
BEHAV	.908	25

In the annexed tables all items from each scale are listed.

Based on the dimensionality of the scales, we propose, by exploring the internal validity, to identify those items that have a significant contribution in measuring the overall constructs.

3.2. Dimensionality and scale reduction

3.2.1. Analysis of Knowledge scale
To verify the dimensionality of the Knowledge scale, we conducted a factor analysis, using principal component method with rotation Varimax and Kaiser normalization. Data shows three scale dimensions. The total variance explained for each component is: 42.8% for the 1st factor, 19.1% for the 2nd one and 7.1% for the 3rd one.

Results suggest that items *KNOW.4. Cell phone production and usage does not consume a lot of resources* and *KNOW.18. SD is not dependent on gender equality* distance themselves from the overall construct. In the case of these two items, we changed the direction of the Likert scale, generating the version with the positive meaning. However, the low values for these two items, respectively their distance from the rest of the items, led us to exclude them from the scale analysis. We mention that precisely the inverted meaning of the items may have generated such differences regarding the reporting of answers.

Further factor analysis shows two dimensions of the Knowledge scale, with 44.9% explained variance for the 1st component and 23% for the 2nd one.

In order to reduce the size of the scale and to be able to identify the items that have a great similarity, with small distance between them, we performed the hierarchical cluster analysis. Dendrogram and Proximity matrix shows that items 12, 13, 7, 10, that belong to the 1st dimension of Knowledge scale, have high similarity (proximity matrix includes values below 50 between these items). The 4 items address the environmental issue about sustainability: *KNOW. 12. 'Maintaining biodiversity' means maintaining the number and variety of living organisms. This is necessary for SD; KNOW. 13. SD requires shifting to the use of renewable*

resources as much as possible; *KNOW. 7. Protecting the environment is necessary for SD; KNOW. 10. Conservation of fresh water is necessary for SD.* Among these items, the most comprehensive one is item 7, because it also includes aspects related to the sustainable consumption of resources and the protection of lively organisms. In this case, we concluded to keep this item in the final scale.

Items 20, 22, 21, 23, 17 (included in the 1ˢᵗ dimension) also prove that are proximate to each other (with lower values than 50 in the proximity matrix). All items refer to the social pillar of sustainability: *KNOW.20. SD requires access to good quality education for everyone; KNOW.22. SD requires respect for human rights; KNOW.21. Respect for cultural diversity is necessary for SD; KNOW.23. SD requires people to reflect on what it means to improve the quality of life. KNOW.17. Improving people's opportunities for long and healthy lives contributes to SD.* The improvement of quality of life includes access to good education, opportunities for healthy lives and respect for human rights and cultural diversity. We concluded that item 23 is more inclusive and somehow covers the themes addressed by the other items, therefore we kept this one in our final proposed scale. As the Dendrogram show, regarding items included in the 2ⁿᵈ factor (item 6, 5, 1, 2, 11, 9, 3), we proposed to exclude items 9 and 11, as they belong to different cluster than the other ones. This decision was taken based also on the value of the average factor loading (with the items 9 and 11 included, this value is below .700).
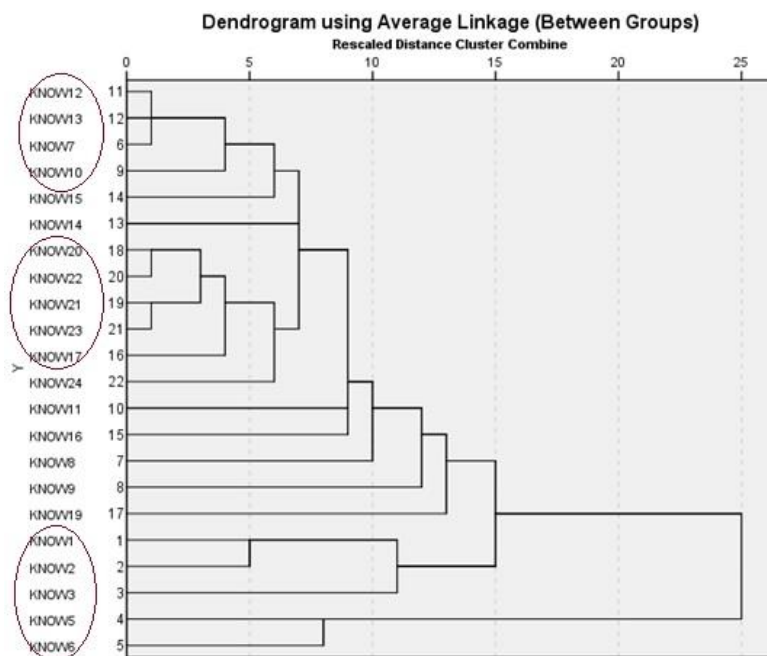
Figure 1: Dendrogram for Knowledge scale items

The final Knowledge scale was comprised of 13 items (factor analysis, Cronbach`s Alpha = .931) grouped on two dimensions: 1ˢᵗ dimension regards the social and environmental pillar of sustainability (which explains 44.9% of variance) and the 2ⁿᵈ one has items referring to the economic pillar (23.1% of variance explained).

3.2.2. Analysis of Attitudes scale

The developed scale included 39 items. To test the dimensionality, we performed the factor analysis with rotation Varimax and Kaiser normalization. Results indicate 5 scale dimensions. As items *ATT.17. I think that companies have the responsibility to reduce the*

use of packaging and disposable articles and *ATT.24. Use of fuel-efficient vehicles should be encouraged by governments* have lower values than .500, for a second round of factor analysis, we excluded these two items. New data shows that items *ATT.9. I think migrants should have all the same rights as the local people* and *ATT.33. People should sacrifice more to reduce economic differences between populations* together are included in one component, with low percentage of variance explained and also with low value of average factor loading. In this case, we excluded these items from the factor analysis. After a third round of factor analysis, we excluded also items *ATT.15. Individuals should shop in the direction of their desires* and *ATT.38. The production of high-tech products for economic development should be supported* based on the same arguments. Therefore, data shows 3 dimensions for the Attitudes scale: with 30.31% of variance for the 1ˢᵗ component, 28.9% for the 2ⁿᵈ one and 10% for the 3ʳᵈ one.

In order to reduce the numbers of items in the Attitudes scale, we performed the hierarchical cluster analysis. Dendrogram and Proximity matrix analysis show that items 19, 20, 25, 26, 39 (that belong to the 1ˢᵗ factor) place themselves close to each other (with lower values than 50 in the proximity matrix). These items refer to: *ATT.19. I think destruction of the environment is a threat to biodiversity; ATT.20. I think global warming poses a serious threat to the future of our world if cautions are not taken; ATT.25. The use of renewable energy sources needs to be widespread to leave a livable world; ATT.26. Environmental protection and people's quality of life are directly linked; ATT.39. Investments in agriculture and livestock sectors should be supported for economic development.* Items 19, 20 and 25 refer to the environment issues. Item 26 links environmental and social components of sustainability and item 39 addresses the economic development part. Global warming is one of the most acknowledged threats regarding our future world which also covers the risk regarding biodiversity. As well, the transition to renewable energy is one of the most important strategies to fight against global warming. Protecting the environment by taking measures in order to reduce global warming will ensure a future where people will have a good quality of life. Global warming has effects poses challenges to economic development, especially regarding agriculture and life stock sectors. However, we need to stress out that, in the case of item 39, it could have been a problem of misunderstanding the meaning of it, and also, because it is the final item in a very complex scale, it is possible that the subjects gave desirable answers. Taking this into account, we proposed to keep item *ATT.20. I think global warming poses a serious threat to the future of our world if cautions are not taken* in our final scale.

The 1ˢᵗ factor included also items 34, 37, 32, 35 that, according to Dendrogram and Proximity matrix analysis, are placed at small distance to one another (with lower values than 50 in the proximity matrix). All items address the crucial role of government economic policies in boosting the economy and sustainable production sector: *ATT.34. For economic investments, environments where life and property safety are provided must be established*; *ATT.32. Government economic policies should increase sustainable production even if it means spending more money; ATT.37. Government economic policies should increase fair trade; ATT.32. Government economic policies should increase sustainable production even if it means spending more money; ATT.35. Government economic policies should act if a country is wasting its natural resources.* Even if item 34 refers to a safe environment for economic investments, this actually makes a reference to government economic policies that need to tackle the safety of property and life. On another hand, item 32 addresses in an extensive manner the importance of government economic policies in a broader context of sustainable economy and production. Therefore, in order to reduce the dimension of the scale, we decided to keep item 32.

The hierarchical cluster analysis shows items 1 and item 2 form the 2ⁿᵈ factor: *ATT.1. Every person should receive education that teaches the knowledge, values and skills necessary for sustainable living in a community; ATT.2. I think that we who are living now should make sure that people in the future enjoy the same quality of life as we do today*, with a lower

distance between them (according to the Dendrogram and with values lower than 50 in the proximity matrix), which indicate their high similarity. Item 2 was kept further in the componence of the scale because a good quality of life is fostered by an education that creates a more sustainable, equitable, and fulfilling world for current and future generations. As well, item 6 (*ATT.6. Governments should adopt SD as a national priority*) and item 11 (*ATT.11. Individuals should be provided with environments where they feel safe while living*) are situated to a small distance to one another, showing their great similarity. A safe environment for the people is assured by good strategical policies, and governments play one of the most important roles in this regard. Therefore, we decided to keep item 6 further for the Attitude scale. All items (16, 23, 18, 13) forming the 3ʳᵈ dimension according to the factor analysis and the Dendrogram were kept in the scale: *ATT.16. Green areas can be dispensed with for urbanization and industrialization; ATT.23. Understanding and addressing the problems of climate change is not important; ATT.18. As long as resources are available, using more than we need now does not threaten the health and welfare of future generations; ATT.13. I think my behavior have no impact on people from other countries.*

A second round of hierarchical cluster analysis shows another grouping of the items. Items 10, 27, 4 became close to one another: *ATT.10. The society should provide free basic health services for everyone; ATT.27. I think everyone must have the access to clean drinking water; ATT.4. It is important to find ways to reduce poverty*. All items refer to aspects that are interlinked in a cycle that affects health, economic stability, and social development. Ensuring access to clean water and basic health services can lead to better social and economic opportunities, ultimately contributing to poverty reduction and sustainable development. Therefore, taking this into account its relevance, we kept item 4 in the Attitudes scale. According to the Dendrogram and the proximity matrix, another group is formed by items 14, 20, 5, 6: *ATT.14. Each country can do a lot to keep the peace in the world; ATT.20. I think global warming poses a serious threat to the future of our world if cautions are not taken; ATT.5. The society should take responsibility for the welfare of individuals and families; ATT.6. Governments should adopt SD as a national priority*. Items are characterized by great similarity (the proximity matrix shoes values lower than 50). We decided to reduce the Attitudes scale by keeping only items 5 and 20 because they collectively represent a broad spectrum of sustainability concerns as they offer a comprehensive coverage of core sustainable development principles. This focus allows for a more in-depth understanding of respondents' attitudes towards these essential elements of sustainability.
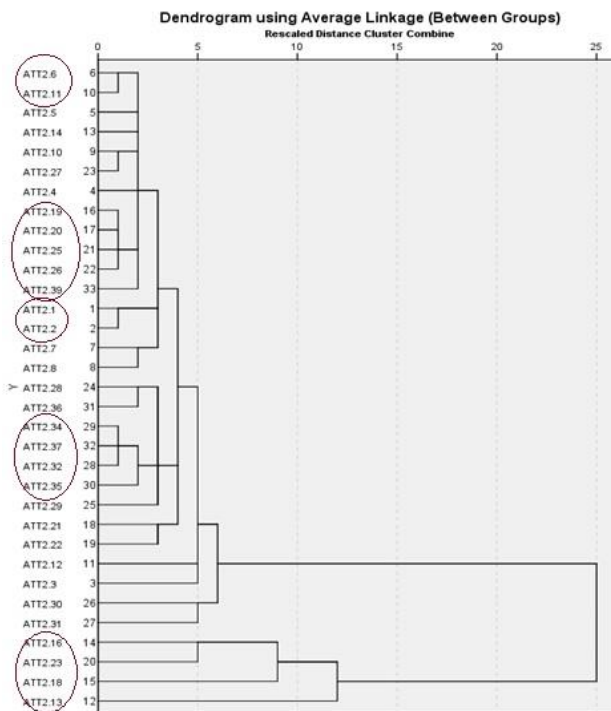
Figure 2: Dendrogram for Attitude scale items

After reducing the scale for more clarity and focus, we performed another factor analysis, using principal component method with rotation Varimax and Kaiser normalization, and we obtained a three-dimensional scale (Cronbach`s Alpha = .916): 1ˢᵗ dimension regards the social pillar of SD, the 2ⁿᵈ one refers to the economic pillar of SD, while the 3ʳᵈ dimension tackles attitudes of disengagement regarding sustainability.

3.2.3. Analysis of Behaviors scale

Initially, the Behaviors scale was composed of 25 items (Cronbach`s Alpha value = .908). For further refinement and development of the Behavior scale we conducted a factor analysis, using principal component method with rotation Varimax and Kaiser normalization. The analysis shows that items group into 6 factors. After other three sets of factor analysis we decide to: exclude item 2 (*BHV2. I choose certain products for ethical or environmental reasons, even if they are a bit more expensive*), and 1 (*BHV1. I am actively involved in SDG*) because they have values less than .500; reduce item 8 (*BHV8. I do not think about how I might be damaging the natural environment*) and item 14 (*BHV14. I treat people respectfully, except those who have racial or ethnic backgrounds different from my own*) because they separately form one component and, while their meaning is reversed (negative content of the items), they could not have been accurately perceived by respondents; we deleted items 21 (*BHV21. I avoid buying goods from companies with a bad reputation for looking after their employees and the environment*), and item 22 (*BHV22. I often purchase second-hand goods*) as they had values lower than .500. The last round of factor analysis indicates 4 dimensions for the Behavior scale. The total variance explained for each component is: 19.5% for the 1ˢᵗ factor, 19% for the 2ⁿᵈ one, 16.7% for the 3ʳᵈ one, and 14.1% for the 4ᵗʰ component.

In order to see the underlying structure of the Behaviors scale and reduce the number of items in the scale, we performed the hierarchical cluster analysis. Dendrogram and Proximity matrix analysis show that items 13 and 15 (that belong to the 1ˢᵗ factor) place themselves at

a small distance one from another. We choose to retain item *BHV15. I give men and women, boys and girls the same level of respect* over item *BHV13. When I use the computer or phone for social networking or gaming I always treat everyone as respectfully as I would in person* because it emphasizes a critical and universally relevant aspect of respect and equality that extends across all areas of interaction, both online and offline.

The componence of the 2nd factor recalls item *BHV5. I avoid excessive food purchases*, and item *BHV11. I reduce the energy I use at home to protect the environment.* The Dendrogram and proximity matrix reveals the high degree of similarity between these two items. Therefore, we kept item 11 because addresses a more measurable and practical action that aligns with broader environmental goals and can lead to substantial benefits. Further, items *BHV17. I participate in democratic activities related to student life at my university*, and item *BHV18. I volunteer in social or environmental organizations* form the 3rd factor, and are also situated at small distance to one another, leading us to the decision to retain item 18. Retaining this item is more relevant because it encompasses a broader scope of activities, applies to a wider audience, not only students, and has the potential for greater and more sustained impact on social and environmental issues. Eventually, factor 4 is formed by item *BHV19. I get informed on environmental issues in web pages and media*, and item *BHV20. I get informed on international social issues in web pages and media* situated very close to one another. Both items refer to information about sustainability issues, however we decided to retain item 20 because it refers to a broader and more general spectrum of issue. Moreover, there could have been a problem of misunderstanding the content of the item among respondents.

Figure 3: Dendrogram for Behaviors scale items
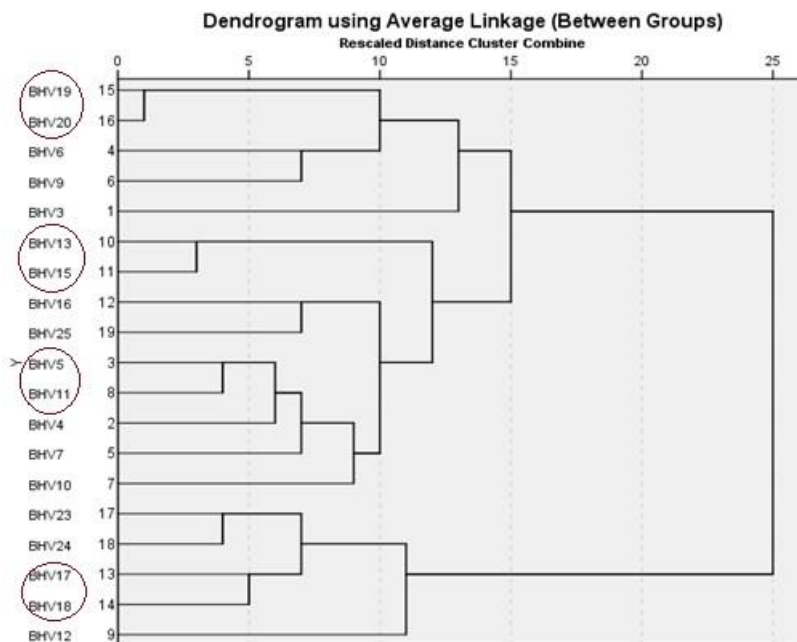
After reducing the number of items and dimensions of the Behaviors scale, the factor analysis (Cronbach`s Alpha = .871) indicated that items grouped in three dimensions: the 1st dimension is formed by items that refer to general sustainability behaviors, the 2nd one addresses an environment-oriented behavior, while the 3rd dimension shows participation and a pro-active behavior.

4. Conclusion and future prospects

In this paper we reviewed the literature regarding education for sustainability, focusing on the concepts of sustainability literacy and sustainability awareness. There are several studies that seek to clarify the actions and directions that universities take in order to promote sustainable development, respectively studies that aim to capture the current level of students' training in terms of sustainability. In order to have a consistent and overall picture of the role of higher education in the formation of literate individuals regarding sustainability, it is recommended to start with an assessment of the current state, with the identification of the actions carried out by the universities and also analysis of students' knowledge, attitudes and behaviors related to sustainability.

Our study aimed to develop and test scales for measuring knowledge, attitudes and behaviors for Romanian students. The scales were constructed based on several international studies, and through the statistical analyses we proved the internal consistency of the measurements and also reduced the number of items in each scale. The results presented are an intermediary phase within a larger study. Future research will validate these reduced scales on large samples, which will also allow more detailed analyses to explain the sustainability and SDGs related behaviors in higher education.

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ANNEX. Lists of initial items used in the three scales.

Items in KNOWLEDGE scale (1-5 point Likert scale)
KNOW. 1. Economic development is necessary for sustainable development (SD)
KNOW. 2. SD requires businesses to behave responsibly to their employees, customers and suppliers
KNOW. 3. SD results in fair distribution of goods and services to all people around the world
KNOW. 4. Cell phone production and usage does not consume a lot of resources
KNOW. 5. SD requires that people understand how the economy works
KNOW. 6. SD allows the environment to be radically altered in order to create/maintain jobs
KNOW. 7. Protecting the environment is necessary for SD
KNOW. 8. Human actions are contributing to changes in our atmosphere and climate systems
KNOW. 9. SD requires individuals to reduce all kinds of waste
KNOW. 10. Conservation of fresh water is necessary for SD
KNOW. 11. For sustainable development, people need to be educated in how to protect themselves against natural disasters
KNOW. 12. 'Maintaining biodiversity' means maintaining the number and variety of living organisms. This is necessary for SD
KNOW. 13. SD requires shifting to the use of renewable resources as much as possible
KNOW. 14. A culture of peace where people settle conflicts by discussion is necessary for SD
KNOW. 15. Good citizenship is necessary for SD
KNOW. 16. Sustainable development requires global partnership
KNOW. 17. Improving people's opportunities for long and healthy lives contributes to SD
KNOW. 18. SD is not dependent on gender equality
KNOW. 19. The elimination of poverty is necessary for SD
KNOW. 20. SD requires access to good quality education for everyone
KNOW. 21. Respect for cultural diversity is necessary for SD
KNOW. 22. SD requires respect for human rights
KNOW. 23. SD requires people to reflect on what it means to improve the quality of life
KNOW. 24. Sustainable development requires ending hunger and malnutrition in all its forms

Items in ATTITUDES scale (1-5 point Likert scale)
ATT.1. Every person should receive education that teaches the knowledge, values and skills necessary for sustainable living in a community
ATT.2. I think that we who are living now should make sure that people in the future enjoy the same quality of life as we do today
ATT.3. I feel I have the responsibility to do something about the problems of the world
ATT.4. It is important to find ways to reduce poverty
ATT.5. The society should take responsibility for the welfare of individuals and families
ATT.6. Governments should adopt SD as a national priority
ATT.7. Citizens should be well-informed and actively participate in democratic processes like voting
ATT.8. The society should further promote equal opportunities for males and females
ATT.9. I think migrants should have all the same rights as the local people.
ATT.10. The society should provide free basic health services for everyone
ATT.11. Individuals should be provided with environments where they feel safe while living

| ATT.12. Household tasks should be equally shared among members of the household regardless of gender |
| ATT.13. I think my behavior have no impact on people from other countries |
| ATT.14. Each country can do a lot to keep the peace in the world |
| ATT.15. Individuals should shop in the direction of their desires |
| ATT.16. Green areas can be dispensed with for urbanization and industrialization |
| ATT.17. I think that companies have the responsibility to reduce the use of packaging and disposable articles |
| ATT.18. As long as resources are available, using more than we need now does not threaten the health and welfare of future generations |
| ATT.19. I think destruction of the environment is a threat to biodiversity |
| ATT.20. I think global warming poses a serious threat to the future of our world if cautions are not taken |
| ATT.21. Biodiversity should be protected at the expense of industrial agricultural production |
| ATT.22. People who pollute our land, air or water should pay for damage done to communities and the environment |
| ATT.23. Understanding and addressing the problems of climate change is not important |
| ATT.24. Use of fuel-efficient vehicles should be encouraged by governments |
| ATT.25. The use of renewable energy sources needs to be widespread to leave a livable world |
| ATT.26. Environmental protection and people's quality of life are directly linked |
| ATT.27. I think everyone must have the access to clean drinking water |
| ATT.28. Environmental protection is more important than industrial growth |
| ATT.29. SD will not be possible until wealthier nations stop exploiting workers in poorer nations |
| ATT.30. I think it is right to boycott companies that are known to provide poor workplace conditions for their employees. |
| ATT.31. It is possible to protect the environment and create jobs even when the economy is doing poorly |
| ATT.32. Government economic policies should increase sustainable production even if it means spending more money |
| ATT.33. People should sacrifice more to reduce economic differences between populations |
| ATT.34. For economic investments, environments where life and property safety are provided must be established |
| ATT.35. Government economic policies should act if a country is wasting its natural resources |
| ATT.36. Reducing poverty and hunger in the world is more important than increasing the economic well-being of the industrialized countries |
| ATT.37. Government economic policies should increases fair trade |
| ATT.38. The production of high-tech products for economic development should be supported. |
| ATT.39. Investments in agriculture and livestock sectors should be supported for economic development. |

Items in BEHAVIORS scale (1-5 point Likert scale)
BHV1. I am actively involved in SDG
BHV2. I choose certain products for ethical or environmental reasons, even if they are a bit more expensive
BHV3. I choose to walk, bike or use public transport vehicle to places instead of using a motor vehicle
BHV4. I never waste water
BHV5. I avoid excessive food purchases
BHV6. I don`t use plastic bags to wrap things
BHV7. At home I recycle as much as I can
BHV8. I do not think about how I might be damaging the natural environment
BHV9. I have changed my personal lifestyle to reduce waste
BHV10. I pick up litter when I see it in a park or a natural area
BHV11. I reduce the energy I use at home (e.g., by turning the heating down or turning the air conditioning up or down or by turning off the lights when leaving a room) to protect the environment

BHV12. I report environment and social issues to authorities
BHV13. When I use the computer or phone for social networking or gaming I always treat everyone as respectfully as I would in person
BHV14. I treat people respectfully, except those who have racial or ethnic backgrounds different from my own
BHV15. I give men and women, boys and girls the same level of respect
BHV16. I try to do things that will help people living in poverty
BHV17. I participate in democratic activities related to student life at my university
BHV18. I volunteer in social or environmental organizations
BHV19. I get informed on environmental issues in web pages and media
BHV20. I get informed on international social issues in web pages and media]
BHV21. I avoid buying goods from companies with a bad reputation for looking after their employees and the environment
BHV22. I often purchase second-hand goods
BHV23. I participate in activities promoting equality between men and women
BHV24. I participate in activities in favor of environmental protection.
BHV25. I convey the importance of protecting the environment to my family members

NAVIGATIONAL DYNAMICS IN THE DIGITAL AGE: DIGITAL LEADERSHIP AND E-LEADERSHIP IN ORGANIZATIONAL TRANSFORMATION

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Abstract: *Today's business world is highly dynamic, volatile, uncertain, complex, and ambiguous (VUCA). It is driven by ever faster, more efficient, and more numerous technological advances. Digital technologies have a huge impact not only on how an organization works but also on its business model. This has led to fundamental changes in the nature of leadership as well, from the underlying traditional forms of leadership to modern forms of leadership. In this context, the ability to successfully navigate these new technological waves has become an essential challenge for leaders. The digital transformation of organizations in the digital era marks the need for a holistic and integrative approach to the concepts of digital leadership and e-leadership, which are becoming a priority for organizations in their desire to remain competitive and successful as long as possible. The leadership process itself is a predictor of how change is perceived, managed, and integrated within an organization, not just at the surface level but also deep into its structure. This paper explores in detail the concepts of digital leadership and e-leadership, examining their importance and how they act to ensure that organizations are effectively guided through the digital transformation process, advancing with digital technologies. The research method is bibliometric analysis to mark the synapses between the two concepts and their network with other key notions. The main conclusion of the paper is that digital leadership and e-leadership are integral and complementary; they act together, without putting a sign of equality between them, to ensure the success of organizations in addressing the new technological requirements and disruptions encountered in their business environment.*

Keywords: *digital leadership, e-leadership, digital transformation, bibliometric analysis*
JEL Classification: M0, M2, O3

1.Introduction

The digital age is a period when information technology and the Internet have become essential elements in our daily lives, transforming how we interconnect, work, and obtain information (Savastano, Amendola and D'Ascenzo, 2018).

The digital age propelled by technological waves has a double effect on the business environment; digital technologies are a catalyst for more innovation opportunities but also a generator of disruptions that require a high level of adaptability on the part of the

organization. In this era, the level of competitiveness has also increased significantly, and innovation has become a prerequisite for success (Bakshi, 2019).

Business models are upgrading because of the implementation of digital technologies, and digitization is part of the new era (Achar et. al.,2022). Integrating digital technologies into a business organization's strategy starts the process of digitization. Therefore, classic business models are no longer relevant, and the way of relating to competitors and measuring performance has changed significantly (Matoušková, 2022). As Caar (2001) points out, the digital organization represents a new type of organization that is completely different from previous ones in terms of its structure, organization, and operation.

According to Akib et al. (2022), resilience is viewed as a crucial element for an organization's survival. This involves the organization's capacity to adapt to change by utilizing, promoting, and taking ownership of a range of variables, including leadership agility, digital skills, innovation, and digital technologies.

2. Digital leadership and e-leadership

There is an interconnectivity between the two forms of leadership in the digital age. Both have in common the use of digital technologies (Amorim et al. 2023). Torre and Sarti (2020) argue that leadership in the present context must navigate digital contexts and that there is a relationship between the two forms of leadership.

The research by Bauwens and Cortellazzo (2024) highlights the necessity of seamlessly integrating skills and behaviors associated with conventional, situational based leadership with the innovative requirements of digital age.

The evolutionary process of e-leadership has spanned over a decade and has involved a reorganization of organizational functions with information technology as the main tool used in this process (Avolio et al.,2014).

E-leadership is the process of guiding and directing teams in the digital age, which is shaped by the globalization of the contemporary world. E-leadership in a digitally transformative context is defined as the management process that provides guidance to individuals on how to use information technology in their work, with the goal of generating change that facilitates the achievement of a set of organizational goals related to digital organizational initiatives (Yudha, Herlambang and Susanto, 2019. From Pulley's and Sessa (2001) perspective, e-leadership is characterized by complexity. E-leadership is also a process of fostering a culture of digital innovation, according to Peixoto et al. (2022).

This new form, e-leadership, provides communication between leaders and subordinates via the Internet (Aggarwa, 2018). EU Leaders is a project that focuses the European Union's emphasis on the need to develop an organization's e-leadership skills, which are crucial to cope with the digital age (Amorim et al. 2023).

Digitization and the new changes it has brought to organizations have led to the emergence of digital leadership, as an evolved form from e-leadership. Digital leadership is based on a range of skills (both social and technical), making it necessary to update traditional leadership styles (Dorozalla and Klus, 2019). Digitization and the new changes it has brought to organizations have led to the idea that digital leadership involves an in-depth understanding of digital technologies and their impact on the whole system of the organization, playing a role in ensuring the digital transformation of organizations (Topcuoglu et al., 2023).

According to Eberl and Drews (2021, p.5): ''digital leadership is a complex construct aiming for a customer-centered, digitally enabled, leading-edge business model by transforming the role, skills, and style of the digital leader, realizing a digital organization, including governance, vision, values, structure, culture, decision making processes, adjusting people's management, virtual teams, knowledge, and communication and collaboration on the individual level''.

Digital leadership is a dynamic process, which consists in the power of social influence belonging to an individual (or a group of individuals) to engage other members of the group in the achievement of tasks and objectives established, over a period, in an organizational context specifically, a process based on the widespread use of digital technologies (Bibu, Abrudan and Sivulca, 2023).

E-leadership refers to the transformation of conventional leadership into a digital environment, concentrating on the proficient management of digital technology, digital reinforcement of employees' motivation, and digital transformation handling. On the other hand, digital leadership" involves a broader set of digital strategies and practices (Ahuja et al., 2023).

The concept of e-leadership is concerned with the phenomenon of leadership in electronic environments (Hensellek, 2020). Hensellek (2020) makes a delineation between the two notions of leadership and argues that digital leadership is a broader field of research, with a focus on cultivating a digital mindset and skill set that can facilitate successful digitization in both society and the economy.

3. Methodological framework of the research and results

The primary goal of this paper is to delve into the ever-evolving landscape of the digital world. In particular, this study aims to explore the multifaceted relationship between leadership and the digital era, examining how these two concepts intersect and interact to drive the transformation of organizations. The research methods are a literature review and the use of bibliometric analysis, which perfectly fits our goal. In addition, these reviews are objective, providing a broad perspective on the field of research. Furthermore, bibliometric analysis utilizes statistical methods to analyze data (Saputro et al., 2023).

The research questions are: What does digital leadership mean? ; What does e-leadership mean?; What is the relationship between the two concepts and what is the point of convergence between the two in ensuring digital transformation?;How digital leadership and e-leadership influence transformation?

The database was made up of 346 articles from the Web of Science. The type of analysis selected was co-occurrence and the unit of analysis was the authors' keywords and all keywords. The measurement method was full counting. The program used to view the data was VOSviewer because it provides an unparalleled ability to analyze large datasets, as noted by Sood, Kumar, and Saini (2021). In addition, Vosviewer has made it easier to monitor trends in sustainable organizational management according to Ogutu, El Archi, and Dávid (2023)

For the first bibliometric analysis, the minimum number of occurrences of a keyword was three, and 293 articles were selected for evaluation, out of a total of 184 author keywords. Six keywords were deemed the most significant, and the keywords with the highest impact were ultimately chosen for inclusion in our analysis.

For the second analysis 53 articles were extracted from the Web of Science based on two keywords (digital leadership and e-leadership). Despite the vast number of words available (329), only a mere 16 were deemed worthy enough to be included in the mapping process, meeting the stringent minimum occurrence requirement set at 5. The results about the e-leadership concept are presented in Figure 1, below.
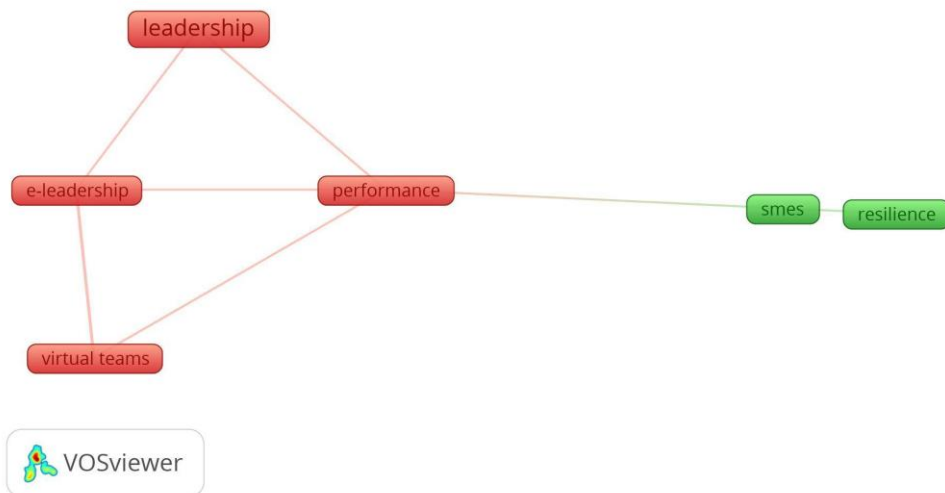
Figure 1: Bibliometric map of the e-leadership concept
Source: made by the author based on VOSviewer

The six items are thoughtfully and strategically divided into two distinct categories, each encompassing a unique set of concepts and qualities. The first category is made up of four words (e-leadership, leadership, performance, and virtual teams). The second category is comprised of two equally crucial items – SMEs (Small and medium-sized enterprises) and resilience. The word with the highest frequency is leadership with 10 occurrences. We found performance with 4 occurrences and e-leadership with 3 occurrences. E-leadership is directly linked to performance and virtual teams.

Recent studies have revealed that e-leadership not only plays a crucial role in enhancing organizational performance, but also has a significant influence on promoting innovation within the organization. A key role is played by employees and the improvement of their innovation behavior (Zhong, Sukpasjaroen and Pu, 2023).

E-leadership is also the process of guiding and directing teams in the digital age, which is shaped by the globalization of the contemporary world. E-leadership use by managers has a positive effect on the trust and commitment of members of virtual teams. This has the potential to enhance the performance of global business operations which utilize virtual teams (Vought, 2017).In this context, leaders may be geographically separated from their teams, yet they are able to maintain a sense of connection through the use of digital technology, such as computers and the internet (DasGupta, 2013).

By strategically implementing e-leadership within an organization, it enables the effective and efficient adaptation of that entity to the dynamic digital landscape, the ability to make informed decisions, and the identification and exploitation of growth opportunities (Gunawan et al., 2023).

The relationship between e-leadership and digital leadership is presented in Figure 2, below.
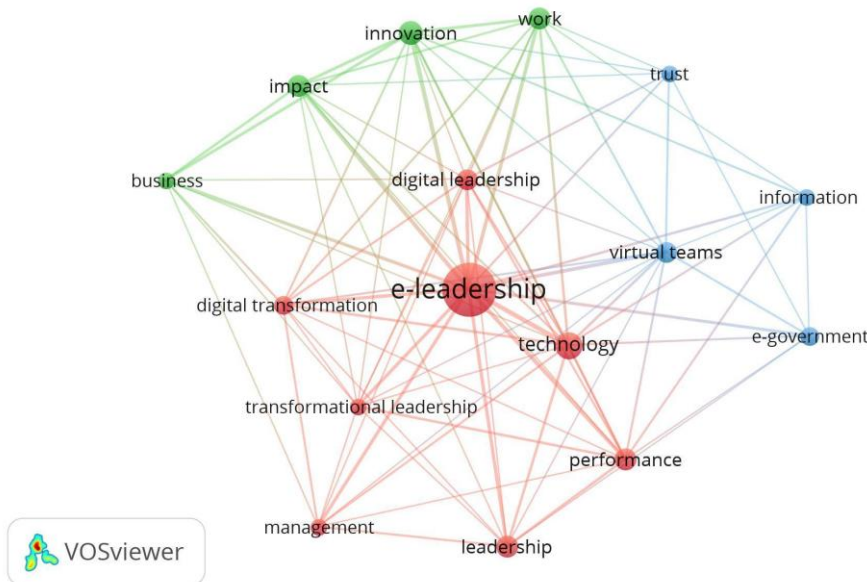
Figure 2: The relationship between e-leadership and digital leadership
Source: made by the author based on VOSviewer

Among the 16 items included in this distribution, the first cluster in red color is a highly captivating combination of keywords that encompasses the rapidly evolving and complex landscape of digital leadership (digital leadership, digital transformation, e-leadership, leadership, management, performance, technology, transformational leadership). The second cluster in green color is made up of business, innovation, and work. The third cluster in blue color has four items: e-government, information, trust, and virtual teams.

Both e-leadership and digital leadership have a direct connection with digital transformation, management, technologies, performance, transformational leadership, leadership, business, and innovation. Maria and Pedro Araújo Pietrafesa (2023) points out that e-leadership needs a transformational component to support innovation. The concept of transformational leadership is of paramount importance in enabling e-business analytics to gain and sustain a competitive advantage (Saleh and Auso, 2023).

The use by managers of the transformational leadership style is significant in the context of digital transformation projects, as it facilitates the enhancement and optimization of the dynamic capabilities of the organization (Huang, Jiang and Chang, 2023). Ly (2023) validates through his research the impact that digital transformational leadership has on the digital transformation process, the working tool being the agility of the organization. Management plays a key role for both leadership styles (e-leadership and digital leadership) and to ensure the digital transformation it is necessary that the applied management models be as innovative as possible (Maria and Pedro Araújo Pietrafesa 2023).

Some authors (Karakose et al., 2022; Cortellazzo, Bruni and Zampieri, 2019) argue that e-leadership is a component of digital leadership, while others (Kalashnikov, Peredreeva and Katarína Hercegová, 2019; Tigre, Curado and Henriques, 2022) argue that digital leadership includes e-leadership. Digital leadership is a more complex and comprehensive concept, which includes e-leadership as a starting point. E-leadership applies to virtual environments, but digital leadership ensures digital transformation by managing digital technologies (Telli, 2022).

4. Conclusion

Upon closer examination, it becomes evident that a profound correlation exists between digital leadership and e-leadership. While these two concepts may appear similar on the surface, they possess distinct characteristics that set them apart. Both stem from a foundation rooted in traditional leadership styles, yet they seamlessly merge into the larger realm of digital transformation. This integration of traditional and digital elements highlights the dynamic and ever-evolving nature of effective leadership in today's rapidly changing technological landscape.

Our opinion is that e-leadership represents a first step in the process of digital transformation of an organization (surface level), and that digital leadership happens in the more advanced stages of organization's digital transformation and, therefore represents a major in depth change of the organization.

In the context of an increasingly digital world, businesses are under pressure to remain competitive. In this environment, the managers' ability to implement and apply e-leadership and digital leadership in an effective and efficient manner in their activity is essential for the success of their organization.

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ONLINE CONSUMPTION HABITS OF OLDER PEOPLE IN HUNGARY

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Abstract: *People's lives have been significantly affected by COVID-19, including the elderly, who have sought to limit personal contact, especially during quarantine periods. Their shopping habits, and their daily lives changed, too. The basis of my research was a longitudinal study conducted by the Department of Gerontology of the University of Debrecen, Faculty of Health Sciences. I conducted a two-region study in the summer of 2021, using the interview technique. I was looking for answers to the question how and to what extent the COVID-19 epidemic has affected the lives of members of older people's organisations, and how and in what ways their habits have changed, such as the use of digital devices and consumption in general. The results show that during the pandemic, in 2020, telephone contact was the main mode of communication between members of organisations, while in the following year, 2021, there were almost equal numbers of people who preferred online contact and those who preferred traditional telephone contact. Older people have presumably become more open to the online world, which is why internet use and online contact have become more common. During the period under review, older people's willingness to use digital tools increased and this also broadened their opportunities, such as by developing their skills, which was often a necessity. This is also true for online purchases. Online consumption has also increased among older age groups, as well as among all age groups of domestic consumers. For older people in particular, this is influenced by their opportunities for digitalisation. The main advantage of digitalisation for older people is that they can keep in touch with each other and with their family members living further away much more easily, but the disadvantage is the financial cost, as not all older people can afford to have the right technical conditions, internet access and skills.*

Keywords: aging; Covid-19; online shopping habits

JEL Classification: Z13

Introduction

The number and proportion of older people is increasing in our country and around the world, and there is a growing opportunity and need for scientific research on them. By 2025, more than 25% of Europe's population will be over 65 years of age, which will be the greatest challenge of the 21st century, both socially and economically, and this is also true for Hungary (European Commission, 2018).
Ageing is not the same for all people, because there can be huge differences between life paths, life events and problems (Hegedüs, 2020).
Definitions of old age vary in the literature. Klebl (2007) includes people aged 50 and over in the target group for age marketing, but divides them into further subgroups (50, 60, and 70+ years). The World Health Organisation (WHO) refers to people aged 50 and over as ageing, while people aged 65 and over are considered older people (Balázs and Bene, 2019).
According to Bálint Boga (2017), the elderly can be divided into two main groups: young-old (<75); old-old (75<). The over-50 age group is referred to as the "Silver Economy", which

includes all services that meet the needs of people over 50. It is understood as a set of services and products that, in addition to meeting needs, also increase economic activity.

Online shopping habits in Hungary

The GfK Hungária Market Research Institute surveyed people aged between 15 and 69 in 2016, and the results showed that online shopping is becoming increasingly popular among Hungarian consumers. 9 out of 10 people surveyed have made a purchase on an online platform. The organisation's 2016 research revealed that consumers have also become more open to online shopping abroad due to lower prices. The survey also found that shoppers are sticking to sites that are tried and trusted. People prefer to use their smart phones to read the news and browse "social media", while for online shopping they prefer laptops and desktops. People mainly order books, electronic equipment and fashion items online. In 2020, COVID-19 will also make it possible to buy food online in Hungary. According to the survey, younger people mainly prefer smart phones and tablets, with desktop computers in third place. The reverse is true for older age groups, suggesting that the size of the device is an important consideration for older people (Nagy and Keller, 2017). Figure 1 shows the distribution of age groups in digital device use:
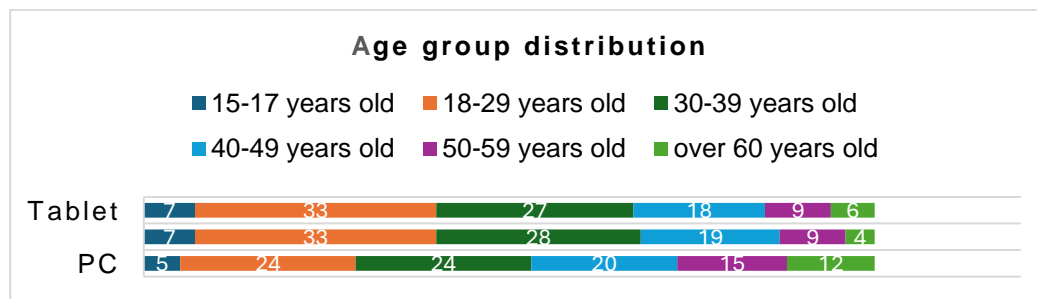
Figure 1: Distribution of digital devices by age group (data should be interpreted as a percentage)
Source: Own editing according to Nagy and Keller, 2017:6

Types of online buyers in Hungary

Below I present two typologies of online shoppers from the wide range of products on offer, without claiming to be exhaustive.
Bányai and Novák (2017) divided online consumers into five main groups according to the primary purpose of the purchase:

1. Convenience shoppers: they have a higher average age. This type of shopper orders online for convenience, buying mainly groceries.
2. Thorough shoppers: they prefer to shop online because there is a lot of information available on the internet about the product they want, but they often buy in person things they have previously bought online.
3. Saver shoppers: this type of shopper is constantly on the lookout for promotions, and will shop online if the product they want to buy is cheaper online than in stores, and even prefer this type of shopping if they get a discount after the purchase.
4. Hardcore shoppers: regular online shoppers. They are not only happy to order online for themselves, but also for others. They often order from foreign sites and are not deterred by the possibility of paying online by credit card. They also frequently visit popular sites for browsing.

5. Busy shoppers: this type of shopper is not interested in the possibility of a sale. They don't browse unnecessarily, they only visit websites with the intention of making a purchase, and due to time constraints they only spend as much time browsing as they need to finalise the order. They only order for themselves.

Older consumers

Following the launch of COVID-19 in 2019, the use of ICT tools has come to the fore. During the quarantine period, elderly organisations have become more attentive to their members, even taking advantage of ICT. A lot of innovative ideas were generated during the quarantine period, a period that was more difficult for urban elderly people living in a flat without a balcony. According to the interviewees, it was easier for the elderly in the villages to cope mentally with the quarantine period. Contact with family members was the most lacking for the interviewees (Patyán, et al., 2021).

The use of ICT tools can have a positive impact on the mental health of older people, which can also improve their memory. Older people who use ICT tools are less likely to suffer from depression than their peers who do not use ICT tools. Research shows that older people who regularly spend time using ICT tools feel less isolated. The digital divide between older people and young people who use digital technologies is still significant, but has narrowed significantly in recent years (Kristóf and Győri, 2021).

There is a growing interest in technological devices for older people. Geriatric technology covers devices for older people that improve their quality of life and support them in maintaining their independence. ICT opportunities can also reduce older people's feelings of loneliness and exclusion (Tóth, 2022). By continuously monitoring their health, the deterioration of their health can be slowed down and reduced. They can keep in touch with more distant family members more easily, even by video call, which, if assisted by a younger family member, can also have intergenerational benefits and foster closer family ties (Bene et al., 2020). There are also negative effects of using ICT devices, such as lack of personal contact, poor posture due to prolonged sitting, and looking at a monitor can impair eye health, lead to internet addiction, and can also be victims of internet abuse (Kristóf and Győri, 2021).

At the roundtable discussion held in the framework of the XI International Conference of Gerontology Days in Nyíregyháza, experts analysed the consumer protection concerns of the elderly. Participants agreed that elderly consumers need increased attention in the context of accelerated technological change. Participants discussed the following topics: traps, making older people more aware consumers, and contacting consumer protection agencies. The police captain said that the gullibility of the elderly is being exploited groups are still present today and will always be present. He highlighted the dangers of easy loans on the internet (Bene, 2019).

The characteristics of the elderly in the digital space in Hungary are described in more detail in Bene et al (2020). They highlight the role of digitalisation beyond health solutions to community support and combating loneliness. At the same time, they draw attention to the characteristics and opportunities that partly explain the vulnerability of older people to consumerism. These are:

-   Their regular monthly income is their pension;
-   they have plenty of free time;
-   many live alone;
-   many have family members living far away (often abroad);
-   they face a real risk of loneliness and isolation.
-   pensioner clubs, other active retirement communities;
-   they can go to events, offices, financial institutions.

In their daily lives, they have the time and opportunity to engage in personal dialogues in different local communities. They can participate in various events and in the ever-expanding elderly education programme. They can also get involved in communities specifically for older people and join initiatives (e.g. sports, volunteering, education) in the online space (Bene, 2022). It should be borne in mind that older people are motivated differently from people of working age. Experience has shown that many of them are prone to take undue risks, even consciously. Socialised in a significantly different environment from today (cohort effect), their information processing and problem-solving patterns are less up-to-date and do not sufficiently support their advocacy. Technological and even linguistic changes work against them becoming aware consumers (online consumption). The digital landscape before the pandemic was characterised by the slow catch-up of older people in the digital space.

Table 1 shows the most popular online activities of Rat-era natives and veterans (consumers over 65), showing that they differ most for online purchases (Bernschütz et al., 2020).

Table 1: Comparison of preferred internet activities for two generations

Generation	Activity	Never	Sometimes	Often	Very often
Born during the Ratko era	Sending email	7,2	47,5	33,1	12,3
	Chatting (written communication)	14,8	40,5	34,5	10,2
	Online telephony (verbal communication) via the internet	34,8	37,0	21,5	6,7
	Activity	**Never**	**Sometimes**	**Often**	**Very often**
	Use of social networking sites	0,0	7,6	54,2	38,2
	Read news on a social networking site	1,7	14,5	51,0	32,8
	Read news on a news portal (not a community site)	4,9	24,5	39,7	30,9
	Internet gaming	46,5	23,9	19,3	10,2
	Online shopping	26,4	58,6	12,5	2,5
Veterans	Sending email	7,9	48,5	34,9	8,7
	Chatting (written communication)	14,6	45,0	37,1	3,3
	Online telephony (verbal communication) via the internet	42,8	36,0	18,6	2,5
	Use of social networking sites	0,0	9,8	63,7	26,5
	Read news on a social networking site	3,3	14,3	60,0	22,4
	Read news on a news portal (not a community site)	5,7	32,4	43,0	18,9
	Internet gaming	48,3	25,8	17,1	8,8

	Online shopping	36,7	52,5	9,2	1,7

Source: Own editing according to Bernschütz et al, 2020:44

Kenesei (2020) researched assistive technology use in old age. She used an online questionnaire technique among elderly people over 60 years of age. 65% of respondents use the internet daily, but 13% do not even use it monthly. Kenesei's survey found that on average they spend 11.5 hours a week on the internet, mostly from a desktop computer. They use the internet to keep in touch, read the news and find information.

Hegedüs (2020) studied behavioural changes in individuals over 50. 73 in-depth interviews were conducted. The interviewees do not have problems with their livelihood, 17 of them are actively working. Most of the interviewees have tertiary or secondary education and most are married. Interviewees were asked to recall a point in their lives when their shopping habits changed, either positively or negatively. Interviewees had difficulty or no difficulty in recalling this. Most had changed their shopping habits because of their children or their health.

Mehrolia and colleagues studied the shopping habits of online food ordering during the pandemic in 2021. They conducted statistical analyses to examine the association between age and online food ordering. They found no significant association between the two factors, which may be due to the low participation of people aged 50 and over in the study. At the same time, the results showed that those who tried online ordering once became repeat customers.

Research method and sample

The aim of the longitudinal research carried out at the Department of Gerontology, Faculty of Health Sciences, University of Debrecen, is to assess the functioning and resilience of pensioner organisations (Bene, Patyán, 2022). The research will be conducted in three periods: spring 2020, summer 2021 and spring 2023, by interviewing the leaders of the county clubs of the two large pensioners' organisations and, on their recommendation, the leaders of other county pensioners' member organisations. The present study explores the online consumption habits of active seniors in retirement clubs in light of the COVID-19 epidemic and related restrictive regulations.

I focused my research on two major regions to explore possible similarities and differences. I started my research by content analysing the relevant interviews from the COVID survey, and then I completed interviews with the 2021 survey respondents based on a set of defined criteria, which I analysed using the previous code table to supplement the new information. In order to improve comparability of the data, I tried to analyse almost the same number of interviews from the two regions (east of the Tisza river and Transdanubian).

The sampling frame consisted of the county and affiliate leaders of the National Association of Hungarian Pensioners' Associations and the National Association of Pensioners' Clubs and Seniors "Life for Years". Table 2 shows the respondents. The average age of the interviewees was 70.5 years. 6 men and 13 women were interviewed.

The interviews were mostly arranged and conducted by phone or Facebook messenger. The interviews were mostly 30-40 minutes long. The scheduling was difficult because of the summer period, the elderly organisations were trying to catch up with their cancelled events and many were on holiday.

Table 2: Presentation of samples

Name	Organisation	Region
Lászlóné Nagy Ilona	Head of Szolnok City Clubs and Pensioners' Interest and Cultural Association	east of the Tisza river

Name	Organisation	Region
Dr. Csiszár Gabriella	Head of the Pensioners' Association of Nyíregyháza and its Region	east of the Tisza river
Molnár Ferencné	Head of the Association of Pensioners' Organisations of Hajdú-Bihar County and Debrecen	east of the Tisza river
Name	**Organisation**	**Region**
Szrenka Pálné	Head of the Association of Pensioners' Associations of Békés County	east of the Tisza river
Teszárovics Miklós	Head of the Pensioners' Interest Group of Borsod-Abaúj-Zemplén County and Miskolc City	east of the Tisza river
Breznai Sándorné	Head of Rece Traditional Preservation Association	east of the Tisza river
Szikszai Ferencné	Head of the Railwaymen's Diabetics Club	east of the Tisza river
Dévai Jánosné	Head of the Municipal Pensioners' Association	east of the Tisza river
Juhász Lászlóné	Head of the Conservatory Pensioners' Association	east of the Tisza river
Nyakó Józsefné	village pensioner	east of the Tisza river
Horváth Ferenc	Vice-President of the Arrabona Municipal Pensioners' Association	Transdanubian
Szabolcska Károlyné	Executive Secretary of the Szekszárd Regional Association of Pensioners	Transdanubian
Demeter Ferenc	President of the Association of Pensioners' Organisations of Veszprém County	Transdanubian
Béres János	President of the Pensioners' Interest Group of Zala County	Transdanubian
Vas Lászlóné	Head of the Pannon Pensioners Association of Győr-Moson-Sopron County	Transdanubian
Molnár Árpád	President of the Pensioners' Association of Vas County and the City of Szombathely	Transdanubian
Schreiner Vilmosné	Head of the Association of Retired Teachers and their Friends	Transdanubian
Dr. Kocsis Gyula	Life for Years leader	Transdanubian
Szabó Zsuzsanna	Head of Sóly Pensioners Club	Transdanubian
Name	**Organisation**	**Region**
Nagy Barna	Head of the Debrecen Pensioners' Association	east of the Tisza river
Deák Jánosné	Head of the Interest and Cultural Association of	east of the Tisza river

	Szolnok City Clubs and Pensioners	

Source: own editing

Results

The leaders of older people's organisations did not provide a unanimous answer to my questions about online shopping. Some were still completely reluctant to shop online, while others did not prefer this method of shopping because of bad experience.

„This age group really doesn't shop online, or someone's child does if they do. So I don't shop online." (Mrs P. Sz., Békés county, 2021)

„My family shops online, but I'm not interested." (Mrs S. V., Vas county, 2021)

Respondents who had ordered something online said that they had tried it because it seemed to be the safest form of shopping during the COVID period in terms of contact.

The results contradict the previously hypothesised increased openness to online consumption and show that many older people (including active older people who are opinion leaders) are still wary of shopping online, fear of being scammed or disappointed by the quality of the product. According to the club leaders, members of older people's organisations still prefer to buy the products they need in person, and they are not aware of any members who prefer to buy online. Most leaders urged members to be cautious about shopping online and asked professionals to make seniors aware of potential dangers.

There was no difference between elderly people in Transdanubian and east of the Tisza River in this area, with no equal preference for online shopping. Among the managers surveyed

- 5 of the surveyed managers mentioned that they were afraid of possible scams and the quality of the product ordered,
- 6 reported that they regularly buy online,
- 3 managers said that they did not prefer to shop online because of a previous bad experience, that they were afraid of online shopping because of a scam, and,
- 4 leaders said that they only shop this way with the help of their children or grandchildren, not alone,
- 1 driver wanted to protect his health during the COVID, so he only bought online during the pandemic, more,
- 2 mentioned that they had ordered products online but not regularly (Figure 3).

Figure 3: Frequency of online shopping
(Source: Own editing)

During the interviews, we were also interested to know exactly what products the managers who mentioned that they regularly order or had ordered online had purchased. Most of them purchased Christmas gifts, dietary supplements, household items and various balms online. Respondents expressed the importance of being able to buy certain products at the best possible price, so they keep an eye on promotions and only order if they get value for money. The managers who mentioned Christmas presents said that it was important for them to have as little contact as possible when shopping, so they bought their goods online to protect their health.

„I tend to order because I find something like family balm, that's it, something I think is good, I do, because I've always got it before, but not everyone is that brave." (Mrs J. L., Szabolcs-Szatmár-Bereg county, 2021)

„Because of COVID people are more open to online shopping, I've done it myself." (Mrs V. L., Győr-Moson-Sopron county, 2021)

Summary

The number of ageing people, i.e. people over 50, is growing rapidly, not only in our country but also in Europe, with social and economic consequences. The aim of my research was to assess the online shopping habits of senior citizens who are leaders and members of ageing organisations, i.e. seniors who are specifically active. I conducted semi-structured interviews and worked from their transcripts. The conclusion I drew from the research was that the quality of products and the ability to verify it for themselves is very important to older people. They watch for special offers and wait if necessary. Even though I surveyed active seniors, they reported that they were afraid of scams and fraud. Caution is indeed helpful against consumer scams, but excessive caution can be a barrier to their online consumption. ICT tools are used preferentially for browsing and maintaining contactless social interaction, which was particularly important for health protection and contact during the COVID-19 epidemic.

Online shopping could be further promoted among older consumers by strengthening intergenerational relationships, including helping and supporting grandchildren and children in the shopping process, and consumer education sessions for older consumers, where experts could raise awareness of the factors to consider when choosing the right websites. There is a need to promote internet safety for all age groups through policy programmes, awareness campaigns, programmes and practical education.

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TALENT MANAGEMENT - PRACTICES AND CAREER DEVELOPMENT OPPORTUNITIES IN THE I.T FIELD IN ROMANIA

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Abstract: *In the context of globalization and in circumstances that have generated an economic competitiveness, organizations in the field of I.T. from Romania are in particularly opportune situations in terms of recruiting, selecting, retaining and developing talent. Talent effectively contributes to organizational success, which is why we are justified in saying that it can be the "lifeline" for any organization in the context of globalization.*
Regarding the evolution of the concept of talent management, the starting point can be found in the organizational context through the McKinsey consulting group, which later attracted the attention of academic theorists. In the desire of McKinsey consultants to emphasize the role of human resources in organizational success, the war for talent formula appeared.
Recruiting, retaining and developing talent is a significant issue, which is why organizations have started investing in overcoming related issues and implementing talent management strategies.
Talent management is recognized as a priority so that organizations in the field of I.T. are faced with this challenge to develop talent management systems that lead to the progress of the organization or produce its performance. Talent cannot be copied and is what creates value for the organization.
What we can clearly state at this moment is the fact that talent management is a determining factor that supports the field of human resources. Success depends on the organization in the relationship with the existing human resource, in keeping, motivating and developing it according to its potential.
In this research we proposed an analysis of the relationship between talent management practices and the personal and career development of the individual in organizations in the field of I.T. from Romania. Thus, the purpose of the research is to identify how employees in this field perceive their professional development within organizations. In the research methodology, I formulated the research objectives and hypotheses, described the research methods, instruments and sample. The analysis of the results was carried out with the help of the Qualtrics XM Survey platform, and the statistical analysis with the help of the SPSS program (version 22.0), by transferring the data from the Qualtrics XM Survey platform.

Keywords: *talent management, technology, carrer, human resources*

JEL classification : *M12, M52, M51, M53, J62*

Introduction

Talent management develops after the 1990s, starting from a group of consultants from McKinsey & Company, and knows several stages, both theoretically and in organizational practice. The new challenges represent a permanent source of debates, both in the academic world and among practicing specialists in the field of human resources.

In the first part of the research, we proposed some theoretical considerations regarding talent management practices and their contribution to the career development opportunities

of employees in the I.T. field from Romania. The second part of the research is dedicated to the research methodology and the realization of the research itself, in which we will describe the purpose, objectives, hypotheses, methods, tools and sample of the research. We propose the relationship between the implementation of talent management practices and opportunities for personal and career development in the I.T. from Romania.

1.   Talent management - theoretical framework

Human resource management goes beyond the classic approach to managing human resources within organizations, and is particularly important for its success. We refer here to the recruitment and selection of staff, to their motivation, to personal and professional development.

The concept of talent management was born in the late 90s, starting from a group of consultants from McKinsey & Company, a global management consulting firm, founded in 1926 by James McKinsey (Michaels et. all, 2001).

In the year 2005 the Google search engine provided eight million materials and articles written about talent management; as a comparison, in 2015, twenty-five million articles were found; in the year 2019, accessing the Google engine returned seven hundred and sixty million articles on this topic, and in the year 2023 we discover 1.04 billion articles that deal with themes, analyzes about the concept of talent management (Google, 2023).

In fact, the new label of talent management is a modern philosophical trend, an approach to human resource management, which lays the foundations for psychological evaluation in organizations. We refer here both to individual professional performance and to a broader spectrum of the future performance of the organization.

Thus, we can consider that talent management represents a set of practices, which involves the recruitment, selection, retention and development of employees who possess skills and potential.

From the analysis of the specialized literature, we obtain a reconceptualization of the notion of talent management. It encompasses the processes and strategies for identifying and establishing the organization's priorities, from the perspective of the composition of human resources, capacities, skills and experiences, respectively identifying, attracting, maintaining, valorizing and improving them from the position of employees (Rustiawan et. al., 2023).

We must mention the fact that there is no single talent management that applies to every organization in every field. Depending on several criteria (activities, objectives, labor market, organizational culture), talent management can undergo changes.

According to Neacșu's analysis, we can talk about common processes of talent management: Effective planning of the required workforce, Recruitment, Selection, Rapid integration of new employees, Employee development, Continuous concern for keeping those who matter, Effective performance management (Neacșu, 2010).

The specialized literature mentions a creed, which belongs to a talent management, composed of a publicized set of basic principles, values and mutual expectations that guide the behavior of an institution and its people (Berger & Berger, 2018).

An excellent example of a credo is Johnson & Johnson, which consistently ranks among Fortune's Most Admired groups. The Johnson & Johnson company listing states: "*Our credo is more than a moral compass. We believe it is a recipe for business success*" (Berger & Berger, 2018, p.16).

Another successful company with an explicit credo is Microsoft. Microsoft's standards of business conduct are an extension of the company's values, and reflect its continuity: a commitment to ethical business practices and compliance with the law. Employees are expected to be well-informed and exercise judgment when making business decisions, and the standards are designed to help; they make the right decisions for themselves and for Microsoft (Berger & Berger, 2018).

The creeds have been enhanced in recent years to include social responsibility, sustainability, ethical behaviour, innovation and creativity. Starbuck's company credo includes references to social and ethical responsibility (Berger & Berger, 2018).

Studies on talent management seek to highlight the advantages that arise when there is accountability in the organization, and also the criteria for occupying a position, the characteristics of employees, the demands of the organization on work.

Following the presentation and analysis of these approaches and definitions of talent management terminology, we deepen the research by defining talent management as a set of organizational practices, processes and values that help the organization to identify, select, retain and -develop their human resources – talent, to achieve their strategic objectives (Quifors, 2017; Collings & Mellahi, 2009; Berger & Berger, 2018, Collings et al., 2019).

2.   Talent management practices

After reviewing the literature, it was found that an effective way to develop a talent management system was to identify its core practices. Studies demonstrate that talent management practices are integrated into a system that includes: talent recruitment, talent selection, talent development, talent retention, talent compensation management, talent performance management and talent succession planning (Tepayakul & Rinthaisong, 2016; Collings et. al., 2019).

Making a statistic of how both theorists and practitioners define talent management, several dimensions or practices of it stand out, on which there is a consensus, and which we find in most studies and researches: talent recruitment, personnel selection, staff retention/maintenance, professional development of the organization's staff (Berger & Berger, 2018; Danao & Borttoff, 2022).

The recruitment and hiring of personnel represents a set of effective practices of talent management, and is the basis for assessing the values and personality of individuals, cultural harmonization (cultural fit) (Stahl, 2012). Organizations must have a strategic plan for talent recruitment in the internal organization, motivate internal employees to help search for talent through external recruitment, and use the merit system method for talent recruitment (Strack et. al., 2014; Danao & Bortoff, 2022). As sources of talent recruitment, an organization uses its own specialized websites, participates in Top Employers job fairs, and now uses recruitment agencies and services. To recruit the best talent, organizations must consider recruiting as a marketing function and the candidate as a customer (Florea, 2011). As merit system principles are particularly relevant to talent recruitment, talented employees should be recruited based on merit and appropriate experience (Strack et. al., 2014).

Talent selection is a process of choosing an applicant, who has been selected in the stage of talent recruitment to identify a talented person, to be part of a talent pool, consisting of people prepared for certain tasks and responsibilities (Strack et al., 2014). The talent selection process must be carried out in a systematic way in several organizations, and the selected tests must be reliable, valid, objective, and must be applied in correct norms (Thakur, 2015). The best applicants must be found through a series of assessments such as interviews, written tests, aptitude assessments and psychometric tests among others (Chimphondah, 2023).

A second set of talent management practices consists of training and development. It is found that only diversified programs in which large sums are invested are not enough, and thus, the focus falls on the development of new leaders, the involvement in training of top managers, line managers and from other levels in the recruitment of talent and , later in his development (Collings, 2019). Talent development is not only an employer's problem but also an employee's responsibility in preparing the employee's knowledge, skills, behavior and characteristics that will affect current and future success (Strack et. al., 2014).

Thus, human resources in organizations should have the skills and capabilities to grow people in their jobs, and managers should constantly provide feedback to support and encourage employee development. Talent development can involve activities such as development and training, coaching, mentoring and performance management. In most organizations, the responsibility for employee development is shared between employees and managers (Collings et al., 2019; Strack et. al., 2014).

The third set of practices within talent management is the management of valuable talent retention, which represents a major challenge for multinational corporations. Here we are not only discussing the financial reward, as this does not replace an exciting environment, a long-term career development, the attention and appreciation of the direct manager (Chimphondah, 2023, Stahl, 2012). Talent retention and motivation is the organizational effort to induce talent to remain in the organization using financial incentives, an organizational incentive, and psychological incentives to increase talent satisfaction (Strack et. all, 2014). Talent retention is a process by which talented and performing employees are encouraged to stay with the organization for a maximum period of time. Therefore, it is important that employers, through effective employee retention strategies, create and foster an environment that encourages current employees to stay, which is essential to the long-term health and success of any organization (Strack et. al ., 2014).

Talent retention should include a career plan for each employee, multiple compensation packages, professional development opportunities, training programs and flexibility. Career development can also be a key component of the system of talent management practices. Careers are vital to people at all levels of an organization. Managers must promote professional development (Chimphondah, 2023).

3.   Research methodology

In our approach talent management represents a set of practices, processes and organizational values, which help the organization to identify, select, develop and retain its human resources - talent, to achieve its strategic objectives.

3.1.   The purpose of the research

In the research carried out, we aimed to analyze the relationship between the implementation of talent management practices in I.T. organizations and personal and career development of employees.

Thus, the purpose of the research is to identify how employees in this field perceive their professional development within organizations.

3.2.   Research objectives

It is necessary to understand why talent management is important and what added value it brings to employees.

We proposed specific objectives that can be summarized as follows:

1. Identification of talent management implementation practices in I.T. organizations from Romania

2. Identification by employees of the way of understanding personal and professional development in the organization.

3.3.   Research hypotheses

Considering the research questions and research objectives, we formulated the following hypotheses:

H_1: There is a significant positive correlation between the evaluation of the effectiveness of the talent management practices implemented in the organization and the capitalization of personal skills and abilities by the organization.

H₂: There is a significant positive correlation between the evaluation of the effectiveness of the talent management practices implemented in the organization and the opportunities for personal and career development.

H₃: There is a significant positive correlation between organizational capitalization of personal skills and personal and career development opportunities.

3.4. Research methods

We chose cross-sectional research, which collects and analyzes data. The information is collected through standard procedures, and the people who are part of the sample are chosen according to a scientific criterion, i.e. from among the people active in the I.T. from the target population.

In the research, a questionnaire was used that will confirm or not the hypotheses of the research, following the data analysis through the SPSS platform. Data will be collected and used for graphs in the Qualtrics XM Survey platform, and then imported for analysis and interpretation in the SPSS platform.

3.5. Research tools

The chosen questionnaire requires both short answers, using a classic, dichotomous Likert scale, as well as five- or seven-point Likert scales with numbered values. The survey consists of 16 questions and was developed and distributed using the Qualtrics XM Survey software platform. The Qualtrics platform helps with sample description and statistical data related to survey participants, statistical analysis of some responses.

3.6. Research sample

The investigated population consists of 115 subjects from the I.T. sector. from Romania from the representative centers: Bucharest, Cluj, Iasi, Timisoara, Oradea. Thus, we have a demographic distribution of those who answered the questionnaire: 30 from Bucharest, 28 from Cluj, 23 from Timisoara, 19 from Oradea and 15 from Iasi.

The participants were selected from the field of I.T. from Romanian and multinational companies that are active on the Romanian market and are among the top I.T. companies, both hiring programmers, web designers, project coordinators or project managers, department managers, general managers, human resources managers in the I.T. field. The questionnaire was applied between October 2022 and February 2023.

4. Research results

4.1. Data analysis

The data collection and the presentation of the questionnaire results were carried out with the help of the Qualtrics XM Survey platform, and the statistical analysis with the help of the SPSS program (version 22.0), by transferring the data from the Qualtrics XM Survey platform.

Regarding the opinion of employees in the field of I.T. regarding the valorization of their own skills and abilities by the organization, the data show that employees in the I.T. believe that the organizations they belong to value and promote their skills and abilities for the success of the organization.

Ignoring the neutral answers (there is no difference), graphic figure no. 1 highlights the fact that a percentage of 85.71% of respondents clearly perceive the valorization of personal skills and abilities within organizations in the IT field in which it operates.
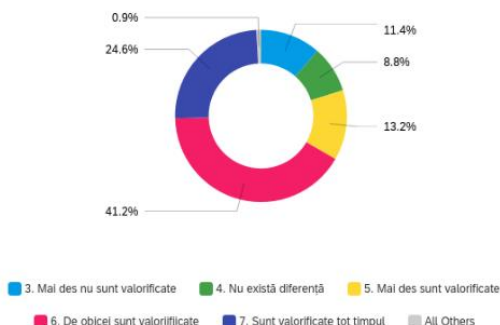
Figure no. 1 Graphic representation diagram: the perception of I.T employees regarding the capitalization of own skills and abilities for the organization

Regarding the perception of employees in the field of I.T. regarding the organization's encouragement for employees towards personal development and career development, according to figure no. 2, a significant percentage of 73.04% of employees in the I.T. field believes that the organization's staff are encouraged to discover opportunities for personal and career development within it. Ignoring the neutral response, IT workers 86.59% perceive that the organizations they work in encourage them in terms of personal development and career building.
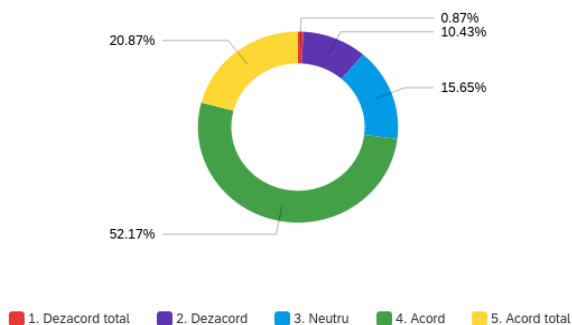
Figure no. 2. Graphic representation diagram: employees' perception of personal and career development opportunities fostered by the organization

Regarding the opinion of employees in the field of I.T. regarding the relationship between the implementation of talent management practices on the one hand and motivation and performance in the organization on the other (Ignoring the neutral answer), figure no. 3 reveals that a significant percentage (96, 90%) of employees in the field of I.T. agree that there is a significant relationship between talent management practices and employee motivation to achieve performance.
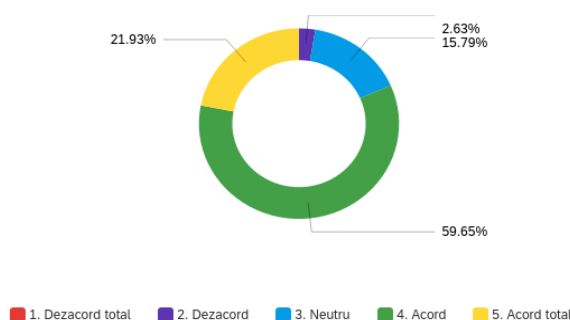
Figure no. 3 Graphic representation diagram: the relationship between talent management - motivation and performance in the perception of IT employees.

4.2. Statistical Processing and Interpretation of Results (SPSS)

The statistical analysis was carried out using the SPSS program (version 22.0). To test the hypotheses, we considered it appropriate to use the Pearson test, of bivariate parametric correlation. One of the conditions to be respected refers to the normality of the distributions. For this we performed the Kolmogorov-Smirnov test. The analysis of the Z K-S indices, as well as the related thresholds, indicates that the normality of the distributions is not respected ($p<.05$; see Table A, appendices). Due to non-compliance with the normality condition of the distributions, we performed the Spearman rho correlation test, a non-parametric equivalent. Table no.1 includes a series of descriptive indicators and the results of the Spearman rho correlation for all three formulated hypotheses. By analyzing the values in the table, we observe a median of 4 and a range of 3 for the dimension of evaluating the effectiveness of talent management practices in the organization, as well as for personal and career development opportunities. Referring to the dimension of valorization of personal skills by the organization, we obtained a median of 6 and an amplitude of 5.

Variables involved	Median	Amplitude	rho	p
evaluating the effectiveness of talent management practices	4.00	3	.366	.000
valorization of personal skills by the organization	6.00	5	.460	.000
opportunities for personal and career development	4.00	4	.608	.000

Table no. 1. Spearman rho bivariate correlation results

The results of the Spearman rho correlation indicate that there is a significant positive correlation between the assessment of the efficiency of talent management practices and the capitalization of personal skills and abilities by the organization (rho=.366; p=.000, statistically significant). A significant positive correlation is recorded between the assessment of the effectiveness of talent management practices and opportunities for personal and career development (rho=.460; p=.000, statistically significant); the results show us a significant positive correlation between the valorization of personal skills by the organization and opportunities for personal and career development (rho=.608; p=.000, statistically significant).

Thus, the high efficiency of talent management practices also entails the high frequency capitalization of personal skills by the organization, the evaluation of a lower efficiency of talent management practices would imply the increasingly reduced capitalization of personal skills by the organization. High efficiency of talent management practices also brings with it multiple opportunities for personal and career development, the assessment of lower efficiency of talent management would imply fewer opportunities for personal and career

development. Last but not least, the more frequent capitalization of personal skills by the organization entails multiple opportunities for personal and career development, the less and less capitalization of personal skills by the organization would imply fewer opportunities for personal and career development.

Thus, hypothesis **H$_1$** is validated and supported: there is a significant positive correlation between the evaluation of the effectiveness of the talent management practices implemented in the organization and the capitalization of personal skills and abilities by the organization.

Hypothesis **H$_2$** is validated and supported: there is a significant positive correlation between the evaluation of the effectiveness of the talent management practices implemented in the organization and the opportunities for personal and career development.

Hypothesis **H$_3$** is validated and supported: there is a significant positive correlation between the valorization of personal skills by the organization and opportunities for personal and career development.

In other words, talent management practices have proven their effectiveness by encouraging the organization's staff to discover new opportunities for personal development and career development, and also by making the most of employees' professional skills and abilities.

The answers of employees in the field of I.T. affirms the effectiveness of the talent management practices implemented so far (93.75%) and correlates significantly on the one hand with the opinions regarding the organization's capitalization of employees' skills and abilities (85.71%; Spearman coefficient rho=.366; p= .000, statistically significant) and on the other hand with employees' perception of how the organization encourages employees to discover new opportunities for personal and career development (86.59%; Spearman coefficient rho=.460; p=.000, statistically significant) . The correlation is also significant between the valorization of personal skills by the organization and opportunities for personal and career development (Spearman coefficient rho=.608; p=.000, statistically significant).

These correlations are supported by the literature. The effectiveness of the implementation of talent management practices, observable in encouraging and providing new opportunities for personal and career development can represent key components of the talent management system. These practices are associated with employee training and coaching programs. Career is vital for people at all levels of an organization and managers must promote professional development (Chimphondah, 2023).

Talent development can involve activities that can improve performance in current positions as well as preparation for transition to the next level (Collings et. al., 2019; Strack et. al., 2014). The individual - talent expects the employer to honor the promises made. Durability and the fulfillment of mutual expectations are the essential points of success (Colings et. al., 2019).

For the correct management of talent, to provide opportunities for personal and career development, it is important to support the principle of fairness based on skills and abilities (Armstrong in Berger & Berger, 2018). Literature researchers believe that talent reward management must be linked to business and organizational strategies (Strack et. al., 2014). Lazlo Bock has extensive experience at Google and claims that rewarding and recognizing talented people is a priority in this organization. People with vision have been given the opportunity to create their own Google, and the organization helps human resources to become founders, part of a company or team, families, cultures (Bock, 2017). Google has been able to build a dynamic culture, attract global talent, and achieve outstanding performance in employee personal and career development.

Those at Microsoft believe that a talent management involves a constant effort, as organizational changes occur and key messages need to be transmitted, repeated, reinforced, reformulated for the new ones in the company. But what is worth noting at Microsoft is that talent management makes a difference both for people and for the organization (Silzer and Dowell, 2010). Decisions to invigorate or move talent are informed

by considering both job performance and the benefit of the job for personal and career development (Hancock & Schaninger, 2020).

Conclusions

In the context of globalization and in circumstances that have generated an economic competitiveness, organizations in the field of I.T. from Romania are in particularly opportune situations in terms of recruiting, selecting, retaining and developing talent.

Through the conducted research, we identified the relationship between the implementation of talent management practices in personal development and the individual's career in IT organizations from Romania. It is a recognized fact that talent contributes to both organizational success and individual personal and career development.

Talent recruitment, retention and development are significant challenges, which is why organizations have begun to invest in overcoming related issues and implementing talent management strategies.

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ADAPTING LEADERSHIP DEVELOPMENT FOR SMES IN THE ERA OF REMOTE WORK FROM THE PERSPECTIVE OF GENERATION Z: MODERN APPROACHES AND CHALLENGES

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Abstract
This study investigates the impact of remote work on leadership development within small and medium-sized enterprises (SMEs), particularly examining how the expectations and skills of Generation Z play a role. The COVID-19 pandemic has accelerated the adoption of remote work, underscoring the urgent need to address the unique challenges faced by SMEs through targeted leadership training programs. Effectively addressing these challenges requires a nuanced understanding of Generation Z's perspective, which is essential for devising strategies that align with the dynamics of remote work. The widespread use of digital tools has revolutionized communication and management practices, presenting both opportunities and challenges for leaders, especially when catering to the preferences of Generation Z. Online training emerges as a cornerstone for nurturing effective leadership in virtual environments, offering flexibility and accessibility that resonate with the digital-native Generation Z. Generation Z's values, including efficiency, supportive leadership, and work-life balance, significantly shape their expectations of leadership roles within SMEs. Through a comprehensive analysis of empirical data and practical insights, this research contributes to a deeper understanding of how leadership development initiatives can evolve in response to changing work paradigms. A case study illustrating an SME's successful adaptation of leadership development to remote work offers valuable lessons and actionable insights for similar organizations. Recommendations underscore the importance of innovative, inclusive, and flexible program designs tailored specifically to the needs and demographics of SMEs. In conclusion, this study offers valuable insights into the evolving landscape of online leadership development programs, with the overarching goal of empowering SMEs to thrive in tomorrow's workplace.

Keywords: remote work; SMEs; Generation Z; leadership development; talent management; online training

Introduction

In 2020, the global economy and employment patterns were profoundly influenced by the COVID-19 pandemic. (Carillo et al., 2020) As a result, numerous sectors witnessed a compulsory shift towards remote work arrangements (Ónodi - Holló, 2020) and its impact has been more deleterious for small and medium-sized enterprises (SMEs). SMEs often lack organizational capability and, thus, experience a higher risk in pursuit of innovation. (Demirkan et al., 2022) With the advent of flexible employment arrangements, SMEs are facing the demand for novel leadership models and skills, calling for the exploration of new training opportunities to facilitate understanding and adaptation. SMEs constitute the backbone of the EU economy, not only in terms of number of enterprises and contribution to employment and GDP (over 60% of the business economy's GDP is produced in SMEs) but

also as a key source of innovation, creativity, and flexibility. Demirkan proposes that there is a positive causal link between employee training and SME innovation, therefore, the SME development is crucial and to a large extent determines the development of the EU economy in general. (Panteia research, 2023) The ageing workforce is even more evident in some industries and occupations. Planning now to deal with this ageing workforce is a key role of leaders. (McCrindle - Fell, 2019) Recognizing the distinctive challenges that SMEs encounter underscores the importance of identifying and addressing these issues in leadership development initiatives. Moreover, understanding the perspectives of Generation Z is paramount for crafting effective strategies that resonate with the demands of remote work.

Telecommuting can have a positive impact on the work-life balance, increases job autonomy, means flexible working hours, reduces or eliminates the commuting time, reduces environmental costs. (Ónodi - Holló, 2020, Martin et al., 2022)) The convergence of digital and telecommunications innovations has enabled work to be performed without the need for physical presence across various domains, leading to the widespread adoption of remote work due to the pandemic. While employers have recognized advantages such as cost savings (Venkatesh - Speier, 2000), challenges persist in ensuring effective communication and implementing suitable leadership models. Conversely, Generation Z employees value benefits such as work-life balance and possess advanced digital skills conducive to remote work. (Martin et al., 2022, Gabrielova - Buchko, 2021, Seemiller - Grace, 2017, McCrindle - Fell, 2019)

An illustrative case exemplifying the intersection of these trends is the 2020 workshop conducted by Budapest Corvinus University. This workshop brought together participants from diverse professional backgrounds to engage in a comprehensive exploration of the topic. Through interactive discussions, presentations, and collaborative exercises, attendees delved into the multifaceted aspects of leadership development in the context of remote work and Generation Z preferences. The workshop highlighted the transformative impact of digitalization and telecommunications innovations, which have enabled work to be carried out without the need for physical presence across various domains. From the employer's perspective, remote work offers significant cost savings, eliminating the need for office space and enabling the engagement of professionals from around the globe. However, challenges persist in ensuring effective communication and implementing suitable leadership models. It is essential for employees to coalesce into cohesive teams aligned with common corporate goals, even when working remotely, necessitating the adoption of a new type of leadership culture. Additionally, remote work allows employees to spend less time commuting to the workplace, resulting in more leisure time. Advanced digital skills are particularly crucial for roles that can be performed remotely, favoring Generation Z's adeptness in this domain. (Cserháti, 2020)

Material and methods

This research study employed a comprehensive approach to investigate the strategic significance of career planning and leadership development within small and medium-sized enterprises (SMEs), particularly in response to the evolving landscape of remote work arrangements and the increasing presence of Generation Z in the workforce. The methodology encompassed a thorough literature review and case study analysis.

Literature Review
The literature review provided a foundational understanding of the challenges faced by SMEs in adapting to remote work and meeting the expectations of Generation Z employees. It synthesized existing research on topics such as remote work dynamics, Generation Z

preferences, leadership qualities, and online training initiatives. Drawing from scholarly sources such as Scopus and Google Scholar, the literature review informed the conceptual framework guiding the research study.

Case Study Analysis
Additionally, a case study approach was employed to examine real-world examples of successful talent management and leadership development strategies within SMEs. A Budapest-based IT sector SME served as the primary case study, offering insights into its remarkable evolution and adaptation strategies. Data collection involved analyzing company documents, reports, and publicly available information, supplemented by observations of organizational processes and practices. The case study provided valuable insights into the practical implementation of career planning, leadership development, and online training initiatives within a specific organizational context.

Results and discussion

The preferences of Generation Z regarding the workplace
As Generation Z (born between 1997 and 2013) is already present in the workforce, it's crucial for employers to recognize their impact. (Gabrielova - Buchko, 2021, Chillakuri, 2020) In the current managerial environment, leaders face the challenge of effectively managing and understanding the distinct traits molded by the experiences of Generation Z. (Schroth, 2019) Generation Z is characterized by their strong inclination towards connectivity, thriving in an era dominated by high-tech communication, technology-driven lifestyles, and extensive use of social media. (Gaidhani et al., 2019, McCrindle - Fell, 2019, Dwivedula et al., 2019)

Competitive Salary and Career Opportunities
Generation Z exhibits a distinct set of preferences when it comes to workplace dynamics and leadership expectations. Among these preferences is the desire for a competitive salary that transparently increases alongside career opportunities. (Kirchmayer - Fratričová, 2018, 2020, Patel, 2017) Additionally, they value quick career advancement and development opportunities (McCrindle - Fell, 2019), seeking avenues for professional growth and skill enhancement. (Adecco, 2016)

Flexibility in Working Conditions
Flexibility is another key aspect that Generation Z looks for in a workplace (Chillakuri, 2020). They seek flexibility not only in terms of working conditions but also in job roles. This flexibility allows them to adapt to changing circumstances and pursue diverse interests within their careers. (Barhate - Dirani, 2022)

Autonomy and Mentorship
Generation Z values autonomy in their work (Wieldmer, 2015), alongside proper mentoring (Barhate - Dirani, 2022) and onboarding (Chillakuri, 2020) processes. (McCrindle - Fell, 2019) They appreciate the opportunity to take ownership of their tasks (Patel, 2017) while also benefiting from guidance and support from experienced mentors. (Gabrielova - Buchko, 2021) This combination fosters a sense of empowerment and encourages innovation.

Emphasis on Soft Skills
In addition to technical skills, Generation Z places importance on the acquisition of "soft" skills alongside "hard" skills. (Gabrielova - Buchko, 2021, Grow - Yang, 2018) Soft skills such as communication, teamwork, and emotional intelligence are considered essential for success in the modern workplace. (Tripathy, 2020)

Culture of Continuous Feedback

Continuous feedback and evaluation are integral to the preferences of Generation Z. (Turner, 2015, Patel, 2017, Randstad, 2016, Chillakuri, 2020) They value a culture of continuous feedback, where constructive criticism and recognition are provided regularly (Chillakuri, 2020). This approach, often facilitated through Continuous Performance Management systems, enables ongoing growth and development. Continuous Performance Management (CPM) entails collaboratively establishing employee goals with their manager, fostering more frequent dialogues between managers and subordinates, facilitating two-way discussions on performance, and providing real-time and crowdsourced feedback (Zenger, 2017).

As Generation Alpha emerges as the most educated, technologically advanced, and affluent generation, it becomes increasingly clear that Generation Z, who will soon lead them, must develop strong leadership skills to effectively navigate this evolving landscape. With more than 2.5 million Gen Alphas born globally every week, and an estimated total population nearing 2 billion by 2025, Generation Z will play a pivotal role in shaping the future of this burgeoning demographic. (McCrindle - Fell, 2019) In conclusion, the rise of Generation Z within the workforce is inevitable, and their transition into leadership roles will likely occur rapidly. In addition to meeting the immediate needs of Generation Z in the workplace, understanding their expectations is crucial because these will shape the leadership style they will learn from and emulate as they progress in their careers. Employers must therefore be proactive in understanding and accommodating their preferences and expectations to ensure mutual success and organizational sustainability in the rapidly evolving business landscape. It is imperative for organizations to delve deeper into understanding what Generation Z expects from their leaders, as aligning leadership practices with these expectations can foster a more inclusive and effective work environment.

In a research illustrated by the following table by Nihan Yavuz Aksakal and Ebru Ulucan from the Department of Business Administration, Faculty of Business Administration, Istanbul Ticaret University, Turkey, 183 participants from Generation Z were surveyed to identify the characteristics they deem important for their leaders to possess.

These characteristics are divided into two categories: traditional management competencies, indicated in green, and new/novel management competencies, indicated in blue.

Among the traditional management competencies, the highest-ranking characteristic, identified by 153 out of 183 participants (approximately 83.61% of respondents), is the ability to set vision and goals. Following closely behind is fairness, with 98 respondents (approximately 53.55%) considering it important for leaders to possess. Regarding new/novel management competencies, the top-ranked characteristic is confidentiality, marked in blue, with 120 respondents (approximately 65.57%) recognizing its significance. This is followed by consciousness, with 114 respondents (approximately 62.30%) considering it important. Other notable characteristics include the ability to take responsibility for mistakes, management skills, and the ability to work as part of a team, all of which received significant attention from respondents across both traditional and new/novel competencies.

Overall, the research highlights the evolving expectations of Generation Z regarding leadership qualities, emphasizing the importance of both traditional and new management competencies in today's dynamic work environment.

Table 1. Characteristics that a leader should possess according to Generation Z

Vision (goal-setting) ability	**153**
Management skills	**135**
Ability to take responsibility for mistakes	**122**
Confidentiality	**120**
Consciousness	**114**
Fairness	**98**
Ability to work as part of a team	**89**
Digital skills	**73**
Ability to recognize talent	**70**
Emotional intelligence	**64**
Strong communication skills	**57**
Openness	**48**
Honesty	**44**
Empathy	**23**
Respect for others	**19**

Source: Own editing based on the research of Yavuz - Ulucan, 2024

The strategic importance of career planning and leadership development

We investigated the strategic importance of career planning and leadership development within the dynamic landscape of contemporary organizational frameworks, shedding light on insights for effective workforce management and organizational success.

Career Planning
Generation Z students value hands-on opportunities that prepare them for career success. (Seemiller - Grace, 2017, McCrindle - Fell, 2019) Flexible employment arrangements predominantly cater to the younger generation, creating abundant opportunities for mass employment. With a growing trend of frequent job changes, organizations are reacting by incorporating long-term individual career planning as a pivotal element of talent nurturing.

Leadership Development
In their 2019 study McCrindle and Fell underscored the need to understand and connect with Generation Z before leading them, emphasizing that this generation values inclusive, participative leadership. They found that Gen Z appreciates managers who prioritize communication, transparency, and respect, favoring a consensus-based leadership style. (Barhate - Dirani, 2022) Recognizing individual contributions and fostering an emotionally supportive environment are also key.

Additionally, instead of fostering a culture of hierarchy, organizations should prioritize interpersonal relationships. This focus not only fosters a collaborative environment but also enhances leadership skills. Ağın's (2023) study underscores the transformative leader's role: they strive to merge their own and their subordinates' interconnected yet separate goals. They use their power not to balance the power of the other party but to support each other.

By embracing strategic career planning and cultivating transformational leadership, organizations can foster a culture of collaboration, innovation, and collective success,

enhancing both individual leadership capabilities and overall organizational performance. (McGaha 2018)

Exploring the Potential of Online Training: Benefits, Challenges, and Recommendations

The individual nature of technology has helped Generation Z become comfortable and accustomed to learning independently. They value the ability to concentrate, proceed at their own speed, and derive personal insights before collaborating with others. (Seemiller - Grace, 2017) Gen Z's proficiency in online learning can be attributed to their adeptness with technology. (Chillakuri, 2020, (Fratričová - Kirchmayer, 2018) Their exposure to digital platforms from a young age has made digital language and technology almost innate to them. They are what can be termed as "digital integrators," seamlessly incorporating technology into their daily lives. (McCrindle - Fell, 2019)

The commonly known eLearning definition usually describes the activities of conducting learning using information and communication technologies. (Alsharhan et al., 2021) Online training stands as a pivotal tool in modern organizational learning landscapes, offering a wealth of opportunities alongside its distinct challenges. (Oeb insights, 2023) At the forefront of online training's appeal is its global accessibility, fostering a borderless learning environment. (Mosharraf - Taghiyareh, 2016) Collaborations with training centers worldwide empower organizations to access diverse educational resources, enriching the learning experience for employees across geographical boundaries. (LinkedIn learning, 2024)

Central to the appeal of online training is its inherent flexibility, enabling participants to tailor learning experiences to their individual pace and preferences. (Alsharhan et al., 2021) Online learning system has the potential to diversify educational curricula and foster engagement by facilitating immediate feedback, encouraging learner interaction with peers and instructors, cultivating digital literacy, and enhancing the overall learning experience. (Abdulkareem - Eidan, 2020)

Yet, online training is not immune to challenges. There is intense requirement for self-discipline and even more intense requirement of self –direction (Abdulkareem - Eidan, 2020) Another limitation of online learning is its one-directional approach, hindering the ability to delve deeper into material that requires additional explanation or understanding. (Simamora, 2020)

Despite these challenges, online training offers compelling benefits (Mosharraf - Taghiyareh, 2016), including reduced cognitive load and increased interactivity. By integrating learned skills into daily work routines under the guidance of supportive leaders, organizations can ensure the practical application of training outcomes.

To optimize the effectiveness of online training initiatives, organizations must implement robust monitoring and feedback mechanisms. (Randstad, 2016, Chillakuri, 2020) Through ongoing support and guidance, leaders can facilitate the successful integration of online training into organizational learning cultures, (Chillakuri, 2020) driving sustained growth and development.

In this exploration of online training, we aim to provide actionable insights and strategies for leveraging its potential to the fullest in today's dynamic organizational environments.

Crafting Future Leaders: A Case Study on Organizational Growth and Innovation in an IT SME

We are presenting the success story of a Budapest-based IT sector Small and Medium Enterprise (SME), offering insights into their remarkable evolution and adaptation strategies regarding developing their future leadership team.

We utilized a case study approach, focusing on a Budapest-based IT sector SME known for its outstanding talent management and innovation. Data collection involved analyzing company documents, reports, and publicly available information, supplemented by observations of organizational processes and practices.

In the first quarter of 2022, the company had 25 employees, a number that emerged to 35 by Q1 of 2023 and skyrocketed to an impressive 105 by Q1 of 2024. This rise in workforce size is testament to the organization's dynamic approach to talent management, particularly in the realm of generational leadership, as the workforce is predominantly of Generation Z individuals. The company has prioritized initiatives aimed at aligning career opportunities and training programs with the preferences and aspirations of this demographic. A staggering 85% of employees express satisfaction with the plethora of career growth opportunities and training initiatives provided by the organization.

Since the global pandemic, the company's embrace of hybrid work models and a culture of transparency has fostered a sense of empowerment and trust among employees. Robust leadership development programs, coupled with the establishment of "Employee Insight Group" forums, ensure that the voices and perspectives of employees are heard and valued.

Central to the organization's remarkable success is its steadfast commitment to continuous learning and development. Based on the research, the company employs a diverse array of training platforms, including LinkedIn Learning, Udemy, and in-house tailored workshops for employees. Notably, they have developed a 30-60-90 day onboarding plan for all new employees, a method praised for its effectiveness in facilitating a smooth transition into the organization. This structured onboarding process ensures that new hires receive the necessary training and support to quickly integrate into their roles and the company culture. Most of these training initiatives are conducted online, aligning with the company's findings that online training improves employee satisfaction by being less time-consuming and catering to the preferences of Generation Z, especially in the era of home office setups. Additionally, the company reinforces its dedication to talent recognition and nurturing through biannual performance evaluations and promotions at all levels.

At the heart of its operations lies a pioneering "Distributed leadership model," which empowers employees at all levels to take ownership of their roles and contribute meaningfully to the organization's collective success. Distributed leadership is primarily concerned with the practice of leadership rather than specific leadership roles or responsibilities. It equates with shared, collective and extended leadership practice that builds the capacity for change and improvement. (Harris, 2009) Through this innovative approach, the company has not only achieved remarkable growth but has also cultivated a culture of collaboration, innovation, and excellence.

This case study serves as a testament to the transformative power of strategic talent management and organizational agility, offering valuable lessons for businesses seeking to thrive in today's dynamic and competitive landscape.

Conclusions and Recommendations for Sustainable Business Practices

We encapsuate our insights into actionable recommendations tailored to the unique needs and challenges of SMEs, empowering them to thrive in an ever-evolving business environment.

Strategic Adoption of Online Learning Initiatives
To harness the transformative potential of online learning, SMEs should adopt a strategic approach to selecting and customizing training modules and knowledge-sharing platforms. Collaborative tools such as Jira and Confluence offer avenues for streamlining project management processes, enhancing team communication, and fostering a culture of transparency and accountability across all organizational levels.

Recognizing Gen Z's expectations and embracing Agile Organizational Structures
Recognizing Generation Z's leadership expectations is paramount, as their evolving style will influence future organizational norms. Employers must actively accommodate these preferences to ensure mutual success and sustainability. Additionally, amid the rapidly changing business landscape, small SMEs are urged to embrace agile structures. Unlike larger multinational corporations, SMEs can adapt more quickly due to their smaller size. Cultivating close-knit workgroups within SMEs fosters innovation and adaptability, enabling teams to respond swiftly to market shifts. Moreover, fostering a sense of community in physical workspaces promotes creativity and collaboration, reinforcing the bonds essential for collective success.

Empowering Supportive Leadership Practices
At the heart of SME success lies the cultivation of supportive leadership practices. Accessible mentorship and coaching opportunities empower employees to unlock their full potential, driving organizational excellence from within. By prioritizing continuous feedback mechanisms and performance evaluations, SMEs can nurture a culture of growth and development, fostering an environment where teams thrive and flourish.

By implementing these targeted strategies, SMEs can fortify their competitive edge, navigate market complexities with confidence, and embark on a trajectory of sustained growth and prosperity. As SMEs continue to adapt and evolve in response to emerging trends and challenges, the cultivation of innovative business practices will serve as a cornerstone for long-term success and resilience in an ever-changing business landscape.

Research Limitations and Further Research Opportunities

While our study has provided valuable insights into the strategic importance of career planning, leadership development, and online training within SMEs, it is important to acknowledge the limitations of our research and identify avenues for future exploration.

Limitations
Sample size and generalizability: Our study was conducted within a specific SME context, which may limit the generalizability of our findings to other organizations. Additionally, the sample size for structured interviews was relatively small, potentially impacting the depth and breadth of insights gained from participant responses.

Cultural and geographic context: The study was conducted within a specific cultural and geographic context, which may influence the applicability of our findings to different cultural and regional settings.

Scope and depth of analysis: While we have endeavored to provide a comprehensive analysis of career planning, leadership development, and online training practices, the scope and depth of our study may not capture all relevant factors and nuances within these domains.

Future Research Opportunities

Comparative studies: future research could explore career planning and leadership development practices across different SMEs and industries to identify common trends, challenges, and best practices. Comparative studies could enhance our understanding of contextual factors influencing these practices. Cross-cultural studies: Cross-cultural studies examining career planning and leadership development practices in diverse cultural contexts could shed light on the cultural factors influencing these practices and their effectiveness.

While our study has contributed to the existing body of knowledge on career planning, leadership development, and online training within SMEs, there remain opportunities for future research to address the limitations identified and further advance our understanding of these critical organizational practices. By continuing to explore these topics, researchers can contribute to the development of evidence-based strategies for enhancing organizational effectiveness and employee engagement in SMEs.

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NEW MANAGEMENT PARADIGMS DETERMINED BY THE PANDEMIC: THE DIGITAL REVOLUTION IN THE OPERA SECTOR

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Abstract *This paper analyses the impact of the COVID-19 pandemic on the digitization process of the opera sector under the impact of the COVID-19 health crisis. Surviving in a time of humanitarian disaster was a great challenge for opera houses, which faced new challenges. Most of the world's opera houses survived this crisis, but in different ways. The authors identify three different categories of approach of digital technologies in response to the hostility of the environment, depending on the status and brand power of each opera house, the sustainable validity of competitive advantages, and the loyalty of audiences. Evidence collected from personal observations are presented. A comparative analysis of the management of opera houses in different areas of the globe was conducted to examine how they have embraced digitization to stay in touch with audiences during the pandemic. We have identified solutions like online concerts, broadcasting shows and concerts on radio and TV, using shows from the archives, and organising online museum tours. These provided joy in hard times to the public, hope and motivation, to escape the dark and sad reality. The results are discussed with reference to two ideal types of pandemic-induced pathways: back to the old normal vs. forward to the new normal. The influences that determine the differences in strategies are also considered: tradition, national context, leadership, knowledge, digital capability of the staff, etc. From an academic perspective, this article enriches the current understanding of the adaptation of the management model of opera houses in a hostile environment and provides managers with concrete guidelines on the systematic adaptation of their business models in hostile situations.*

Keywords: opera theater, pandemic crisis, innovation, digital, transformation
JEL Classification: D29; L29; L32 ; M10.

1.Introduction

This paper analyses the impact of the COVID-19 pandemic on the digitization process in the world of opera from the perspective of innovation management. With the outbreak of the pandemic in March 2020, those forms of entertainment considered non-essential and requiring physical presence were severely affected (Seetharaman, 2020). With the brutal freezing of all artistic activities worldwide (Annunziata & Annunziata, 2021), it was the online environment that fed the need for culture and reduced the anguish of isolation.

With social distancing and quarantine in mind, finding new ways to use media channels, which became a vital link to the outside world, turned challenging. For many, the pandemic accelerated the transition to the digital environment, and self-preservation determined the discovery of new paths to innovation and new ways of approaching the market (Chatzichristodoulou *et al.*, 2022).

Innovations in opera management occurred as a response to the new challenges imposed by global health restrictions and the digitization of everyday life. The unexpected event can be considered as an innovation opportunity (Drucker, 2002) and any unexpected success

should be exploited into an innovation opportunity by developing a new variant of the product or artistic act.

Innovation is quickly accepted if it is proven to subscribe to the improvement trajectory of the organization (Steiber *et al.*, 2020). Digital opera is breaking down barriers by cultivating a new audience of people who choose to watch performances from the comfort of their own homes rather than invest time and effort in a move. The pandemic has forced artists to make a virtue of being online. Virtual performances, discussions, and artistic presentations have become the "norm" in the pandemic.

2.Digital Transformation

Digital transformation is the incorporation of computer-based technologies into an organization's products, processes, and strategies and is defined as a socio-economic change shaped by digital technologies, which induces changes in the structures, routines, and business models of organizations (Warner & Wäger 2019).

Digital business transformation is an objective process that responds to changing business environments. Its implementation requires prioritization supported by financial resources, leadership, and the active participation of all employees in the organization. In the pandemic crisis, the desire to survive determined an open, firm attitude towards digital transformation. With the pandemic they went to forced digitization in response to "sudden and unforeseen disturbances that require the transformation of the service offer and the business model within the limits of available resources and operations" (Heinonen & Strandvik 2021, 103). In the case of these forced innovations, the goals cannot be predetermined and the effects can only be partially anticipated and controlled (Sarasvathy, 2001). Digital technologies strongly influenced the opera sector in the pandemic crisis and were based on four innovative forces with congruent directions: social networks, mobile devices, cloud computing, and data analysis. They have radically transformed society destroying old business models and opening new directions. Their impact can take place in a short time interval, but also in a longer interval (Heinonen and Strandvik 2021).

3. Types of operation management in the pandemic

Based on published data, personal observation and discussion with managers, we have identified a few types of operation management in the pandemic.

3.1. Operation management that took a prompt but cautious approach to digital technologies

The great opera houses of the world fall into this category. The management of these theatres confidently awaited the reopening and consciously limited the exploration of new options, taking a firm attitude based on the recognition and strength of their brand, the lasting validity of their competitive advantages, and the loyalty of their audience. They used the potential of digital technologies right from the beginning of the pandemic, but with caution. First, videos of previous performances and other behind-the-scenes documentaries of the theatre were made available on the web. Through the management policies addressed, they showed full confidence in a scenario of returning to the pre-pandemic model, using the digital space only as a temporary surrogate. Among so many free streaming deals, the big theatres have asked for an (albeit symbolic) price for viewings. In the following lines, some historical examples of the use of digital during the COVID-19 crisis are highlighted:

Milan's Teatro alla Scala approached digital strategies sparingly because of its dependence on the national public television company, RAI, which owns most of the video material of Teatro alla Scala's productions. Under the leadership of Sovvrintendent Dominique Meyer, Scala presented an exceptional televised event, the *Gala A Riveder le Stelle*. The show, conceived in cooperation with RAI1, marked a departure from traditional streaming featuring many spectacular moments and an impressive "special effects" show. The show was broadcast by Italian Television and had a record of views: 1.5 million in 24 hours and 2.5 million views after 48 hours. Teatro alla Scala launched its own opera streaming platform only in January 2023. The pandemic confirmed this strategic choice but did not accelerate it.

The New York Metropolitan Opera, through General Manager Peter Gelb, was among the first cultural institutions to understand the role that digital would play during the pandemic and had several historic initiatives, such as Free *Nightly Met Opera* streams aired throughout the opera's closure. The announcement of this series of transmissions was made one day after the closure of the opera. The broadcasts started on March 16, 2020. These constituted a free series of live presentations.The *At-Home Gala*, broadcast free on the Met website on April 25 at 1 p.m. EDT, was part of New York's Metropolitan Opera's *The Voice Must Be Heard* emergency fundraising campaign. The biggest names in classical music performed live on Skype from their homes in 13 different countries. Thirty-three live performances and seven pre-recordings took place over four hours. The event raised $3 million (1.5 million from private individuals and another $1.5 million from major sponsors) and the live stream on its website had reached about 300,000 views in 162 countries, and the total with replays had reached 1 million views within days. (Blum, 2020). *Met Stars Live in Concert* is another online recital series that featured opera's biggest stars live from striking locations around the world and broadcast via satellite in HD quality.Tickets for each recital were $20 and could be purchased on the Metopera website at metopera.org, and the performances were available for viewing on demand for 14 days after each live event..

Opéra National de France, an institution over 300 years old and with the largest subsidy from the French state – 95 million euros annually – cashed in for the first-time from virtual transmissions through the *L'Opéra chez soi* programme.wich was launched at the beginning of December 2020. The first broadcast was the ballet *La Bayadère* by Rudolf Noureev, and the viewing price was 11.90 euros. By December 20, 2020, after 13 operas and 8 ballets broadcast, the platform already had 2.5 million views on the institution's networks. It was the first time that this institution cashed in through virtual broadcasting.

The Bolshoi Theatre in Moscow held, for the first time in its history, a digital broadcast on March 27, 2020. It can be said that this is one of the good things brought by the pandemic. The Bolshoi Theatre partnered in this project with Google, Mezzo, *Pathé Live*, and *Bel Air Media*.

3.2. Opera management that saw the pandemic as an opportunity for expression

This category includes smaller opera organizations, which accepted the challenge of reinventing themselves of breaking the traditional barriers of operatic concepts in the new context. Compared to A-category theatres, which attacked the digital space in the first weeks of the pandemic, smaller theatres approached digital innovation cautiously also in the early stages of the pandemic. However, later embraced the change with great courage and determination through a proactive attitude. The equipment and technological readiness allowed small theatres to use the lock-down to experiment new ways of recording works for Internet broadcast.Thanks to this strategic approach focused on communication and building a youth-oriented digital community, theatres stayed in touch with their audiences and even managed to get in touch with new audience segments. In most cases, these theatres distributed their shows online for free, only asking for voluntary donations.

A Feast in a Time of Plague piqued the interest of the management team at Teatro Municipal Rio de Janeiro. The musical version by Cesar Cui, a Russian composer from the Group of Five, based on Pushkin's text and translated into Portuguese by Irineu Franco Perpetuo, was chosen. It was about a recording made during the quarantine, without the protagonists having left the isolation. The initiative belonged to the new Music Director Ira Levin and to André Heller-Lopes, renowned opera director in Latin America. The soloists recorded their vocal parts from their homes, creating their own script and setting, by candlelight .

The Handwashing Public Service Video Project is a project made up of a series of explanatory videos, featuring Pacific Opera singers performing well-known operatic moments, but with new lyrics by Bill Richardson.

Save at the Greek National Opera or Mozart in a Time of Corona was the project initiated by the management of the Greek National Opera (GNO) in Athens. The project consisted of a video released in October 2020, in which the new social distancing measures imposed by the Greek government and the rules to be followed when entering the opera house were explained. In this adapted version, in the aria, instead of listing Don Giovanni's conquests, the baritone presented the list of protective measures taken by the Greek National Opera against the spread of the virus.

Staatstheater Augsburg produced performances in Virtual Reality, which could be watched with the help of VR glasses, from home, without the risk of being infected with the coronavirus. The producers proposed a new experience, in 360-degree perspective.

Teatro Coccia di Navaro, produced the first smart working opera, already in April 2020, titled *Alienati*. The show was designed specifically for the internet, using a video game structure. Artists recorded from their homes and turned to a sound engineer. The viewers were allowed to be the protagonists of the story, being able to decide its course and the fate of the characters from the comfort of their own home. The viewing was free, but with the possibility of a donation to a special fund established by the municipality of Novara.

3.3. Personal management of one's artistic career in the pandemic.

In the pandemic, and especially during the lock-down periods, the focus has shifted from institutions to artists. In the previous period, most of the artists were employed with a fixed contract in an opera house, or had collaboration contracts, so they were not obliged to think about the management of their own career. With the outbreak of the pandemic and the closing of theatres, they had to be inventive and flexible to find new ways to stay connected with their fans, with their loyal audience. The main thing that most opera artists did was to engage in as active a presence as possible on social media. Most of the time, they did this alone, with their own tools and knowledge, but the most enterprising ones engaged in an accelerated appropriation of know-how and equipment, often even through collaborations, or signed contracts with specialized companies. These artists, who had a proactive attitude towards digitization, developed a more proactive attitude, feeling the need to regain their visibility in the new scenario.

Hänsel and Gretel with Animal Crossing avatars on the Nintendo platform was the project of two young sopranos, Larisa Baiton and Celeste Pelligrino, alumni of the New England Conservatory and co-founders of a small opera company in Boston, Massachusetts. They realized that interesting project right at the beginning of the health crisis, in the spring of 2020. Being also passionate players of Animal Crossing, the two had the idea of success to launch, through the company Due Donne Production, an opera on the Nintendo platform in the series of Animal Crossing games. Animal Crossing is a franchise developed and published by Nintendo and created by the Japanese Katsuya Eguchi and Hisashi Nogami. All characters were portrayed by Animal Crossing avatars (with comic character, oversized heads, and brightly coloured eyes, blue hair, etc.) Through this project, the two young musicians brought the work closer to the younger generation, the Animal Crossing players, but also won the appreciation of music lovers traditional.

Gingerbread! is the virtual version of Humperdinck's *Hänsel and Gretel* by Iford Arts, a Wiltshire company known for its educational work. This production makes clever use of Zoom-style home recordings with special backgrounds. This is a production created, written, and performed by the artists in their homes during the lockdown, recreating the opera in a whole new interactive way.

Mi camino is the new cycle of multimedia songs brought together in an opera, belonging to the composer and artistic director Héctor Armienta. It describes the impact of COVID-19 on agricultural workers in the Greater Bay Area. Armienta created an animated work inside a virtual world.

4. In conclusions

Managers of opera theaters were abruptly confronted with a total unexpected and unpredicted crisis of a total new nature and consequently, were caught without plans to mitigate this type of crisis. Due to health restrictions which abruptly closed live shows for an indefinite period they were forced to quickly look for alternatives to keep their activity, to continue to satisfy their public and to find new ways to generate revenues or to provide artistic comfort to the general public. Also, we conclude that the pandemic crisis and especially the lockdowns have forced international art world staff and managers to become aware of the fragility of "normality" in the artistic field, thus quickly lowering the resistance to change of artists and staff regarding the adoption of the digitally based solutions to deliver the show and keep in touch with the public. In general, all artists shared the same feeling about the pandemic situation: maintaining an emotional connection with the faithful public and sharing the feeling of continuous involvement and preparation for the relaunch of the cultural sector when normality returns.

Most artists were nostalgic for live performance, however, a significant part of them showed openness to the digital product, considering it an available surrogate for the live experience. Is there a "normal state" to return to, or is it time to define and establish a new "normal"? What normality means in times of pandemic? How the uncertainties and insecurities brought about by change can be addressed in accordance with the operatic tradition?

Based on the identification by the Opera managers of the opportunities and threats triggered by the health crisis, as well as by the openness or reluctance towards the digital space of the work, two trends/expectations/paths of the workers in the artistic sector were identified: the first, the Return to the Old Normality (RON), and the second: the Move towards the New Normality (MNN).

The first path RON is a temporary situation determined by the need to use the virtual environment only as a surrogate of the live performance, while MNN considers digitization as an opportunity for new operatic experiences compared to traditional participation in performances. According to RON, live experience is irreplaceable and will return after the pandemic, as this is the only way artists can address the public and be rewarded by them for their artistic performance (through applause). In this variant, the operating model of the business is confirmed, and the innovations are of small size. In this case, all expectations, actions, and resources of the institution are directed to speed up the resumption of live performances. This category includes successful organizations with a prominent position in the traditional market and a long-term stable position in the international market. They had a conditional openness to digital transformation. Examples from the A classification fall into this category.

The second path the MNN needs to identify extensive and long-term innovative solutions, to make digital experiences an autonomous part of the operatic product, and to revise and adapt the value- creation model of the institution. Resources are also directed towards increasing know-how in the field of digital technologies. Weaker market players were more motivated to experiment with variations from the traditional business model.

The willingness to experiment was also strongly influenced by the creativity of managers, as well as the willingness to work in co-specialized assets (Teece, 2007) by collaborating with other companies and institutions (specialized firms, research centres, and universities). On the other hand, people's desire for convenience and security has fuelled the addiction to digital tools, with consumers willing to look for smart gadgets, apps, and systems. It is, now, obvious that people's relationship with technology will deepen as the population increasingly relies on digital connections for work, education, healthcare, daily business transactions, etc. This pandemic has ushered in a new era, the Era of Tele-Everything (tele-work, tele-medicine, tele-education, and why not, tele-entertainment). And this "remote" process is growing. Many of the smaller opera houses, with a less prominent position in the traditional market, have survived the effects of the pandemic by proposing redesigned business models in response to the hostility of the environment and the changing behaviour of the public. These theatres have been able to adapt to a hostile environment, even gaining competitive advantages, just by using improvisation in adapting their business model. Examples from the B classification fall into this category.

We have also identified the third path Category C at the intersection of RON and MNN, which comprise" enterprising individual artists" who, being aware that the return to "old normal" will happen, were flexible and nimble, and accessed the way that allow them to stay in touch with their audience.

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THE ROLE OF SELF-MARKETING IN CREATING OPPORTUNITIES FOR ROMA EMPLOYMENT

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Abstract: *The role of different groups in society in the labour market is of vital importance for the functioning of a nation's economy. Equal access to employment is a fundamental condition for tackling social exclusion and is closely linked to reducing and combating poverty. Research on discrimination in the labour market goes back several decades and is primarily based on perceptions of discrimination. The Roma population is one of the most disadvantaged groups in Hungary, with the most severe labour market tensions and the largest number of underprivileged groups. Roma are considered a social group with below average labour market opportunities. The unfavourable social and economic situation of the Roma population in Hungary and their resulting marginalisation has become a platitude in public discourse and academic work. The importance of the issue is undoubtful, as it is estimated that the Roma population, which constitutes a significant proportion of the population, is the poorest, most excluded and, overall, the most vulnerable group in society. The gap between the Roma population and the majority society has been steadily increasing for decades, mainly due to the residential segregation and economic decline of the Roma. Negative discrimination in the labour market plays a crucial role in shaping the employment prospects of Roma people. On the one hand, this is due to the negative discrimination they face, and on the other hand, to the low level of knowledge acquired by these people compared to the average in society. In our study, we examine the factors determining self-marketing and the labour market chances of Roma in the context of the background factors, economic and social effects of unemployment, which particularly affect this precariat group. We make an attempt to prove that self-marketing has a right to exist among the Roma working population. In researching this topic, it is essential to address the issue of the conscious career management competences of members of the emerging generation and the crucial role of inclusive workplaces.*

Keywords: *Roma; lifestyle; equal opportunities; discrimination; labour market; self-marketing*

JEL Classification: R23; O15

Introduction

The Roma population in Hungary is an ethnic group that can be most characterised by disadvantage and, among other things, as a result of this, their chances and opportunities in the labour market are negligible compared to the majority society, or can be described as highly hectic. The health, social and economic situation of the Roma population in Hungary can be typified by a significant degree of underdevelopment and backwardness (Törő et al., 2017; Sárváry et al., 2019). They are a vulnerable and exposed group who face various forms of exclusion in many areas of daily life. Their economic disadvantages, weakness and low presence are also the cause of their segregation, which affects several areas. The Roma can also be described as a precariat group, as their volatile, fluctuating and precarious labour

market situation means that their employment prospects and income are characterised by imbalances. Their quality of life is the major determinant of their employment potential (R. Fedor, 2021). The Roma population is weak and inefficient in terms of parameters of their educational and labour market status, which results in a temporary inability to escape from poverty, immobility, and even the risk of further decline as an outcome. The disadvantaged situation of the Roma is further exacerbated by factors that are a projection of discrimination, rejection and prejudice shown by the majority society.

Discrimination in the precariat group of Roma

A number of international conventions and documents of international scope and legal force include a prohibition of discrimination. The prohibition of discrimination can be seen as a variable concept the message and meaning of which has been permanently enriched and expanded over the years and decades. Regarding fundamental human rights, the Charter of Fundamental Rights of the European Union has a binding legal force in the Union, since it guarantees and ensures the recognition of and respect for the different nationalities, cultures and traditions of the Member States as well. Article 21 of the Charter summarises all the characteristics, descriptive features, traits and criteria based on which discrimination is prohibited. The adoption and acknowledgement of EU Community law has played a decisive role in the development and modernisation of protection, security and guarantees against discrimination, as it has made the Member States subject to an obligation to transpose it. Of particular importance are Directive 2000/43/EC implementing the principle of equal treatment between persons irrespective of racial or ethnic origin and Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation (Pap, 2021). Hungary's fundamental law (constitution) also contains a prohibition of discrimination, and our Equal Opportunities Act and certain sectoral laws also cover and affect this area. The modern mentality and way of thinking have made it essential that the dilemma of equal opportunities and discrimination become a significant phenomenon. However, there is a difference in the conceptual framework and definition of equality and equal treatment. Equality of opportunity is one of the fundamental human rights that creates and establishes equivalent, equal opportunities for all people, so that everyone can enjoy the rights granted to all in the same way and in the same proportion as others. Equal treatment, on the other hand, is defined as the right of all to equal treatment, which means that no one can be discriminated against on the basis of their membership of a particular group or their characteristics (Dajnoki & Balázs-Földi, 2016). Discrimination is a complex and multifaceted phenomenon that plays a prominent role in the reproduction of inequalities among disadvantaged social groups (Tardos, 2015).

Discrimination at work

Discrimination at work is a recurrent form of discrimination. Discrimination at work occurs when, for example, a job advertisement mentions certain characteristics that are expected of employees as a kind of necessary criteria or excludes them because of a particular characteristic. It also includes denying employees certain rights at work, perhaps not recognising their achievements, or prohibiting the use of certain equipment or premises. Employers have a duty, responsibility and obligation to respect the requirements of equal treatment. However, it is the employer's actions that make it most difficult to recognise and identify discrimination at work, as it has a wide discretionary right. However, in employer decision-making, it is essential to exclude factors and components that would result in an adverse impact or consequence related to a protected characteristic (Halmos, 2018; Bene & Salamon, 2016).
Babusik distinguishes between two forms of formal discrimination: actual and statistical discrimination. Formal discrimination occurs, for example, when an employer refuses to

employ a Roma worker or applies reduced wages. In the case of statistical discrimination, the employer's decision to hire is based on a lack of information. Roma often face a phenomenon of rejection, which plays a decisive role in the development of their employment indicators. Technocratic management styles and attitudes play a role in the emergence and presence of discriminatory businesses. These managers are characterised by their distancing and avoidance of workers whom they despise, since for them the excellence and impeccability of the workforce are paramount. The results of the studies and research on willingness to employ suggest that the employers surveyed employ Roma to a negligible extent and would not employ them even if they were qualified for the job. When examining the employment of Roma, it is also worth looking at the types of jobs that employers contract them to do. Most companies do not employ even highly qualified Roma with higher education in managerial positions. This may also be evidence that for the Roma population, even a good level of education is not a guarantee for a white-collar job or even a blue-collar job. This is due to discrimination in the open labour market, which is a phenomenon of prejudice and racism against Roma (Babusik, 2008).

Discrimination in the labour market

The employment indicators in Hungary are affected by the labour market situation of the Roma population, therefore a thorough knowledge of the Roma labour market participation is essential to achieve equal opportunities and improve economic indicators (Varga, 2020). There is a cumulative discrimination in the labour market for Roma workers. In their case, discrimination may be present in selection, classification, promotion or even dismissal. When examining the equal opportunities of Roma, it is of particular importance to look at the chances of Roma workers to successfully fill certain positions and jobs (Suhajda, 2018). The labour market failure of this socially precarious group is fuelled by a number of factors (e.g. under-education, inherited disadvantages, discrimination, early school leaving, segregated living conditions, etc.) that hinder their integration into employment (R.Fedor & Balla,2019). The Roma population in Hungary is faced with a rejection that is now widespread, rooted in stereotypes, and these negative prejudices create unfavourable and hostile conditions that do not contribute in the slightest to the development and regeneration of the role of the Roma in society and economy, and to a positive shift in the general perception of them (Olasz, 2020).
Protection against discrimination can be given by an inclusive, welcoming society where the workplace environment is not a breeding ground for prejudice. Reducing disadvantage for Roma workers in the labour market is a complex task requiring support from a complex background, closely linked to ensuring equal access and cooperation between support services. At present, the disadvantaged, often cumulatively disadvantaged situation of the Roma population has a negative impact and acts as a risk factor for the development of their talents (Visztenvelt et al., 2014).

The role of self-marketing in enhancing labour market opportunities

Today, self-marketing is becoming increasingly important in terms of increasing labour market opportunities. For most people, the concept of marketing is a corporate activity that includes product development, pricing, distribution and communication. These activities have been developed for companies in order to maximise their effectiveness and profits. However, these activities should not be applied only in a corporate context, but nowadays they are much more than that, as they can also be applied to individuals (Kotler-Levy, 1969). There are books and websites on the subject, and even consultancy firms can help you in the world of employment. There is no doubt that there is a consensus among professionals in the field that in order to fill certain positions, it is necessary to have a well-designed

personal brand. In general, self-marketing is useful for career building (Kitchen, 1989), but we believe that it can also be used as a tool for the reintegration of Roma into the labour market.

The experience of employers, companies and enterprises shows that the chances of Roma workers to find a job are further weakened by the fact that they often do not appear at the interview. This can be due to delays caused by financial constraints, but also to a lack of self-confidence. Their lack of motivation to enter the labour market may also stem from discrimination, which further contributes to their lack of self-confidence. Roma workers with lower educational attainment tend to have confused CVs (if any), with major gaps, uncovered or passive periods. In the absence of accurate background information, these factors may make employers suspicious, although it is possible that a very honest, dedicated and hard-working worker may have had previously undeclared work that he or she is afraid to mention on his or her CV.

Studies show that the Roma are dominated by unemployed people with low educational qualifications and economic disadvantages. Of course, there are also smaller groups in Roma society who already have a secondary or higher education. But they also face difficulties in reducing their disadvantages. Even if they have excellent professional skills, they may lack in professional contacts. For those Roma workers who are more educated than their peers, we believe that a certain degree of self-marketing could greatly improve their chances in the labour market. The justification of self-marketing among the Roma working population is underlined by the problem of mismatch between labour market supply and demand. The reason for this can also be found in the attitudes of young Roma people, who 'typically' take the easy way out, often opting for the simplest solution, lacking a vision of the future, not sufficiently goal-oriented and not sufficiently informed about their job opportunities in good time. The vast majority of the Roma population is under-educated, with primary education, although the number of young people with secondary education is slightly on the rise. However, this is the 21st century, where jobs requiring secondary education are often filled by college graduates. Young people in Roma society, like young college graduates starting their careers, have too high expectations of the world of work and low work motivation and morale. Most young Roma people are completely uncertain about the field of work in which they see their future (Dávid, 2009).

Members of the emerging generation need conscious career planning if they want to increase their chances in the labour market. Short- and long-term thinking are essential. This awareness should start during the period of study, choosing a profession or school that matches the demand of the labour market. Unfortunately, this kind of awareness is often completely absent in Roma society.   Students need to plan ahead, assess their labour market opportunities and qualifications and set realistic expectations of themselves. Regrettably, we sometimes feel that society no longer has any expectations of young Roma people, and that they have no expectations of themselves. We believe that the first level, the first step in self-marketing is to develop this kind of awareness. There is little or no awareness of the labour market among prospective and current Roma workers. An increasingly fast-paced labour marketplaces demands on its workers (e.g. language skills, work experience) that a disadvantaged Roma worker with low educational qualifications is unable to meet. Roma workers almost completely lack the self-awareness that would make them stand out from the crowd. Personal branding is also important, as prospective employers often "check" the applicant in the online space and the information they gather there influences the selection process.

A Roma student who consciously plans and decides what field he/she would like to work in in the future, and collects information on labour market opportunities, accordingly, develops himself/herself accordingly, and increases his/her chances in the labour market. The essence of the self-marketing process is that the individual is constantly marketing him/herself. The object of this marketing is the individual. Self-marketing is the process of creating a professional self-image of oneself in order to get a lucrative job. This activity must

continue once a job is obtained, as successful career development also depends on self-marketing. This is where Roma workers are currently performing very poorly. Given their disadvantaged situation, it is a real success if their efforts to find a job are positively assessed. Roma workers who lack self-marketing have very poor job retention skills. Retention characteristics are less present in their work ethic and in their work socialisation toolbox. With adequate self-marketing, they would have the possibility to fill a job for a long period of time, in contrast to the current general picture, which shows that Roma workers are employed by an employer for a short period of time. Shuker (2010) defines self-marketing as an exchange of resources. Individuals market themselves in order to obtain a job and thus receive a salary in return for their work, and later continue this activity in order to possibly be promoted and thus receive an even higher salary for a more responsible job. In self-marketing, the product is the individual who "sells" his/her qualities to the labour market. The employee should also think about what skills, qualities and characteristics are important when looking for a job. The individual should focus on the needs of the labour market. The main motivation for Roma participation in the labour market is to earn an income. The working age Roma working population is not yet able to focus on labour demands due to a lack of self-marketing and multiple social disadvantages. There is also a growing recognition among workers today that we are no longer living in an era of lifelong jobs, and it is rare for someone to spend decades with an employer and still manage to retire. With career changes becoming more common throughout our lives, workers are increasingly taking personal responsibility for shaping their careers. Personal branding can also help to increase employability. Competition in the labour market, the changing economic environment and periods of crisis have led to a downward trend in employment opportunities, especially if the individual is a Roma worker. In order to increase the opportunities for prosperity and employment, workers need to pay more and more attention to their personal brand. Everyone has a personal brand (Wee, 2010). A personal brand is the image that we project of ourselves to the outside world and which includes our behaviour, our appearance, our manifestations. In personal branding, the individual, the employee, seeks to emphasise his or her uniqueness. In this case, the focus is not on making the individual, the employee, better than the competition, but on highlighting his or her true difference and authentic competencies.

The role of inclusive workplaces as a marketing tool

Increasing the number of diverse and inclusive jobs also increases the chances of Roma workers to find a job. This approach, which is mostly typical of larger multinationals, possibly global players, but is also increasingly common in medium-sized enterprises, is not only beneficial for the social responsibility of companies but is also increasingly required by business interests. Creating inclusive workplaces is a marketing tool to enable companies to organise diverse teams of employees who can respond to complex tasks. In a competitive business environment, employers have a responsibility to create a safe working environment for their employees. More and more companies are making efforts to make their employment practices inclusive and are using marketing tools to communicate their successful performance and progress to the public (Bene,2016). Inclusive workplaces help to combat social exclusion, which is also responsible for discrimination in employment. This kind of change in approach and employment practices and ideas contributes to improving equal opportunities in the workplace by managing diversity effectively. Diversity employment programmes value the diverse backgrounds of workers and seek to develop employment policies that, through their human resource management, retain the best people from all cultures and backgrounds. Inclusive workplaces are also a marketing and management tool to help companies increase their productivity and efficiency. As for inclusive workplaces, vulnerable groups often appear in the communication campaigns of large companies, but it is observed that advocacy for more "unpopular" social groups (such as Roma) is less

frequent. There are companies that support NGOs working with Roma communities, but these are rarely given a central role in company communications. We believe that an increase in inclusive jobs could have a positive impact on the employment prospects of skilled Roma workers. The employment of Roma workers does not impose any particular infrastructural burden on companies, e.g. no need to initiate adaptations for wheelchair access, etc. The majority of Roma workers come to the company from disadvantaged economic and social backgrounds. The majority of these companies already have tools (e.g. housing support, commuting support, clothing support, mentoring) to facilitate the integration of Roma workers.

The majority of Roma workers often face discrimination because of their origin. With inclusive workplaces, it is possible to ensure that companies really only consider what is relevant to them in the selection process, e.g. personality, skills, hidden potential (Kelemen et al., 2018).

Summary

In terms of labour market opportunities, the Roma society can be seen as disadvantaged in several ways. Concerted efforts are needed to overcome this disadvantage, increase job opportunities and reduce poverty and deprivation. Economic crises always hit the most vulnerable groups first, jeopardising the modest progress made in implementing national Roma inclusion strategies. Genuine Roma inclusion means that Roma have equal opportunities with non-Roma, not vice versa. In addition to income poverty, they are characterised by a multifaceted deprivation that is present in their education, employment and many other dimensions that determine their quality of life. Roma society is disadvantaged in multiple ways in terms of labour market opportunities. The problems faced by Roma are complex and require an integrated approach and coordinated, mutually reinforcing measures. The evidence of the past decades shows that progress can only be made if active labour market incentives are combined with an active and inclusive Roma society. The biggest problem in the labour market is that jobseekers do not have the right skills to fill vacancies. Identifying the education and labour market challenges and defining development pathways is essential to achieve a balanced labour market. There is a strong demand from employers for skilled labour. However, for change to take place, there is a need for cooperation between the relevant labour market players, such as the representative bodies of the disadvantaged target group concerned, minority nationality self-governments, municipal and county self-governments, vocational training and adult education institutions, and labour market organisations. Self-marketing, personal branding and an increase in the number of inclusive jobs can have a positive impact on increasing the employment opportunities of the Roma population. Increasing employment, reducing unemployment and labour shortages, improving the employment of disadvantaged people and reducing regional disparities can only be achieved through cooperation.

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