TRENDS IN EDUCATION 4.0

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Abstract: *In the modern world, we are facing with digitalization in all spheres of human life. Of course, digital technologies rapidly implemented in the education system. We can call this term Education 4.0 due to the school of thought that encourages non-traditional thinking when it comes to imparting education. Education 4.0 essentially uses technology-based tools and resources to drive education in non-traditional ways. Instead, with Education 4.0, you can have remote students that sign into their classrooms using the internet through modes like massive online open courses or video chat or dialling in through voice calls, to learn materials that are more dynamic in nature with peers who might or might not be learning at the same pace as them. At the present moment corporate and university circles understand that "Lifelong learning" has been not only a buzzword but vital objective for an opportunity to follow modern trends and stay competitive. An Unicon study reports that the number of corporate universities - which provide education in-house, on-demand, and, often, on the job - has exploded to more than 4,000 in the United States and more than twice that number worldwide. The first trend in the Education 4.0 is powerful trends reshaping the industry and fueling the emergence of the Personal Learning Cloud as a networked learning infrastructure. The second trend is the decline of standard classroom-based programs, such as those primarily offered by business schools and universities. The third trend is the rise of customizable learning environments, through platforms and applications that personalize content according to learners' roles and their organizations' needs. The dominant platforms now count millions of enrollees in individual courses and tens of millions of total users. These trends are linked and form a cohesive pattern. Our goal is to present these trends in Education 4.0 and the strategies, benefits and challenges of digital education.*

Keywords: *Education 4.0; digitalization; Lifelong learning; customizable learning environments.*

JEL Classification: *A23; I21; I26.*

1. Introduction

The history of the development of digital education begun at the end of the 20th century. One of the significant events occurred in 1969 when the Open University was founded in the UK as the first institution that augmented correspondence

learning through mail and TV, with short residential courses and supporting classes at different physical locations. On the application deadline of August 4, 1970, the Open University received 42,000 applications for 25,000 places (Kaplan and Haenlein, 2019).
In 1989 the University of Phoenix launched its online campus, which offered an entire curriculum of bachelor's and master's degrees online. The term Massive online open course (MOOC) was coined in 2008 by Dave Cormier from the University of Prince Edward Island in Canada with regard to a course called Connectivism and Connective Knowledge. Later, the name would be appropriated by software developers, global universities and commentators to describe even larger scale implementations. Here are David Cormier and others reflecting on that appropriation (Blackall, 2016)
In 2011, Sebastian Thrun and Peter Norvig developed the open online course Introduction to Artificial Intelligence – a derivative of a course they would normally teach at Stanford University.
It attracted hundreds of thousands of participants, leading to the establishment of Udacity – a software and platform development that hosts and runs other such courses. Also out of Stanford would come Andrew Ng and Daphne Koller who ran open online courses in 2012, and who would then establish Coursera – another software platform development project to host yet more "open" online courses (Blackall, 2016).
We can see that the idea to study through online courses spread like wildfire so that 2012 was proclaimed ''The Year of the MOOC'' by the New York Times.
At the present moment corporate and university circles understand that "Lifelong learning" has been not only a buzzword but vital objective for the opportunity to follow modern trends and stay competitive.
The growing assortment of online courses, social and interactive platforms, and learning tools create spaces, which call "personal learning cloud". Organizations and teachers can select components from the personal learning cloud and tailor them to the needs and behaviors of individuals and teams. The personal learning cloud is flexible and immediately accessible, and it enables employees and students to pick up skills in the context in which they must be used. In effect, it's a 21st-century form of on-the-job learning (Moldoveanu Narayandas, 2019).

Strategies for education in the Digital Age

Like several other nonprofit and commercial industries, the education sector has been subject to a series of fundamental challenges in the past decade. Education used to be considered a public good, provided by nonprofit organizations that were unexposed to market pressure and had clear societal missions. Now, education is becoming a global service delivered by quasi-companies in an ever-more complex and competitive knowledge marketplace. To cope with these challenges, education institutions need an appropriate strategy.
Higher education has become a crowded global marketplace and, as such, is not immune to changes affecting 21st-century society – an increasingly global, digital, and dynamic environment (Pankaj, 2017). Universities have three basic missions:

teaching, research, and public service. On the one hand, to survive, education institutions must behave like commercial organizations, prioritizing revenue creation. On the other hand, they must also serve as nonprofit organizations, prioritizing the public good and serving as providers of knowledge and a path for educational development (Council of the European Union, 2014).
Over the past decade, however, the field of education has undergone substantial deregulation, and as a result, the sector currently faces a stronger need to react to the competitive environment.

2. Materials and methods

SWOT analysis is extolled as an effective research methodology for strategic planning and strategic management. Methodology, as a research system, is the one that teaches us to use methods, according to the rigors of a methodology appropriate to the subject of research (Ristea and Franc, 2009).
The scientific knowledge of social facts, phenomena and processes are accomplished with the help of clearly defined concepts, using rigorous research methods and techniques, verifying hypotheses or following the objective description of social life (Chelcea, 2007).
SWOT analysis is a method, which can be used for gaining an overview of a social system (for example education) by assessing internal and external factors that affect the system and that allow highlighting its strengths and weaknesses in relation to the opportunities and the threats existing in the institutional environment (Daniela, 2017).
Therefore, SWOT analysis can be used effectively to build competitive strategy. Multiple authors from different

3. Results

In accordance with the System Approach, education as a system are wholes and it interacts with their environments and consist of various sub-systems (Pahl and RICHTER, 2009).
In this sense, an education system exists in two environments, one being in itself and the other being outside. It is a necessity to analyses these environments to determine strategies for education in the digital age. Eventually, SWOT analysis is the most appropriate method of identifying the best strategy (Gurel and Tat, 2017).
Table 1 presents a high-level synthesis of eight trends, categorized within the format of a classic SWOT analysis.

Table 1: SWOT analysis of current key trends impacting education

Strengths	Weaknesses
An essential source for a society's talent and innovativeness - Institutionalized public service with a societal mission; - Important provider of knowledge and innovation;	**A substantial delay in entrance of business practices into higher education** - A tradition of being a public service financed and protected by the State

Strengths	Weaknesses
National driver and global ambassadors higher education as a domestic resource, engine of growth and economic recovery; - International expansion and global knowledge dissemination	**Low responsiveness to changes within the corporate world** - Little adaptation of programs and curricula to recruiters' needs and job expectations
Opportunities	**Threats**
Fast-evolving educational environment through digital technologies - Development of new markets, potential productivity gains, and branding possibilities - Advancement of both general knowledge and the network society **Rapid transformation encouraged by sociodemographics** - Millennials seeking augmented educational experience - Growing and changing student population	**A continuous decrease in public funding** - A necessity for external fundraising and increased self-financing - Need for the marketization of education, potentially lowering academic standards and quality **Increasingly competitive environment** - Domestic deregulation leading to new market entrants - Globalization broadening competition to an international scale

In the era of globalization, knowledge, research, and innovation are becoming increasingly important resources, and these developments are influencing the societal role of universities (Välimaa and Hoffman, 2008). Furthermore, in a global market in which national economies compete with one another, educational institutions are key players in enhancing the positions and reputations of their respective countries by fostering innovation, supporting the economic growth their countries, from the one hand. But on the other hand, education institutions strive for internationalization, as a source of opportunities and resources. Moreover, for countries importing foreign students, international education is a lucrative business. This trend of internationalization suggests that we will observe increasing competition at institutional, national, and international levels.

To compete in the marketplace, education organizations are required to engage in increasingly complex marketing activities, encompassing multiple targets, media, and geographies. As a result of such marketization of the education sector, management approaches and practices that are typical to private sectors are increasingly being applied to universities. But these trends entail serious risks of decline in the quality of education and research. And this is the main weakness (Pucciarelli and Kaplan, 2016).

As we can see from the SWOT-analysis table digitalization gives the greatest benefits for the education system. The advancement of the digital environment is an enormous opportunity for those education institutions able to leverage digital technologies for their own benefit, for example they provide new channels for growth through borderless, virtual education, which can enable education institutions to address the increasing demand for education worldwide, a demand that cannot be fully met solely through offline channels (Friga et al., 2003). Digital solutions can also

contribute toward cost reduction, as the transition from physical to digital solutions can improve efficiency and save costs EPRS (2014).
Another opportunity faced by the education sector relates to sociocultural and demographic trends, including an influx of tech-savvy students, and general growth in education demand and diversity in student populations. The strategies of education should address these developments.
The main threat to the development of the education system is decreasing public funding for universities. The deregulation of the education sector has increased universities autonomy, self-organization, and accountability (Hoecht, 2006), yet it has also facilitated some level of privatization of the sector and entrance of new players. This trend, coupled with the digitalization of education, has made competition in the education sector even more stringent. Universities need to compete in a crowded, global marketplace (Schofield et al., 2013), and the consequent need to market themselves to attract students, and thus to maximize revenues, has led many educational institutions to adopt a more consumerist approach, catering more to students wishes. This trend, however, has negatively impacted academic standards and threatens future academic quality.
So, a detailed examination of the strengths, weaknesses, opportunities, and threats suggests that the education sector must respond to the following three core challenges:

1. Enhance education institutions prestige and market share in a global educational market.
2. Embrace a deeper entrepreneurial mindset, with corresponding modus operandi and decision-making approaches.
3. Expand links, interactions, and value co-creation with key stakeholders.

Benefits and challenges of digital education

There are different benefits and challenges for the various types of stakeholders involved in digital education, such as education providers, businesses and employers, government and individual learners and students.
One of the most important benefits for education providers is that IT-technology makes education more efficient, scalable and accessible. Learning and training providers could reach more isolated learners and tailor the experience to the needs of the individual. Digital technologies could drive collaboration networks between providers, improving value for money, as well as innovating to meet specific demand. But the core challenge for the learning system and education providers is the lack of a political system, government regulation and standardization of the digital products will is likely to affect funding and to increase the costs of learning and that of education providers. Also, it will inhibit wide penetrating digital technologies into the traditional educating system.
On the flip side, there could be a high demand, but a lack of supply on the training provider side, with no learning or education provider able to provide the education that is required. Another challenge is the vested interest in keeping the status quo, particularly on the part of higher education institutions that have not yet embraced the opportunities offered by digital education.

Concerning the benefits for business and employees, the following can be noted. A growing number of businesses and employers have better 'ethical awareness'; they are working to reduce the skills gap and developing employees' skills, which could directly improve their financial and production outcomes, drive down costs and help businesses and employers maintain a competitive advantage. Contemporary education technologies can support and help to overcome this loss of knowledge and experience. Businesses are also keen to incorporate innovation, which can be driven by digital education and can help to increase engagement with the market and customers locally, regionally and globally.

A key challenge for the businesses and employees that was raised is that businesses and employers will push for change in digital education only if it does lower costs or increases revenues. This includes any decision related to investing in either upskilling employees, infrastructure, or the content of digital education. Government is also considered as a part of the challenge, as it lacks understanding of the business models used by businesses. Another challenge related to the current lack of information on skills: businesses and employers do not have enough information about the skills gap to address it. However, in the future, it will become easier to map the skills that already exist and the skills that are being developed, in order to see where the gaps are.

Speaking about the benefits of digital education for the government, the following can be mentioned. Digital education provides the government with the opportunity to increase outreach to more isolated groups of people, to ensure equal access and quality of education, and, overall, to reduce the digital knowledge gap. Also, digital education has the potential to reduce costs by growing businesses and increasing tax revenues was also brought up; however, achieving cost reductions would necessitate investment into setting up an appropriate digital education platform. Engagement in digital education could give the government access to more data, such as the skills and educational attainment of learners, with the possibility of turning this data into feedback and insights for future education. However, the infrastructure that would be required to allow for this type of data usage does not currently exist.

But there are some problems with the current role of the government in facilitating digital education. And the main is the difficulty of bridging the digital divide due to a lack of awareness from policymakers about what is happening in the digital world, and the high speed of development of digital education, both of which impact the development of a holistic strategy, as it takes time to implement and evaluate strategies. For a better balance to be found between what needs to be done quickly and what needs more time to be developed correctly.

A key benefit for individual learners is how traditional and formal education can be transformed into more interactive, exclusive learning for different types of students. IT-technologies can be used to aid learning, also it could be a way for learners to discover the material they wouldn't necessarily have otherwise. New generation notice that using technologies helped them practice and revise. It should be marked also that high quality of digital learning as becoming an expectation because it is

relevant to what learners use every day. The digital quality of learning technologies should be used as a basis for schools or institutions to improve their standards.
But at the same time, there are a lot of challenges related to raising such factors as skills level, buy-in, and exclusion. Not everyone in society has digital skills, the motivation to develop these skills, or an understanding of what they might gain from digital education. Young people can also be put off by the low-level technologies used in schools, compared with the high-quality digital content that they are used to outside school. More needs to be done to provide evidence regarding digital education and its benefits. Also one of the crucial challenges relates to the affordability of technologies, where exclusion can occur based on access to technologies (Grand-Clement, 2017).
While digital education can be a tool for inclusion with the traditional learning system, there are a number of barriers to inclusion which go beyond the use of, and access to, technology. For instance, the lack of digital skills prevents citizens from accessing digital education. Highly-literate people are more skilled with, and confident using, technology, compared with illiterate or people with limited literacy. The same people who are excluded from education, therefore, have a higher chance of also being excluded from digital education. At the same time, the lack of clarity around the value of digital tools results in a lack of motivation on the part of the individuals in considering or accessing digital education.
In adults, the impetus to engage in training and learning is often a desire to change something – for example, to upskill or to enable a change of job. Even though some adults are interested in education and technology, but they are rarely fully integrated into the digital education market.

4. Conclusion

The digital world is increasingly penetrating the education domain, with IT-technology gradually being used to deliver education, knowledge, and skills in new and innovative ways, for instance, such as personal learning clouds. This penetration is coupled with future changes to the model and pattern of work, which are themselves affected by the uncertainty market economic, as well as by political shifts. Given the increased use of fast-changing digital technologies in the workplace, new skills needs have emerged. The use of these technologies has contributed to transforming learning and skills development into a lifelong process.
Regarding the roles different stakeholders have to play in the field of education provision in this digital age, there is individual responsibility to continuously upskill and renew one's knowledge, as well as a wider responsibility across government and businesses in terms of making learning and the education system accessible, efficient and relevant. There is a need for digital skills to be better integrated into formal education and lifelong learning opportunities, in order to provide citizens with the tools they need to succeed in everyday life as well as in potential future careers.
Many types of research pointed that younger generations are in the main more digitally literate than previous generations and because more and more information

is now available online, the role of teachers is changing towards being more of a guide or mentor.
As for government and businesses, they have an important role to play in encouraging greater use of digital technology in learning. It is important to recognise that the future should not be driven by technology. Rather than being an end in itself, the use of technology should be a tool to improve learning and outcomes for individuals by making learning more adaptive and flexible. Further research is required to identify the skills needed today and to predict where skills gaps and shortages may develop.
In order to affect change in the era of digital education, government, businesses and industry need to work together to ensure that digital education, in the greater sense, facilitates accessibility and wider societal inclusion, so that every individual learner, of whatever age and background, has access to the opportunity for digital learning and the benefits which digital technology can offer.

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