Current challenges in the higher education system in the context of digitalization and internationalization

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Abstract

Current models of education are based on current resources available to both the education system and the artificial intelligence system, but in close interdependence with existing global needs, technology is one of them. Moreover, we believe that more and more in the hierarchy of resources, the place of the human factor is replaced by artificial intelligence (whether we are talking about educational software or intelligent technologies, as is the case in language sciences). New ways of approaching and coordinating education aim to increase the flexibility of actors involved in education (especially virtual education networks) and harmonize the results of those higher education institutions that master and use complex but complementary technologies to obtain a product. optimal final education and with a direct connection with its beneficiary, respectively the student in his process of continuous training and adapted to the current needs of the market, correlated with the trades of the future.

The defining elements for any model of education, respectively for the elaboration of the curriculum, are given by compulsory international programs (Cambridge, Oxford, MIT, etc.); preferential national programs; optional local programs; and individual programs.

The digitization of the education system through artificial intelligence tools are among the current challenges of the education system, and mobility (classical and virtual) is the key to internationalizing the education of the future.

- **Keywords:** education system, artificial intelligence, sustainable development

- **JEL Classification:** E44, F65, O31

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Research methodology

The methodology of the paper has as direct tools the collection of data and information from the specialized literature and from the existing global practice in public and private higher education institutions, but especially the scientific articles published on specialized research networks (Research Gate, Academia.edu, RePec), articles published in various journals, relevant books in the field of reference, legislation, analysis and studies, official documents of the various institutions for quality assurance of higher education institutions, other relevant sources. Moreover, in the methodology, we will analyze the documents using the comparative, analytical, descriptive method, without participatory and participatory observation and the use of a set of information sources, data collection in established databases. The paper will also be based on annual reports, publications, consolidated statistics provided by the World Bank, World Economic Forum, European Commission, OECD, data that need to be processed in order to provide an overview and analysis of the most important changes that have place globally - considered representative for understanding the phenomena studied. To substantiate the model of education through digitization and internationalization, we have used observation and examination tools, research methods based on the basic principles of scientific research, and we have also created procedures based on factual analysis, following significant practical experience, and intense documentation in national and international literature.

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The core curriculum will also respect the 8 key EU competences:

1.communication skills in the mother tongue and two languages of international circulation;

2. fundamental skills in mathematics, science and technology;

3. digital skills (use of information technology for knowledge and problem solving);

4. axiological or valorization skills (necessary for active and responsible participation in social life);

5. skills for managing personal life and career development;

6. entrepreneurial skills and financial education;

7.competences of cultural expression;

8.Lifelong learning skills.

Competences will be applied in all areas derived from priority international education programs, but also for the other components of the curriculum.

This curriculum design formula respects both the needs of the international market, the needs of cultural conservation, the needs of local development, and especially the needs of personal development.

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The tools used in the field of the financial industry are tools that can be used in the digital university education system. Moreover, they are tools used in the process of internationalization of higher education institutions globally. These digital tools can be seen in the figure in the image.

Figure no.1. Industry 4.0. Framework and contributing digital technologies

Source: PwC report, 2019

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Figure no.2. Current trends of research with impact on education system

Source: Prof. Adrian Curaj, research paper Economic Model 2040, Quo Vadis Romania?, 2019

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To be able to develop tools and mechanisms for the university education system in line with current global trends and under the direct influence of artificial intelligence, we believe that adapting to digital education technologies and creating education models at the universities that use them is the pillar of basis in the development of the new architecture of education services connected, on the one hand, to the real needs of society, but especially connected to global trends, as reflected in the figure above.

Figure no.3. Artificial intelligence and robotics for systems

Source: World Economic Forum, 2019

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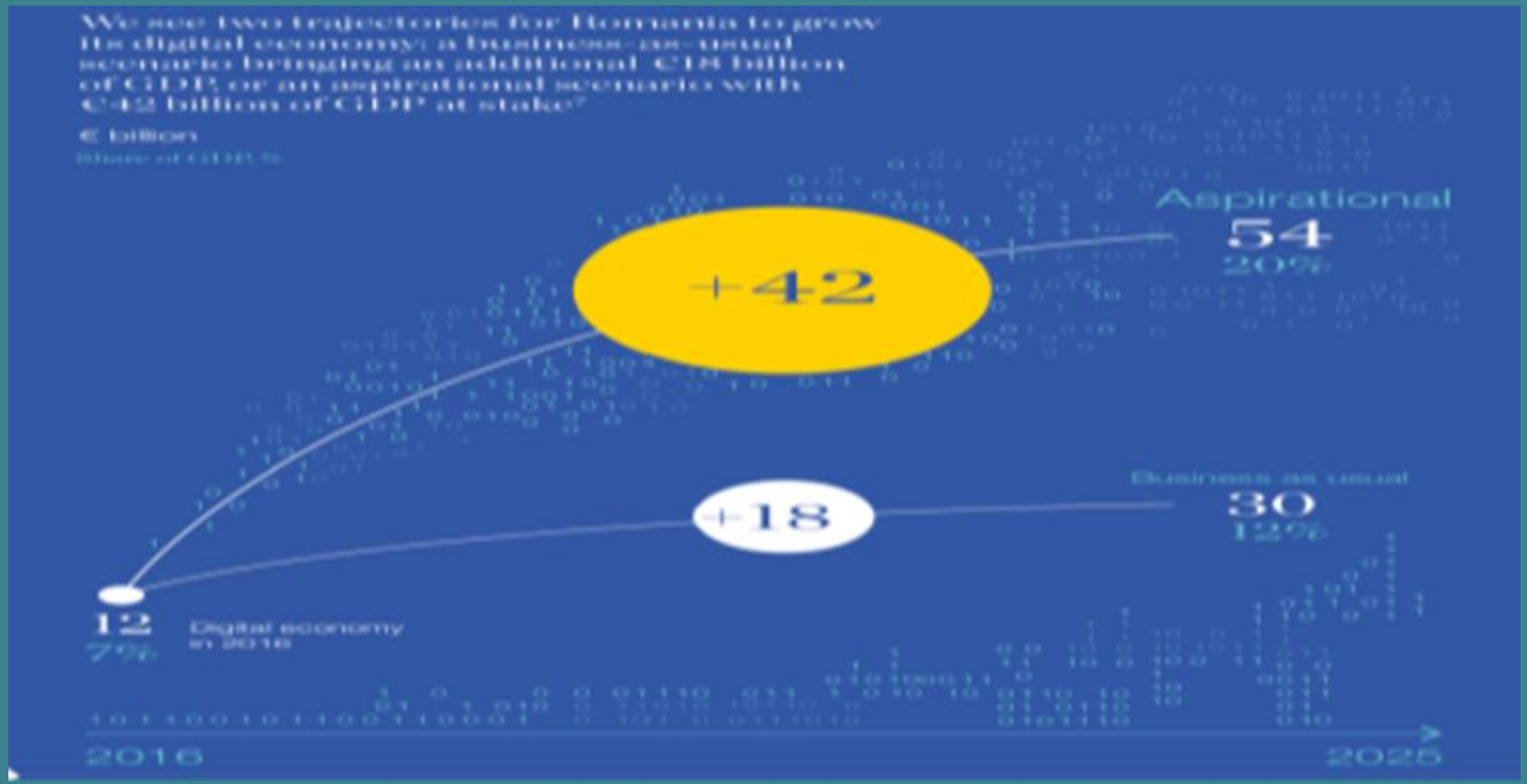
The holistic approach of the phenomenon of expanding innovations in the university education system, respectively of the current technologies used in the university education process, as abbreviated differently at ***EducationTech***, knows very specific elements and adapted to the university education context globally. while the share of online university education (as a result of the COVID 19 pandemic) in the virtual space is dominant compared to the form of education in the traditional system. Moreover, this new education tool has emerged mainly due to the need to streamline the technology-based continuing education system, either to provide education services tailored to current market needs (especially those in need of internationalized education/mobilities), as well as the design of new educational products in the university environment that is reliable and that respond to the market.

The impact of these technologies used in education will have a direct impact on the real economy, more precisely on the professions of the future in the context of their digitalization.

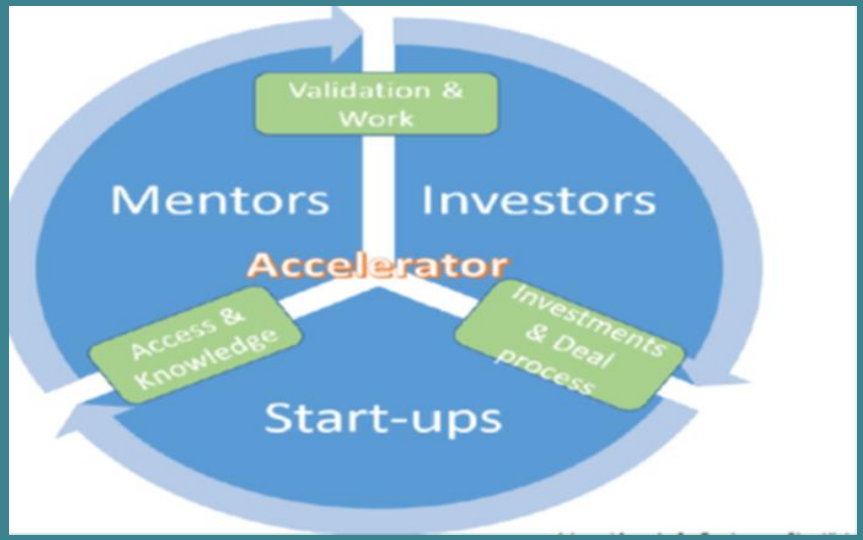
Figure no.4. Scenarios regarding the digitalization of the economy in Romania



Source: McKinsey, The rise of Digital Challengers, Perspective on Romania, 2018

In order to be able to estimate at national and international level the capacity for innovation, technology transfer and entrepreneurship, especially in the field of education, we believe that in addition to the elements related to smart specialization, industrial transformation, a knowledge of the real economy to achieve an architecture of the education system in the university environment based both on the combination of the traditional form of education and with current digital technologies.

Figure no.5. The accelerator model of education in the context of AI



Source: H2020 PSF Report, 2017

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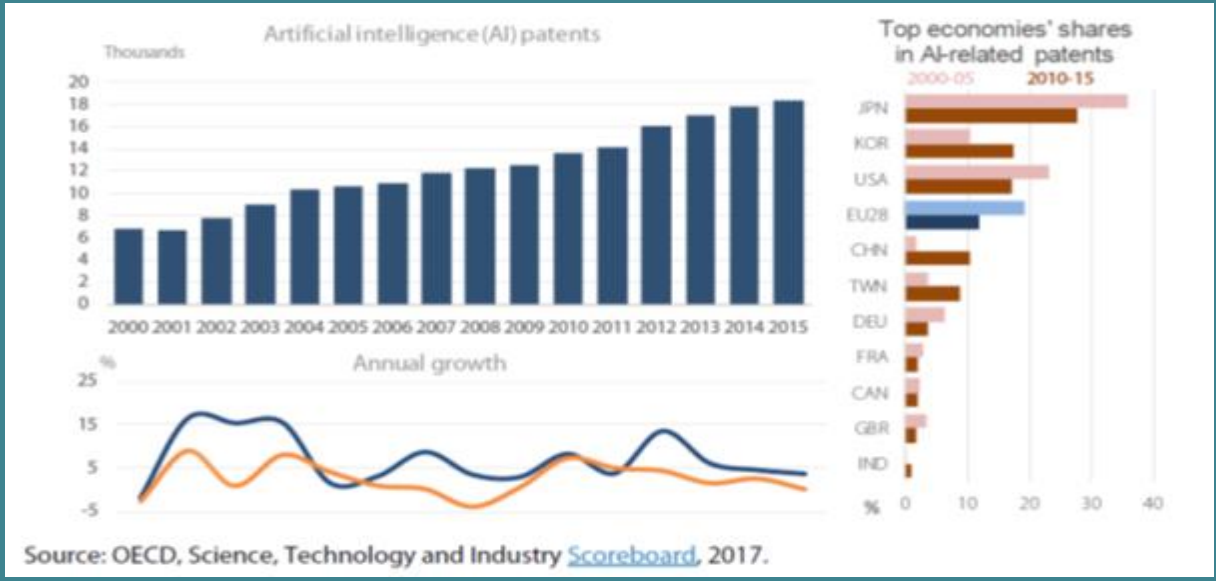
The evolution of technological innovations globally has made artificial intelligence play an increasingly important role in our lives, respectively in all processes (including learning), and its effects are found in different ways. Artificial intelligence can have a positive impact on our lives (including education) if common global strategies are geared towards its use in the context of educational needs. However, as researchers, we need to think carefully about the evolution of global intelligence and, in this regard, we post two diagrams to which we have observations or comments, namely:

Figure no.6 AI patents worldwide in period 2000- 2015



Source: OECD, Science, Technology and Industry Scoreboard, 2017.

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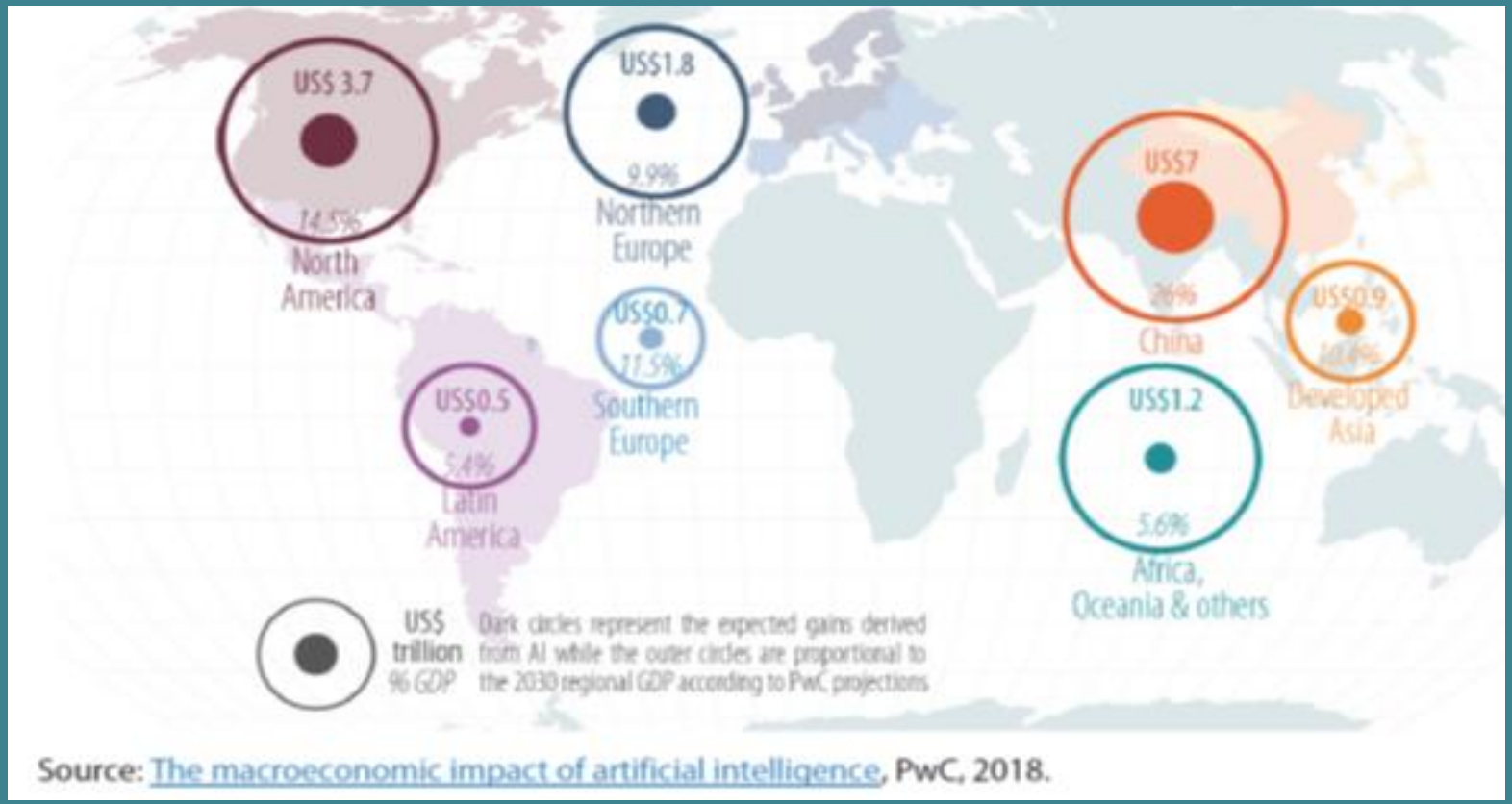
Figure no. 7 Expected gains from AI in the different regions of the world by 2030



Source: The macroeconomic impact of artificial intelligence, PwC, 2018.

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Conclusions and indications for future research

Artificial intelligence in the field of education in the university environment is still at the beginning of laying the foundations, especially because networks are found especially in the virtual space, hence the multiple challenges and vulnerabilities (regulation including virtual, ethical, economic, and social). However, thanks to the digital technologies that are part of our current lives, we believe that artificial intelligence will become predominantly present in education, contributing to current technologies and continuous development, creating an eco-complex but light education model of the system. Tech education in the context of globtech. Although experts differ on the involvement of companies in the development of these technologies, researchers believe that these models of education based on artificial intelligence come with an emphasis on optimizing resources for each individual, which leads us to appreciate that artificial intelligence combined with the Internet of Things (IoT) will result in physical things becoming more adaptive and receptive, extending their useful lives.

Conclusions and indications for future research (continuation)

Professor Torsten Husén, one of the most renowned authors in the field of higher education, said: “The information and technology society is, by its very nature, a changing society, which requires the continuous mastery of new information and technologies that appear and are used. in the occupational sphere. Since the early 1960s we have been discussing lifelong learning, permanent or continuous, which means that no matter what degree of formal education a person has managed to acquire at the beginning of their life, they are forced to recapitulate the knowledge and update it throughout life ”.Along with big data, AI is considered in the education services sector in the university environment as a technique that has the potential to provide immense analytical power. However, many risks still need to be addressed. Many AI techniques remain tested in crisis scenarios. There have been several cases in which the algorithms implemented by the institutions involved in university education seemed to act unexpectedly by their developers, which led to errors and flash crashes. Lo (2016) calls for the development of more robust technology, able to adapt in favor of people, so that users can use these tools safely, efficiently, and effortlessly.Much remains to be done. And clearly, more education is needed in terms of AI competence and awareness. The late Stephen Hawking summed up: "Strong AI growth will be the best or worst thing that has ever happened to mankind. We still don't know."

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Appendix

Timeline of artificial intelligence milestones (Bonnie G. Buchanan PhD (2019): Artificial Intelligence in Finance, the Alan Turing Institute).

1987 – 1993 Second “AI Winter”;

1988 David Shaw founds D.E. Shaw and is an early adopter of AI among its hedge funds;

1990s The AI industry shows renewed interest in neural networks;

1990 Neural net device reads handwritten digits to determine amounts on bank cheques;

1993 FinCen puts FAIS (its AI system) into service to monitor money laundering;

1997 Deep Blue defeats Garry Kasparov, world chess champion at the time. IBM’s stock price increases by $18 billion;

2005 The DARPA 132-mile challenge sees AI applied to autonomous driving;

2007 The DARPA Urban Challenge;

2009 Google’s first self-driving car;

2010 Flash Crash occurs on 6 May. In 36 minutes, the S&P crashed 8%, before a rebound;

2012 On 1 August, Knight Capital loses $440 million 45 minutes after deploying unverified trading software;

2014 Man Group starts to use AI to manage client money;

2016 Google’s DeepMind AlphaGo applies ML algorithms to win at international Go championship;

2017 Two Sigma hedge fund which uses ML, crosses the $50 billion in assets under management;

2017 Beijing announces plans to lead the world in AI by 2030;

2018 UBS announces development of recommendation algorithms;

2018 The Merkel government announces €3 billion will be spent on AI capabilities;

2018 President Macron announces that all algorithms developed for government use will be made publicly available;

2018 Alibaba announces plans to bring AI chips to market the following year;

2018 MiFID II takes effect;

2018 GDPR takes effect on 25 May;

2018 Baidu becomes the first Chinese tech giant to join a US led consortium on AI safeguards.

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Thank you for your attention and wish you success

Globethics.net International Online Conference, Building New Bridges Together: Strengthening Ethics in Higher Education after COVID-19

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