



Research Article

# Romanian Undergraduate Education System in the Post-Communist Period: The Journey Towards Digitalization

Andreea-Cristina STROE

Bucharest University of Economic Studies, Piața Romană 6, Bucharest, Romania,  
[andreea.stroe@csie.ase.ro](mailto:andreea.stroe@csie.ase.ro)

Received date: 28 March 2022; Accepted date: 23 July 2022; Published date: 29 August 2022

Academic Editor: Mircea Georgescu

Copyright © 2022. Andreea-Cristina STROE. Distributed under Creative Commons Attribution 4.0 International CC-BY 4.0

## Abstract

Romanian undergraduate education system has undergone radical changes in the area of digitalization during the last years. Both Romanian authorities and private stakeholders contributed to this transformation. This paper has the goal to present an extensive overview of the most important measures in terms of digitalization that led to the system as it stands today. The research will divide the 32-year period of the post-communist regime in two distinct parts: the period before the COVID-19 pandemic arose (1990-2020) and the period during and after the pandemic (2020-2022). The paper will cover the public and private projects that were implemented in order to improve the level of technology integration and pupils' development of digital skills. This study proved that digitalization has always been treated with priority by Romanian decision makers. Nevertheless, the number of implemented initiatives has not been enough for a complete and sustainable technologization of the system. The sudden shift from a face-to-face approach to a complete online one during the pandemic has shown the unpreparedness of the Romanian education system. This shift was extremely difficult both for pupils and teachers. Overall, the contribution of this study to the literature consists in the systematic overview of the main initiatives provided by public authorities and private stakeholders for the modernization of Romanian education. Moreover, the paper captures authorities' attitude towards the process of technologization of the undergraduate education system.

**Keywords:** digitalization, Romanian Undergraduate Education, post-communist Romanian education, ICT, digital education

## Introduction

The Romanian revolution from December 1989 represents a turning point in the history and the development of this country. Major changes on several fields (economic, political, social, educational) have been initiated by this event due to an acute need to modernize post-1989 Romania (Cătană & Cătană, 2010) from the centralized regime of the communist period (Popescu, 2010). Therefore, a concern for decentralization appeared and the education system was one of the pillars to benefit from such a change (Popescu, 2010). So, a system, in which all the decisions in terms of curriculum, choice of textbooks and management were imposed solely by the state (Popescu, 2010) (Ciurea, 2019), was gradually replaced by a system more oriented towards European values (Cătană & Cătană, 2010) (Marga, 2002), facilitating thus Romania's integration in the European Union in 2007 (Marga, 2002).

The necessity of modernity came also from the global movement in which information and communication technology became a key factor of human adaptation to the 21<sup>st</sup> century (Marin & Prioteasa, 2020). Technology is viewed by a vast majority as a positive influencing factor (Țițan, et al., 2020), so its introduction in every day-to-day activity was natural (Țițan, et al., 2020). Education was not an exception and the wave of digitalization marked new powerful changes included by the literature in the concept of Education 4.0 (Noja & Pânzaru, 2021). In order to adapt to this new era, a new set of skills, the digital ones, is required. Defined by the European Parliamentary Research Service (Kiss, 2017) as:

*“a range of basic to highly advanced skills that enable the use of digital technologies (digital knowledge) on the one hand, and basic cognitive, emotional or social skills necessary for the use of digital technologies, on the other hand”*,

digital skills offer new employment opportunities and contribute to the world's

economic growth (Noja & Pânzaru, 2021). Thus, advanced digital skills, that were once the trademark of a limited group, the ITC professionals (Grosseck, et al., 2019), became mandatory for one's successful integration to the labor market (Țițan, et al., 2020) (Noja & Pânzaru, 2021).

The Council of the European Union understood the compulsory nature of advanced digital skills in the Mondial economy so, in its recommendation from 2008 (European Commission, 2008), later revised in 2018 (Council of the European Union, 2018), digital skills were included among the eight key competences a student must acquire during preparatory years. Since Romania must align to the European Union regulations due to its position as a member in the Union, The Romanian National Curriculum for compulsory education adopted the same directions recommended by the EU (Popa & Bucur, 2012) and introduces ITC in the curriculum for the students for the undergraduate education system to acquire the necessary skills. ICT became a compulsory subject for all high school profiles since 2005 (Ministry of Education and Scientific Research, 2020) and was introduced as a compulsory subject for secondary school since Law no. 1/2011 on Education (Official Gazette of Romania, 2011).

The relevance of digital skills was depicted by the breakout of the COVID-19 pandemic in March 2020, when the entire face-to-face education system needed to shift to a complete online approach (Roman & Plopeanu, 2021). Despite the continuous interest shown by the government on introducing technology in the educational act, the lockdown installed between March the 16<sup>th</sup> and May the 15<sup>th</sup> 2020 (Nicolau, et al., 2020) resulted in no e-learning platform at national level (Hosszu & Rughiniș, 2020), unprepared teachers (Hosszu & Rughiniș, 2020) and students that lacked both infrastructure and technical skills (Ionescu, et al., 2020).

Therefore, the main objective of this paper is to outline a complete image of the

measures taken by the Romanian authorities and private initiatives in terms of digitalization of the education system before and during the pandemic. Moreover, this study will also try to examine if those initiatives were indeed relevant and if they had a minimum impact on the development of digital skills among Romanian pupils so that it would be able to answer the question why the Romanian undergraduate education system was so unprepared when the COVID-19 pandemic came.

### **Research Methodology**

This study focuses on an analysis of the initiatives made both by Romanian authorities and private companies for the introduction of technology in the undergraduate education system. Through these measures, Romanian education attempted to align with the values and learning concepts promoted by the European Union once the decentralization of the system was initiated. It consists of a qualitative research study, based on articles published in academic journals and conference proceedings, books and reports in the period 2000-2022. This period is not coincidentally chosen, the 2000s representing transitions years from the communist centralized economy to a capitalist economy (Iancu, et al., 2015), having the opportunity to analyze the relationship between political decisions and impact on education.

The choice of this theoretical approach is motivated by the fact that, to fully understand the impact of the measures taken for the digitalization of the education system, one needs a clear and complete image of the initiatives undertaken once a decentralized system was started. By using this method, a comprehensive analysis was conducted. Documentary work as the one proposed by this paper is necessary and valuable for the literature. Several steps were followed so that the research work could be completed: the planning (deciding the period of research or which database to use), collecting information, information analysis (firstly, an initial screening was performed to select the most relevant papers and only then a full-text screening)

and, eventually, the writing of this documentary work. Several databases were used in this demarche: WorldCat, Google Scholar and ResearchGate. The search was based on some keywords the text might include in its title and / or in its body. Among them, one can mention "technology", "digitalization", "Romanian education". Google Scholar was a more prolific database, returning hundreds of articles related to the topic (at the initial search, an approximate number of 20 000 results was obtained), whereas WorldCat provided a more limited number, only around 33 results. Even though, combining the search in all three databases, hundreds of articles were returned, only around 0.2% were relevant for this study after a thorough study of the abstract and a skimming of the content. The findings are discussed in the following sections.

### **Findings**

This section will focus on presenting the work that has been done in the last 32 years in the field of digitalization of the Romanian undergraduate education system. A lot of papers have been discussing the digitalization on higher education, but little attention has been given to the pre-university system, which, nonetheless, sets the base for the key competences a student will have. The results were divided in two major sub-sections: digitalization before and after the COVID-19 pandemic arose.

#### ***Digitalization initiatives in the pre-pandemic period***

The interest for the modernization of the educational system started with the fall of communism, once a profound reconstruction was initiated (Popescu, 2010). Reforms were needed on different levels (Popescu, 2010): providing the lacking ICT infrastructure, creating an environment that assured the development of minimal digital skills and technologizing the educational processes (Marga, 2002). Although some private initiatives were conducted before 1996, the real decentralization of the education system began in 1997 with Professor Andrei

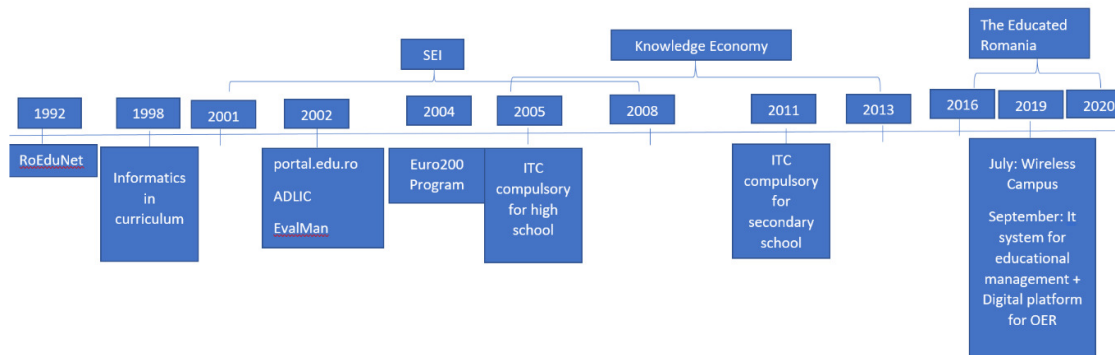
Marga as the Minister of National Education (Popescu, 2010). Throughout the years, all the other ministers continued his effort by adding additional changes to the Law of National Education in accordance with the guidelines of the European Union. Moreover, the private sector did not remain impassible, as well as active communities that have been formed over the years to provide modalities of informal acquisition of skills and abilities needed in a modern education system (Grosseck, et al., 2019).

### 1. Initiatives provided by the government

One of the priorities of Marga's cabinet was to create the necessary environment to enable Romania to meet the criteria to align to the European Union norms in terms of education (Marga, 2002). The conditions though were not so favorable for a profound but necessary change of the system (Marga, 2002). The economic situation Romania was facing at the beginning of the 1990s led to an under

funding of the education system (Marga, 2002), but Marga initiated some fundamental changes that were continued by his successors.

Throughout the years, digital transformation remained a preoccupation of the Government (Ciurea, 2020) both by national programs and international directions imposed by the European Union. One example of the latter is the development, in 2018, of a Digital Education Plan, updated in 2021 (European Commission, 2021). This action plan proposed a set of action domains for the EU Member States (European Commission, 2021) that Romania needed to turn into practice through National Strategy for the Digital Agenda (Ciurea, 2020). The principal directions to follow were, nonetheless, the ones identified by Marga: create ICT infrastructure, develop digital skills among the teachers and students and technologize education processes - a direction started back in June 1993 as depicted in Fig 1.



**Fig 1. Initiatives of the Ministry of Education and Scientific Research for digitalization**

The first initiative of digitalization after the fall of communism is represented by RoEduNet (Grosseck, et al., 2020) (Istrate, 2007). It stands for Romanian National Research and Education Network (Grosseck, et al., 2020) and its goal was to build a research network (Grosseck, et al., 2020). Although it started as a program that united the academic universities, throughout time, many other institutions were included (Istrate, 2007).

Year 1998 represented an important milestone both in the decentralization of Romanian education and the process of training ICT specialists. A new curriculum was adopted (Istrate, 2007), which included Informatics as a subject to be taught and the introduction, for the first time in the post-communist era, of alternative textbooks (Marga, 2002). 1998 was also the year that laid the foundation

for one of the most important projects of digitalization, SEI (*Sistem Educational Informatizat* – Education IT-based System) (Istrate, 2007).

SEI was a large-scale project started in 2001 as a collaboration between the Ministry of Education and SIVECO, a private software provider company (Holotescu, et al., 2020). It was developed in three phases: 2001-2002, 2003-2004 and 2005-2008 (Holotescu, et al., 2020) (the third phase consisted in two stages: 2004- implementation for high schools, 2005-2007- implementation in the secondary school (Preda, et al., 2008)). It covered all the major directions of the education act (management, creating ICT infrastructure in Romanian schools (Istrate, 2007), developing digital skills). It laid the groundwork for the introduction of e-learning in Romania (Holotescu, et al., 2020) (Istrate, 2007). In 2008, the SEI project received the European IT Excellence 2008 award (Vlada, et al., 2009). It represented a firm confirmation that the whole project was a meaningful resource of modernizing the education system of Romania.

Part of the SEI program were three other important initiatives: the communication portal [portal.edu.ro](http://portal.edu.ro), ADLIC program and EvalMan (Istrate, 2007), all started in 2002 (Grosseck, et al., 2020). The portal covered a large variety of ways of communication, as training sessions or forums (Holotescu, et al., 2020) which could be accessed by the teacher to share information or to ask guidance in several situations. ADLIC stands for *Admiterea in liceu* – High School admission (Istrate, 2007) and EvalMan for *Evaluarea Manualelor* – Evaluating textbooks (Istrate, 2007), both having a major role in the technologization of the education processes. ADLIC is the computerized mechanism that distributes secondary school pupils to high school based on a maximum of 100 options of their own (Istrate, 2007). EvalMan is the first computerized modality for specialists from different fields of expertise to evaluate the alternative textbooks proposed by different authors for compulsory and optional subjects of the

undergraduate education system (Istrate, 2007).

Another project with an impact on the development of ICT infrastructure among the disadvantaged families was Euro200 (Ministry of Education and Scientific Research, 2004). The program was launched in 2004 and was not limited to pupils - students could also be part of it in case they did not have the necessary resources to purchase a computer (Ministry of Education and Scientific Research, 2004). In the same direction, another project, a more recent one from July 2019, sponsored with European funds (Grosseck, et al., 2020), is Wireless Campus. This project had the goal to provide wireless equipment to 4500 secondary schools in order to create necessary IT infrastructure (Grosseck, et al., 2020). Other initiatives, more applied to creating the context for the development of Open Education Resources, are represented by the creation of IT system for educational management and The Virtual Library, both launched in September 2019 (Holotescu, et al., 2020).

An international project, implemented with the aid of the World Bank (Holotescu, et al., 2020), is the Knowledge Economy Project. This project was initiated by The Ministry of Communications and Information Technology (Preda, et al., 2008), where the Ministry of Education was a partner and, throughout the whole period of implementation, it focused mostly on providing more access to ICT infrastructure (Holotescu, et al., 2020), but also on the development of digital skills among rural communities (Holotescu, et al., 2020). Its main goal was to create a favorable environment for disadvantaged communities to gain access to information (Preda, et al., 2008).

The Romanian Presidency proposed a project called The Educated Romania (The Educated Romania, 2022), started in 2016 and is an ongoing project with perspectives to 2030 (The Educated Romania, 2022). The main goal of this project is to subdue to public debate a fundamental change in the Romanian society so that the meritocracy

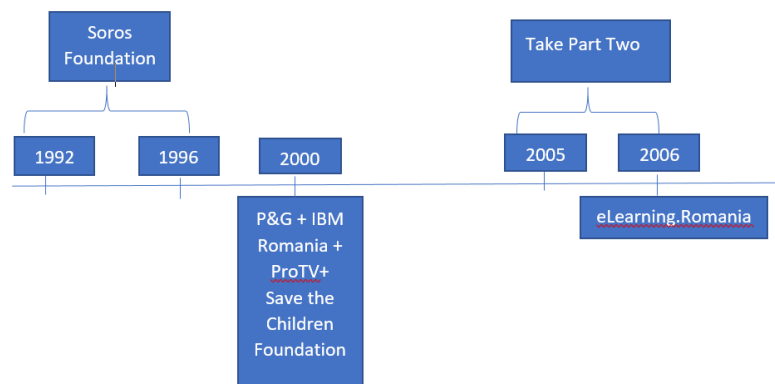
and performance be the guiding values of every aspect of the Romanian society (Grossek, et al., 2020). Until the moment of writing this article, three phases of the project were concluded (The Educated Romania, 2022) , and the weaknesses of the education system were identified (for example, the problems faced by pupils who do not have access to education (The Educated Romania, 2022)). A series of measures were outlined, covering all the aspects of the education act: infrastructure, management, and quality of the educational act with the accent on developing valuable skills both for pupils (so that the integration on the labor market be facilitated) and for teachers (The Educated Romania, 2022).

The analysis of the initiatives in Fig. 1 leads to an extremely important conclusion: in the period prior to the breakout of the pandemic, the government was more interested and dedicated more funds and attention to creating the needed IT infrastructure. On one hand, these

measures were mandatory so that the actors in the educational act (especially pupils and teachers) be provided with the necessary equipment for the technologized process. But, on the other hand, the provision of the devices is undoubtedly insufficient. One must be trained and have strong digital skills so that they can fully benefit from all the advantages the devices come with. Thus, what the Romanian government mostly did was to provide the foundation of the IT infrastructure, but not creating an environment where this infrastructure was capitalized on.

## 2. Private initiatives

Romanian education has always benefited from the support of the private sector. The first initiatives, as depicted in Fig. 2, were back in 1992, just some years after the revolution. The initiatives of the private sector focused mainly on developing the ICT infrastructure from disadvantaged communities (Istrate, 2007) .



**Fig 2. Initial private initiatives on the technologization of the Romanian education system**

The first project, in which Soros Foundation allocated around 4 million USD (Istrate, 2007), covered several directions. Probably the most important one was equipping 314 schools with IT labs (Istrate, 2007) since, in that moment of history, the Internet and the necessary infrastructure just started to emerge in Romania. During the same period and with the aid of Soros

Foundation, satellite antennas were set up in four main cities from Romania (the most important educational centers: Bucharest, Iasi, Cluj and Timisoara) (Istrate, 2007), allowing, in this way, the development of a network between schools from different areas. The same initiative focused also on developing some digital skills among the

teachers and organized some UNIX training for teachers (Istrate, 2007).

The work on configuring the necessary infrastructure for an ICT center was continued by other private companies. P&G, alongside IBM Romania, ProTV (a local television station) and Save the Children Foundation (NGO oriented towards the wellbeing of disadvantaged children) equipped 160 schools with a number of 800 computers (Istrate, 2007).

In the next period (starting with 2005), the approach adopted by the private sector was oriented more towards providing digital content instead of access to infrastructure (Istrate, 2007), understanding the importance and imperative of starting to build digital resources to be accessed by teachers and students. TEHNE (The Center for Innovation in Education (Centre for Innovation and Development in Education, 2022)) was a pioneer in this direction - its first initiative was in 2005-2006 in the form of the Take Part Too project (Istrate, 2007). The objective of this project was to create an environment in which young people were able to access ICT platforms to collaborate and exchange ideas on multicultural subjects (Istrate, 2007). It was an international initiative that gathered teachers and high school pupils from the UK, Denmark and Romania (Istrate, 2007).

TEHNE has other initiatives regarding the development of technical skills among teachers, as well as providing a strong community of practice for teachers. In 2006, together with other associations (as ASTED - Association for Education Sciences, the National Foundation for Community Development, Altfactor Ltd) developed the eLearning.Romania program (Istrate, 2007) with a focus on the development of the computer-assisted education (Istrate, 2007). This platform was among the first initiatives towards the concept of e-learning from Romania and offered support and good practices for introducing the technology into the education act. Their work continued in 2007 with eTwinning program (Centre for

Innovation and Development in Education, 2022), that focused on the collaboration among teachers (eTwinning România, 2019). It also offers the possibility of learning communities (Marin & Prioteasa, 2020), so that they can develop their digital skills, but also their pupils' skills through the collaborative projects (eTwinning România, 2019). iTeach is another initiative of TEHNE (Centre for Innovation and Development in Education, 2022) in the form of an online course platform (Ciurea, 2019). In this way, the technical skills among teachers increase, as well as their ability to introduce various online tools and applications in the educational act (Ciurea, 2019).

Fig. 2 shows only the first initiatives, the implication by the private sector in the education being a constant action until the present days. A very important aspect to be mentioned regarding the private initiatives is that teachers and students also collaborate to enrich the technologization of the education system. Although defined as informal projects, that do not necessarily receive external funding, these proposals represent the creativity of the teacher-pupil collaboration. Some examples of educational software that were developed by teachers from Tudor Vianu National High School of Computer Science from Bucharest alongside their students are The Science of Music, Mechanical Oscillations, Fluid Mechanics and Special Relativity (Moraru, et al., 2011). These four solutions were implemented to explain in a more visual (Moraru, et al., 2011) and interactive way concepts of physics that might seem very difficult at first sight. Such initiatives point towards a paradigm change towards a student-center approach (Stoica, et al., 2010).

Moreover, the concept of Open Education, which UNESCO started to draw attention to since 2002 (Grosseck, et al., 2020), began to be promoted in Romania as well in the recent years (Grosseck, et al., 2020) by individual initiatives. These communities had the goal to create an open learning environment, in which courses, materials, certifications are available for everyone, regardless of their role in the education

process (Grosbeck, et al., 2020). Though not under a legislative strategy, the OERs (Open Education Resources) and the MOOCs (Massive Open Online Courses) started to rapidly emerge in the social communities (Grosbeck, et al., 2020) and to earn a more considerable role in the process of developing strong digital skills among pupils and teachers.

### ***Digitalization effort during the pandemic period***

The COVID-19 pandemic created an unprecedented situation for the Romanian education system: the need to fulfill all the educational process online (Roman & Plopeanu, 2021). The transformation nonetheless was not gradual, but sudden and difficult (Hosszu & Rughiniș, 2020). Despite the previous interest of the government for the technologization of the Romanian education system, studies brought into the public eye the low usage of e-learning solutions (Ionescu, et al., 2020), especially in the undergraduate education system. Therefore, a multitude of gaps have been discovered once the COVID-19 pandemic breakout (Hosszu & Rughiniș, 2020), especially in the disadvantaged communities (Hosszu & Rughiniș, 2020). The main challenges consisted in a lack of devices and a lack of digital skills among teachers (Velicu, 2021). The authorities and the private sector undertook several actions to overcome them.

The beginning of the pandemic was equivalent with a powerful scarcity in terms of infrastructure. According to the Ministry of Education, in the lockdown period, around 250 000 children did not possess a device to be able to participate in online classes (Velicu, 2021). This number was contradicted by a parallel count, organized through private initiatives, which revealed that the more appropriate number was around 900 000 (Velicu, 2021). The enormous difference, of almost four times, is worrisome, being a possible indicator of deficiency in the authorities' communication. Nevertheless, measures were taken, and the government allocated the sum of 150 million euros to be used for

purchasing tablets (Hosszu & Rughiniș, 2020). This initiative was not sufficient since it mainly focused on the disadvantaged communities, but it did not take into consideration households where the living standard was medium. In this case, the parents, who possessed either a smartphone or a laptop that was used for work and that might be shared with the pupil, did not consider it relevant to enroll to the national program of purchasing necessary devices (Velicu, 2021). Nonetheless, the lack of infrastructure further existed since the device was not available for the pupil for a full usage anytime (Velicu, 2021).

The pandemic also brought into attention the question of digital skills among the teachers. Although the education system benefited from some dedicated teachers that were always interested in technological solutions to include in the pedagogical act (Hosszu & Rughiniș, 2020), there were teachers with minimal digital knowledge that did not help them once the system became fully online. They needed to start using a different set of platforms (such as Zoom, Google Classroom or Microsoft Teams) without proper training. The Ministry of Education did provide webinars with the purpose of presenting various platforms and applications that can be integrated (Velicu, 2021), but they were promoted mostly in an informal way, through social media, instead of through official communications (Velicu, 2021). Moreover, the teachers' point of view was that the webinars offered more theoretical knowledge rather than good practices that can be useful in class (Velicu, 2021).

The NGOs were also preoccupied for the development of teachers' digital skills and initiated two projects: *Scoala pe net* (Online School) and *Profesor in Online* (Online teacher) (Hosszu & Rughiniș, 2020). The first project had the goal to create an environment where teachers could find resources to adapt to the online teaching via step-by-step tutorials on digital platforms (Center for Resources in Communication, et al., 2020). The second one represents an online free course for training online teaching techniques (Digital



Nation, 2020). To these initiatives, teachers allocated personal resources to complete different online courses (Velicu, 2021) in the MOOC paradigm or collaborate between them to improve their digital skills.

In an attempt to adapt to tele-education, the Ministry of Education provided a program of tele-school (Hosszu & Rughiniş, 2020). It was facilitated by the National Romanian television broadcaster and targeted the pupils from 8<sup>th</sup> and 12<sup>th</sup> grade (Public Romanian Television, 2020). The choice of audience was not coincidental - the tele-school focused on pupils in final years that followed to take an examen (whether the high school admission or the baccalaureate exam). It consisted in lessons delivered by different teachers, with the focus on the exam subjects. However, the Romanian education system is not limited to only pupils from 8<sup>th</sup> and 12<sup>th</sup> grade, so the others were left with no training sessions, which affected their performance and their educational progress.

The measures taken by the Ministry of Education during the lockdown resulted in an interruption of the educational process, despite the will of providing a qualitative educational act. The pandemic accentuated the gaps between different social classes. In this way, the more disadvantaged communities were the most affected by the consequences of the sanitary crisis. (Hosszu & Rughiniş, 2020). They were not able to fully benefit from the rightful educational process. Moreover, the communication of the authorities was chaotic, as their approach to adapt to the new situation (Hosszu & Rughiniş, 2020). The undertaken measures can be labeled as improvisation, the lack of vision being obvious.

The main objective of the government seemed to be far from improving the online education and to benefit from e-learning, but to resume to a traditional face-to-face approach. This determination can be easily observed in the public communications of the Minister of Education once the 2021-2022 academic year started (Ministry of Education and Scientific Research, 2021).

## Discussions

There is no doubt that the pandemic caught the Romanian education system in a vulnerable position in terms of integration of the technology in the teaching act. Romania was unprepared and incapable to adapt to the critical situation brought by the pandemic. The measures were improvised, despite the previous interest shown by the authorities for the technologization of the educational act, supported by various private initiatives as well.

In the years after the revolution, both the government and the private stakeholders made the digitalization of the education system a priority. Numerous initiatives had the objective to align the schools to the standards imposed by the European Union, with the support of the cultural and political environment. The computers and the Internet started to gain more and more importance in the country in the 1990s (Anon., 1999), so the need to modernize the education system was justified. A first natural direction taken both by the authorities and the private sector was to create the environment for e-learning by equipping the schools with IT labs. Nevertheless, at the beginning, little interest was paid to training the teachers to use the new equipment, a necessity the government failed to understand until the present days. The main focus seems to be directed only to providing the infrastructure.

The private stakeholders, nonetheless, understood the relationship between strong digital skills (on behalf of both students and teachers) and equipment. The created infrastructure was and would be of no use without the digital skills. So, since 2005, they have been investing in numerous initiatives with the objective to create an environment where the online teacher can be more than a definition, but a concrete result of a person with strong digital skills.

Thus, the main reason of the unpreparedness of the education system

was the lack of digital skills. Teachers, though the majority embracing the changes brought by the technologization of the society, were left unguided, with hundreds of options to use and with a traditional content to adapt to an online approach (Hosszu & Rughiniş, 2020). This argument is also supported by the fact that, despite Romania's 10<sup>th</sup> position in the EU ranking in terms of broadband connectivity (European Commission, 2021), it ranked only 27<sup>th</sup> out of 28<sup>th</sup> in terms of digital skills in 2021 (European Commission, 2021). The statistics confirms the focus of the authorities in providing the infrastructure, but not the skills to benefit from it. Moreover, the purposes for the usage of Internet among Romanian people can reinforce this hypothesis: they use the Internet for entertainment and for accessing social media platforms (Buica & Dragan, 2017), so they cannot fully see the benefits of integrating technology in other activities as the teaching act.

### Conclusions

The digitalization of the Romanian undergraduate system has always been a priority both for the authorities and the private stakeholders. With the fall of communism in December 1989, a strong process of modernization was initiated consistent with the European view (Marga, 2002).

This paper firstly offered to its readers a brief political and social context to fully understand the necessity of the modernization of the educational system. Then, this study wanted to provide an exhaustive overview on the measures undertaken by the social stakeholders (the Ministry of Education as an official of the state, private companies) to assist in this process. The paper is structured in two major parts: the initiatives implemented prior and after the breakout of the COVID-19 pandemic.

On the one hand, the findings confirmed the continuous interest in the digitalization of the education system both before and after the pandemic. The stakeholders understood the advantages that e-learning

could bring to the educational act and implemented various projects by the guidance of the European values. Moreover, the study underlined the fact that the digitalization of the educational system did not start with the critical situation of the pandemic but measures were undertaken even before and their number was not to be neglected.

On the other hand, the paper brought to light a less favorable perspective of the integration of the technology in education represented by the lack of digital skills among the most important actors of the process: the teachers and the students. Funds were allocated for the creation of the infrastructure, but less attention was paid to the training needed to understand the capabilities of the equipment and when and how to integrate it in the education act.

Based on these results, this paper confirms that there is still room for improvement in terms of digitalization in education in Romania. The main focus should be in providing guidance both for teachers and students to fully benefit from all the advantages e-learning has.

### Acknowledgement

*This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.*

### References

- Anon., 1999. History of computer developments in Romania. IEEE Annals of the History of Computing, 21(3), pp. 58-60.
- Buica, M. & Dragan, G., 2017. Improving digital competence in Romania: Learning from the best. 9(3), pp. 444-468.
- Cătană, E. L. & Cătană, M. C., 2010. The role of local public authorities in decentralizing Romanian public education system. Procedia-Social and Behavioral Sciences, 2(2), pp. 3432-3436.
- Center for Resources in Communication, Techsoup Association, Seeding Knowledge Foundation &

- Teach for Romania, 2020. Scoala pe net. [Online] Available at: <https://scoalapenet.ro/> [Accessed March 2022].
- Centre for Innovation and Development in Education, 2022. Center for Innovation in Education. [Online] Available at: <http://www.tehne.ro/> [Accessed March 2022].
  - Ciurea, M., 2019. Considerations on the Influence of Digital Technology regarding Education in Romania. s.l., s.n.
  - Ciurea, M., 2020. Digitalization in the Romanian Higher Education in the Present Digital Era. s.l., s.n.
  - Council of the European Union, 2018. Outcome of the Council Meeting, the 3617th Council Meeting. [Online] Available at: <https://www.consilium.europa.eu/media/35296/st09078-en18.pdf> [Accessed March 2022].
  - Digital Nation, 2020. Profesor in Online. [Online] Available at: <https://digitalnation.ro/profesor-online/> [Accessed March 2022].
  - Edelhauser, E. & Lupu-Dima, L., 2020. Is Romania Prepared for eLearning during the COVID-19 Pandemic?. Sustainability, 12(13).
  - eTwinning România, 2019. eTwinning. [Online] Available at: <https://etwinning.ro/> [Accessed March 2022].
  - European Commission, 2021. Digital Economy and Society Index (DESI) 2021, s.l.: s.n.
  - European Commission, 2021. <https://education.ec.europa.eu/focus-topics/digital/education-action-plan>. [Online] [Accessed March 2022].
  - European Commission, 2008. Key competences for lifelong learning. European reference framework. [Online] [Accessed March 2022].
  - Grosseck, G., Holotescu, C. & Andone, D., 2020. Open Educational Resources in Romania. In: Current State of Open Educational Resources in the "Belt and Road" Countries. s.l.:Springer, pp. 151-173.
  - Grosseck, G., Malița, L. & Bran, R., 2019. Digital University - Issues and Trends in Romanian Higher Education. BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 10(1), pp. 108-122.
  - Holotescu, C., Grosseck, G. & Andone, D., 2020. Report on ICT in Education in Romania. In: Comparative Analysis of ICT in Education Between China and Central and Eastern European Countries. s.l.:Springer, pp. 303-323.
  - Hosszu, A. & Rughiniș, C., 2020. Digital Divides in Education. An Analysis of the Romanian Public Discourse on Distance and Online Education During the COVID-19 Pandemic. Sociologie Românească, 18(2), pp. 11-39.
  - Iancu, T. et al., 2015. Study on the Development of Education in Romania. Procedia - Social and Behavioral Sciences, Volume 182, pp. 560-565.
  - Ionescu, C. A. et al., 2020. Sustainability Analysis of the E-Learning Education System during Pandemic Period - COVID-19 in Romania. Sustainability, 12(21).
  - Istrate, O., 2007. eLearning in Romania: the State of the Art. eLearning Papers, Volume 5.
  - Kiss, M., 2017. <https://www.europarl.europa.eu/portal/en>. [Online] Available at: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2017/595889/EP\\_RS\\_IDA\(2017\)595889\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2017/595889/EP_RS_IDA(2017)595889_EN.pdf) [Accessed March 2022].
  - Marga, A., 2002. Reform of Education in Romania in the 1990s: A Retrospective. Higher Education in Europe, 27(1-2), pp. 123-135.
  - Marin, A.-A. & Prioteasa, A. L., 2020. The Impact of Using Information Technology and Communication in Schools in Romania. Business Excellence and Management, 10(2), pp. 97-108.
  - Ministry of Education and Scientific Research, 2004. Euro200. [Online] Available at: <https://www.edu.ro/etichete/euro-200> [Accessed March 2022].
  - Ministry of Education and Scientific Research, 2020. Strategia privind digitalizarea educației din România. [Online] Available at: <https://www.edu.ro/sites/default/file>

- [s/SMART.Edu%20-%20document%20consultare.pdf](#) [Accessed March 2022].
- Ministry of Education and Scientific Research, 2021. Ministry of Education - Press Releases. [Online] Available at: <https://www.edu.ro/comunicate-de-presa>[Accessed March 2022].
  - Moraru, S., Stoica, I. & Popescu, F., 2011. Educational Software Applied in Teaching and Assessing Physics in High Schools. *Romanian Reports in Physics*, 63(2), pp. 577-586.
  - Nicolau, C. et al., 2020. Tele-Education under the COVID-19 Crisis: Asymmetries in Romanian Education. *Symmetry*, 12(9).
  - Noja, G. & Pânzaru, C., 2021. Five Possible impacts of Digitalisation in Romania. *Sciendo*, 14(22), pp. 1-10.
  - Official Gazette of Romania, 2011. Legea nr 1/2011, Legea Educației Naționale. [Online].
  - Popa, O. & Bucur, F., 2012. ICT in the Romanian Compulsory Educational System. *Expectations vs Reality*. Brasov, s.n.
  - Popescu, A.-C., 2010. The decentralisation of the school system in post-communist Romania. *Journal of Educational Administration and History*, 42(3), pp. 315-336.
  - Preda, A.-M., Crisan, D. A., Stanica, L. & Altar Samuel, A. N., 2008. Implementing E-Learning In The Romanian Educational System - A Priority In The Context Of Eu Integration. *Research Paper in Economics*, 2(1), pp. 179-193.
  - Public Romanian Television, 2020. Telescoala. [Online] Available at: <http://www.tvr.ro/telescoala.html> [Accessed March 2022].
  - Roman, M. & Ploeanu, A.-P., 2021. The effectiveness of the emergency eLearning during COVID-19. *International Review of Economics Education*, 37(June).
  - Stoica, I., Moraru, S. & Miron, C., 2010. An argument for a paradigm shift in the science teaching process by means of educational software. *Procedia Social and Behavioral Sciences*, Volume 2, pp. 4407-4411.
  - The Educated Romania, 2022. Romania Educata. [Online] Available at: <http://www.romaniaeducata.eu/> [Accessed March 2022].
  - Țițan, E., Manea, D.-I., Mihai, M. & Cărămidaru, C., 2020. The Impact of Digital Innovation on Education in Romanian Education. Warsaw, s.n.
  - Velicu, A., 2021. The school year 2020-2021 in Romania during the pandemic, s.l.: Joint Research Center.
  - Vlada, M., Jugureanu, R. & Istrate, O., 2009. E-Learning and Educational Software. *Educational Projects and Experience of Implementation in Romania*. Iasi, s.n.