

# Increasing Economic Competitiveness through the Contribution of Digitalization

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**Abstract:** What does digitalization really mean? What is the impact on increasing economic competitiveness? How does it affect the way we live today? The answers may be different from multiple perspectives of understanding this phenomenon. For some it means advanced technologies in everyday work, for others it means permanent communication with others or even a whole new way of doing business, facilitating access to services, fast execution of time-consuming activities etc. In essence, it seems that digitalization means the use of information technology to create added value in an accelerated way, an element that makes you competitive with others. Romania occupies the last place in the European Union, in terms of digitalization, which we could regard as an opportunity, because the dynamics of the last years show a rapid growth of the digital economy in Romania compared to the countries of the European Union. Based on these premises, the article aims to answer the following questions: With what additional effort could Romania accelerate the growth rate of the digital economy?; what are the measures that the private sector should take?; what should the public sector do?; diversification of digital tools used to increase productivity, accessing new customers, will expanding on global markets lead to increased economic competitiveness?; will the integration of technologies in the public sector increase the quality of the services offered to companies and citizens?; is Romania in a good position so that it can benefit from the opportunity of digitalization?; Does digitalization mean the elimination of jobs at an unprecedented rate or the creation of new jobs? We also intend to conclude whether the Romanian economic model can be a digitalization provider or only a consumer of it.

**Keywords:** *digitalization; digital economy; technologies; added value.*

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## 1. Introduction

The digitalization process represents the beginning of the Fourth Industrial Revolution, with significant implications in industry, economy, science and society. With digitalization appear and new areas: artificial intelligence, biotechnology, robotics, Internet of things, vehicle automatic nanotechnology, quantum computing, etc. All these areas change the way we live, work and interact with each other. Thus, it appears the possibility of having more people connected through different devices, which generate a large amount of data, which can be easily processed and stored. This stage of technological development has given the technology the ability to generate changes at the behavioral level, the mentality and the fundamental processes of functioning of the company.

It is necessary to distinguish between digitization and digitalization, as follows: Digitization involves the conversion from analogical representation (documents on paper or any other medium) to digital representation. The purpose is the transfer of physical information in digital format, automating processes or workflows. Digitalization redefines the technical and speculative disciplines, economies, industries and society with major impact on the way we work, live, behave or act. We can say that digitalization is a profound phenomenon, with powerful implications in all areas, the concept is not at all futuristic, but it is part of our daily life for many years, its evolution being extremely fast.

Thus, we define digitalization from three different perspectives: the first perspective represents the improvement, transformation of operations or business functions, models, processes or activities through digital technologies and data; the second perspective refers to the digitalization of an environment, areas or flow; the third perspective refers to the continuous adoption of digital technologies in digital or human activities (Tanase & Paraschiv, 2018). We can say that digitalization means changing operations and business models, but also changing revenue streams and new business opportunities.

Moreover, digitalization is the use of technology for storage and processing, search and retrieval of information between online users, all this being supported, first of all, by a technical support, represented by an electronic infrastructure that allows the transmission and reception of information at a distance, and secondly, the technological support, represented by the Internet.

The phenomenon of digitalization of the economy has a major impact on the labor market and the business environment. Thus, we expect the accelerated digitalization of the economy, associated with the Fourth Industrial Revolution or "Industry 4.0", to have positive effects for competitiveness such as: increasing productivity; job creation and implicitly the emergence of new jobs; creating new business models, based on increased connectivity; eliminating the communication barriers and canceling the distances will amplify the development factors, modifying the formation of added value etc.

The concept of competitiveness in the knowledge economy reflects the ambitions of becoming the largest knowledge-based economy in the world. In the context of the Fourth Industrial Revolution, it is necessary to redefine the traditional processes and a new understanding of the data on which it is based, focusing on: the computing power of computer systems that allows the analysis of data in real time and in the context of large volumes of data; the emergence of new models of artificial intelligence due to the increase in computing power, which will lead to a harmonious cooperation between humans and robots; new generative manufacturing processes that allow to realize economies of scale and widen the scope of application. A relevant example is 3D printing that allows a digital model to be transformed into a physical product, thus, the fusion between the two worlds - physical and digital - endows the products with functions capable of continuous expansion throughout the life cycle. Therefore, the role of man is changed from that of a skilled worker to that of a supervisor of the services available in the network. (Unguru, 2016).

Digitalization affects productivity, both directly through: easy connection of economic agents, reduction or even elimination of transaction costs, favoring the large flow of information, as well as indirectly through changes in the workforce that will have a high level of qualification and will be healthier, due to the rapid access to education and healthcare, but also to the stimulation of creativity and innovation that will lead to a healthier social interaction.

## **2. The consequences of digitalization**

The impact of digitalization will produce significant effects on the labor market, by changing the way of interaction, but also by changing the behavior of individuals. Previous experiences (the first three industrial revolutions) have shown that technology has quite a large impact on the

labor market, in the sense that in some areas the trades will disappear, and in others, the technology will lead to the emergence of new trades and at the same time new business opportunities. Thus, in the short term, it is about the disappearance of jobs, in the sense of the robots taking over the execution of multiple repetitive, dangerous or physically tiring tasks; in the medium and long term, the modernization of qualifications and a possible polarization of qualifications are discussed.

At the theoretical level, the increase of the degree of digitalization would lead to a decrease of the unemployment rate, the effect being felt in the emerging economies, which benefit from the creation of jobs as a result of the digitalization. At the opposite end, the creation of jobs in developed economies, the effect of digitalization is felt more modestly. As a result of digitalization, productivity increases, in the sense that some jobs are replaced by technology, and jobs with a focus on labor will move to less developed or developing markets, where labor is cheaper. In the short or medium term, Romania can benefit from this transfer of tasks (from companies in advanced countries that improve their productivity due to digitalization, to less developed countries, with a lower degree of digitalization), but it is not an attractive business model nor is it a solution, but rather a postponement.

Romania occupies the last places in the European Union in terms of digitalization, but this can be seen as an opportunity, as the dynamics of the last years show an increase of the digital economy in Romania compared to the other countries. New digital technologies can help to activate the workforce, adopt digital technology, automate and use artificial intelligence, all of which mark an acceleration of developments.

Another important consequence that digitalization has on the labor market is related to labor mobility, in the sense that it can create benefits for employees: the provision of goods and services in intelligent objects, which facilitate the manufacturing process, using little resources and combining work with private life, as well as for employers: new ways of organizing companies and creating new forms of employment and business models, offering a wide range of fast, good and cheap services.

In addition to the positive consequences of the digitalization phenomenon, it can also produce negative consequences such as: increased data concentration in the hands of several monopolies able to evade state control; an intensification of the digital divide; exacerbating the importance of lifelong training compared to that of initial education; erosion of jobs, but also of the boundaries between professional and private life; accelerating

work and increasing stress levels, and in terms of taking over more and more tasks by machines and robots, it will lead to a significant loss of abilities and skills, physical, manual or even intellectual (Unguru, 2016).

### 3. Digitalization in Romania

Romania, along with other markets in the region like: Bulgaria, Croatia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Czech Republic and Hungary make up a „Digital Challenger”, because it has a strong growth potential in the digital economy, competing with countries that have high rates of digitalization „Digital Frontrunners”: Belgium, Luxembourg, Netherlands, Norway, Sweden, Denmark, Estonia, Finland and Ireland. This implies a great competitiveness at global level, as well as an improvement of the standard of living of over 20 million inhabitants, but also aligning Romania with the most advanced economies from a digital point of view (Novak et. al, 2018).

The digitalization process in Romania presents two potential trajectories: Thus, the first scenario involves maintaining current practices, so that the country maintains its historic growth rate of the digital economy; the second scenario, assumes an ambitious perspective, where it is expected to recover the gap from the states of Digital Frontrunners. Considering the first scenario, the growth recorded by the digital economy in Romania will be 18 billion euros, reaching a share of 12% of GDP in 2025; regarding the second scenario, the digital economy will increase by 42 billion and will reach 20% of Romania's GDP in 2025 (Novak et. al, 2018).

Of course, the anticipation of the main directions of the Romanian economy is a necessary condition for any attempt to try the economic specialization. Digitalization is a facilitator, a catalyst for business processes, but it is not core business and profit generator *per se*. On the other hand, digitalization cannot be done without the preparation of the existing systems to accept and use the new framework effectively. It is not just a change of working tools, but a paradigm shift, and this type of transformation implies the change of mentalities and educational effort.

In order to diminish the sectoral differences of digitalization Romania has to increase the expenses with Information and Communication Technology, like the states of Digital Frontrunners, especially in sectors such as industrial production, financial sector and utilities (Novak et. al, 2018); to use more, especially in big companies, big data, cloud computing; to digitize public sector services; to invest in technological education and digital

retraining of the workforce; to improve the ecosystem of start-ups and opportunities for digital innovation; to stimulate the culture of innovation and to provide a legislative environment conducive to the development of technology and technological research (Startupcafe.ro editorial,2018). One of Romania's advantages in the transition to the digital economy is the relatively developed IT sector, which contributes more than 5% to GDP formation, and whose rising trend over the next few years will reach about 10% of GDP (Deloitte, 2018).

With an additional effort, Romania could only maintain, it is clear that it is accelerating the growth rate of a digital economy. But this effort implies an equal involvement of both the public sector and the private sector, but, with a predilection, a fiscal financial approach that will stimulate the adoption of modern working systems. Digitalization is not cheap, and the beneficial effects are not necessarily immediate.

Thus, the private sector needs a diversification of the digital tools used, in order to increase the productivity, access to a portfolio of new clients, the expansion on the developed global markets, the digitalization of the financial services through the transfer of the activities in the digital space through internet banking, self-banking, but and the introduction of telemedicine services or the digitalization of educational processes (Deloitte, 2018).

Also, the public sector could integrate technologies that increase efficiency, improving the services offered to companies and citizens (Avram, 2018). The digitalization of public services leads to a better and more efficient administration, improvement of the level of collection of taxes and taxes, simplification of the interaction between the public administration and taxpayers, reduction until the elimination of corruption from the public administration (Deloitte, 2018). etc.

### ***3.1. The degree of digitalization in Romania***

The degree of digitalization of a country at international level is analysed through a series of relevant studies. Among the most important we list:

- The ONU study that measures the efficiency of electronic governance at the international level through a composite index "EGDI" (Electronic Governance Development Index), based on the weighted average of telecommunications infrastructure, human capital index and index online services;

- The study carried out by the European Commission which refers to the digital performance of the countries of the EU, by means of an index "DESI" (Index of digital economy and society), which integrates a set of relevant indicators structured in five components: *Connectivity* - refers to the level of development of the minimum physical infrastructure required for the digital economy; *Human capital* - illustrates the skills needed to benefit from the possibilities offered by the digital society; *Internet use* - measures the various online activities of the public accessing the internet; *Integration of digital technologies* - measures the degree of digitalization of companies and monitors the online sales channel; *Digital public services* - measures the digitalization of public services with an emphasis on e-government.

- IMB World study referring to the digital competitiveness of 63 economies through the analysis of three dimensions: the knowledge needed for the digital transformation of the economy, the understanding and the learning of technology leases; the technological factor that evaluates the digitalization development framework; the absorption of digital technologies that implies the ability of the business environment to transform itself to encompass innovation.

Taking into account the three studies mentioned above, Romania is among the last countries in the rankings, as follows:

According to the EGDI index, it ranks 67th out of 193 due to the low level of digital education. In Romania the Internet is used for accessing social networks or entertainment (United Nations, Department of Economic and Social Affairs, 2018).

According to the DESI index, it is ranked 28th out of 28 due to the difficulties of attracting and retaining the specialists; gaps regarding the Internet connections between urban and rural areas; weak integration of IT systems in public administration; low level of trust in the use of online banking and digital platforms (European Commission, 2018).

According to the IMB World report, it ranks 47 out of 63 due to the difficulties of integrating digital technologies into the public administration infrastructure; the low degree of trust and knowledge of innovative systems by the population; unfavourable legislative framework (IMD world competitiveness center, 2018).

The rankings occupied by Romania for the year 2018 suggest that it is in a vicious circle in terms of digital competences, in which both the existing competences, as well as the demand from the companies, respectively the public administration, are very low. It is the result of the economic policies that had as central element the maintenance of the competitiveness, almost exclusively, through the cheap labour force. This

approach resulted in the transfer to Romania of industries that are less "digitalizable", industries that require cheap, low-skilled labour. Regarding the public admissions, we are in the presence of a perpetual underfunding and the impossibility of implementing a clear vision, due to the permanent political changes that bring about changes of personnel and working method.

The low level of competences in Romania, will curb the increase of competitiveness, Romania can still benefit from the creation of jobs by reallocating activities in the labour force from the advanced digitalization countries.

Digitalization in Romania will rather lead to the widening of the competitiveness gap with the countries of the European Union, if the phenomenon of digitalization is not taken seriously and considerable progress is not made in digital education and in the use of online services by the population, companies and the public sector, then, the Romanian economic model could be a digitalization provider and not just a consumer.

#### **4. Conclusions**

The digitalization of products and processes has provided a large amount of data, in different forms, this high availability of data making it possible to measure and analyse certain phenomena to an extent not achieved until now, and at the same time making it easier to run controlled experiments with high precision.

Increasing digitalization, as well as the emergence of purely digital operating companies have an impact on the functioning of the economy, if the conditions are met, ICT could lead to increases in productivity and innovation, significantly contributing to GDP growth.

Public policies on competitiveness must take into account the challenge brought about by the phenomenon of mass digitalization, and place more and more emphasis on the collaborative involvement of all interest groups.

The digitalization and its contribution to the competitiveness performance must be viewed in a broader sense than the direct impact related to the widespread adoption of information and communications technologies, this represents an incentive for innovation, thus being linked to technological progress. Estimates show that the Fourth Industrial Revolution will definitely lead to major changes in the way of creating added value, thus contributing to increased competitiveness. Significant effects are

also expected on the capital and labour market<sup>1</sup>, both by changing the way of interaction and by the behaviour of individuals.

The increasing role of digitalization in the economy influences the demands of the job profile, as well as the curriculum of the continuous training programs; It is worth mentioning that a significant percentage of the children who enter the school benches today are going to work in trades that do not yet exist on the labour market.

The advantages and disadvantages that arise as a result of Industry 4.0 imply the need for new approaches to public policies, but also to pay greater attention to the services.

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<sup>1</sup> Economist John Maynard Keynes has been warning since 1931 about the technological impact on jobs "Due to the discovery of the means of saving the work that go beyond the pace at which we can find new uses for the work".

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