**The 3rd International Conference on Economics and Social Sciences**
**Innovative models to revive the global economy**
**October 15-16, 2020**
**Bucharest University of Economic Studies, Romania**

# Digital Transformation for Public and Private Organizations Challenges and Opportunities for Romania

Oana-Raluca TOFAN[1]

DOI: 10.2478/9788395815072-077

## Abstract

*As a result of the analysis of the Digital Economy and Society Index (DESI), Romania is next to the last European Union countries. It seems that our country needs to take immediate action for the promotion and integration of digital services by public and private actors. One of the main pillars for Romanian long-term socio and economic development should be digital transformation of public institutions and support for all private sectors to integrate digital technologies. As all transactions and information exchange can be supported by electronic means, the use of electronic signatures is one of the most important factors to be strengthened. We consider that the new challenges faced in order to implement digital transformation within emergent countries as Romania will be raised by people's education, change of mindset and adaptability to an environment focused on automation capabilities. The objective of this paper is to review the existing scientific opinions, having a short analysis of Romania's status, in terms of digital transformation and identification of a possible approach for conducting transformation, which integrates the need of people's education for transition to a more digitalised economy.*

**Keywords:** Digital Transformation, Electronic Infrastructure, Education.

**JEL Classification:** A1

## 1. Introduction

Romania, ranking next to the last European Union countries in terms of digital transformation, according to Digital Economy and Society Index (DESI index), has an open action line, but it must continue to adopt and implement structural changes in order to facilitate the integration within the Digital Single Market. The evolution of markets is the primary factor that will influence the decision and orientation of the digital economies. Romania will have to accelerate its investment attractiveness, provide predictability, support domestic creative industries, research, development and innovation and safeguard the domestic skilled workforce (Gaftea et al., 2017).

[1] Bucharest University of Economic Studies, Bucharest, Romania, oanaralucatofan@gmail.com.

It seems that Romania needs to take immediate action for the promotion and integration of digital services by public and private actors. Countries leading in digitisation scorecards were involved in the implementation of electronic identification and electronic signatures, one stop platforms, self-service mechanisms, agreements with governmental institutions for time efficient interactions, education; the most developed countries are those leading in terms of digitisation thanks to investments in human capital, in infrastructures and in the adaptability of innovation technologies (Price Water House Coopers, 2018).

I consider that one of the main pillars for Romania's long-term socio and economic development should be the digital transformation of public institutions and the support for the private sector to integrate digital technologies in all business sectors. As all transactions and information exchange can be supported by electronic means, the use of electronic signatures is one of the most important elements to be implemented both by state institutions and private sector.

Electronic signature is needed in all electronic transactions, electronic agreements and it also supports the disruptive technologies which are available today (eg. blockchain, internet of things, artificial intelligence, etc.). The creation of the necessary framework for electronic signatures to be used, implemented and largely embraced is an action recommended to be taken immediately by all actors. In order to increase the use of electronic signature, some measures should be adopted: stimulation of the use of electronic infrastructures, boost of people's trust, adapted legal framework, education of people.

The challenges for implementing the digital transformation within emergent countries as Romania are raised, in my opinion, by people's education and by change of the mindset, by adaptability to an environment focused on automation capabilities, e-response mechanisms and cyber risks assessment.

The objective of this paper is to review the existing scientific opinions, to have a short analysis of Romania' s status, in terms of digital transformation and to identify a possible approach for conducting transformation.

## 2. Problem Statement

Digital transformation is a complex, transformative, synergistic and multi-disciplinary process that involves changing business processes, by implementing new technologies in all activities and at all levels of the economy, with the participation of all parties of the public and private environment.

It is not only a matter of opportunity to support digitisation of all social and economic sectors. but a critical necessity due to current evolution of global markets, industries and public activities.

At Romania's level, building an articulate strategy and finding the means to support integration of digital technologies and the tools to be used for determining the rapid increase of digital use of private or public services is essential. While analysing the current status, it is critical to understand the shortages and possible measures to be adopted.

For the transformation to be effective, an implementation of digital policies for private and public sector, through coordinated and synergistic actions which should be socially embraced, is highly needed.

## 3. Research Questions/Aims of the research

The paper takes brief insights of the digital transformation status in Romania by including a short evaluation of the context and of the existing opportunities. Dealing with such a complex subject, with implications within all economic and state sectors, including education and public services offered to citizens, requires having a clear view of the existing scientific literature, what is aimed at, and which possible leads might be available.

The aim is to identify and present a possible synergic, transversal and multi-disciplinary approach for articulating and conducting the digital transformation, which integrates the need of education and people's embrace of the transformation for a transition to a more digitalised economy, while outlining the role of the use of electronic signatures, as part of the digital transformation strategy and the role of education.

## 4. Research Methods

In terms of research, the present paper represents the base for a broader study regarding the challenges and opportunities brought by digital transformation for Romania.

The research is based on the review of the existing scientific publications; a short analysis on the status of Romania's ranking amongst the EU countries is enlisted. The aim is to identify supporting factors which may leverage the increase of digital transformation speed.

The paper has resumed to analyse what is nowadays written on the topic and the author's point of view of a possible approach to be made.

## 5. Findings

The Digital Economy and Society Index (DESI) has been monitored by the European Commission since 2014 and it is reported since then; detailed information on each Member State's digital progress has been presented for understanding the value of the combined quantitative evidence from DESI indicators across the five dimensions of the index with country-specific policy insights and best practices (Digital Economy and Society Index, 2020).

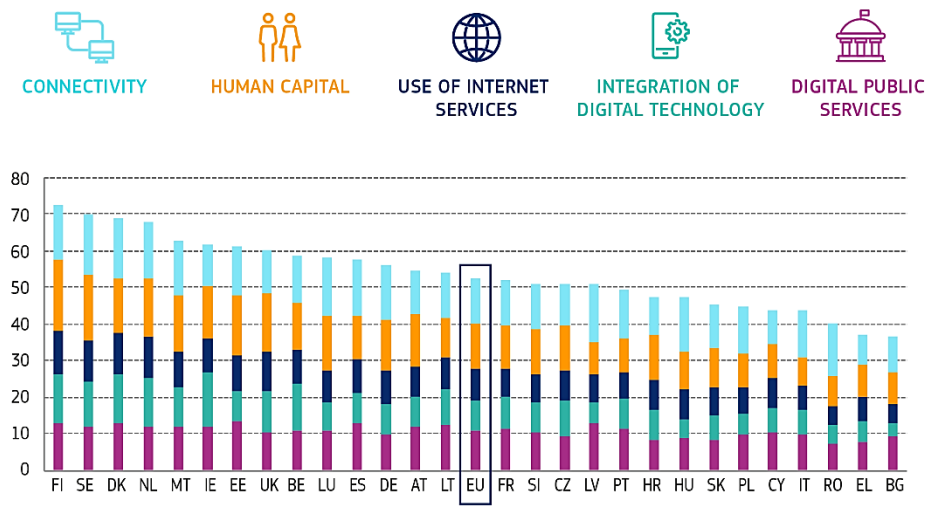


**Figure 1. Digital Economy and Society Index 2020**
*Source:* https://ec.europa.eu/digital-single-market/en/desi

As a result of the analysis of the Digital Economy and Society Index, Romania is next to the last European Union countries. The indicator reflects the fact that Romania performs good on Connectivity dimension, thanks to the high take-up of ultrafast broadband and the wide availability of fixed very high capacity networks. However, digitisation of the economy is ranked behind on Digital public services; for the Use of internet services, Romania has the lowest performance amongst the EU Member States.

In terms of digitisation, Romania ranks 27th among EU countries in terms of the integration of digital technology by businesses, well below the EU average. As it results from the above-mentioned analysis, only 23% of Romanian enterprises share information electronically, while only 8% use social media.

Analysing Romania's performance, as compared to the other EU countries, based on the benchmark established by DESI (Digital Economy and Society Index Thematic Chapters, 2020), Romania:

- performs best on Connectivity dimension, thanks to the high take-up of ultrafast broadband and the wide availability of fixed very high capacity networks. 49% of Romanian homes subscribe to ultrafast (at least 100 Mbps) broadband, the fifth highest figure in the EU;
- is well positioned as regards ICT graduates, as it ranks fifth, with 5.6% of all graduates (EU average: 3.6%);
- in terms of Digital public services and the use of internet services, Romania has the lowest performance among the EU Member States;
- only 23% of Romanian enterprises share information electronically, while only 8% use social media.

It seems there is a Romanian paradox which is difficult to be explained, but this context may bring challenges and opportunities as well, if rightly addressed.

The recent lockdown brought new highlights on the importance of digital capabilities and skills of both private and public entities to support challenging times and perspectives at a global level.

A study made during the first semester of 2020 by Price Water House Coopers shows that, at Romania's level, out of the questioned companies, 37% stopped their activities partially or totally and 27% will benefit of a technical unemployment program. Teleworking became possible for Romania, during the lockdown for many companies thanks to the digital infrastructure which was available and thanks to their employees who were well trained and had digital competencies (Sas, Price Water House Coopers, 2020).

What's to be noted is that electronic infrastructures and people's capabilities made the difference in the process of adapting to the crisis circumstances.

In my opinion, it is not only a matter of opportunity to support digitisation of all socio and economic sectors, but a critical necessity due to the current evolution of global markets, industries and public activities.

Understanding and analysing the context raises an inter and multidisciplinary approach to holistically identify all challenges (Turcan, 2015). This means that a synergistic approach would be of value not only for understanding the current status, but also for identifying a possible future approach.

There are several dimensions of the digital transformation: a dimension given by the electronic infrastructure used, the technological innovations that are available to be incorporated, a dimension given by the usage of technologies in the economy for value added production (current trends are blockchain, data analysis, artificial intelligence, 5G broadband, the internet of things, automation, robotics, cloud computing), a social dimension, which is transformative and, of course, the dimension of people's education.

The technical solutions can be used by building necessary infrastructures or outsourcing such activities to authorised companies acting in this field. Interconnectivity of public institutions will have a significant impact on efficiency and simplification of processes, ease of due payments, introduction of a main point of contact for public services, new platforms for central bodies of the state, exchange of information between entities and citizens with the public sector. The benefits of the use of digital technologies, by cut of timing and less paper consumed can be presented together with the opportunity of designing new flows for e-documents' creation and digital storage infrastructure to be built. Programs for all transformative initiatives can be created by public institutions and the mechanisms should be used in close connection for public-private sectors.

Infrastructure is important when dealing with new workflows and the benefit of innovation would bring competitive advantages and satisfaction for customers or citizens when using public services. The speed of transactions or exchange of information, when needed in real time, can bring increased efficiency, cut of paper costs, cut of operational costs resulting from the physical administration of

documents or work flows, agencies at the price of electronic flows and processed being created and supported by entities together with the creation and administration of cyber risks, security and IT related risks as well.

The existing processes can be analysed and transformed by including electronic components such as infrastructure, workflow, people, skills, electronic storage, cyber security, legal rules.

The organizational change is a process and not an event and sometimes, even when being motivated by rapid developments in technology, the change produces such profound developments that companies struggle to adapt (Principles of Management, 2015). Therefore, support from governmental bodies for education and for electronic infrastructure's implementation during the transition period is decisive.

All transactions and information exchange made in an electronic format needs electronic signatures and this highlights the importance of the integration of this type of signatures both by state institutions and private sector; signing in electronic format brings benefits by cut of timing and less paper consumed at the cost of designing new flows for e-documents creation, digital storage infrastructure to be built and new security rules to be applied.

The use of electronic signatures is also one of the most important factors which facilitate e-business, e-commerce, e-banking, e-government, e-school, e-justice. Therefore, we consider that supporting transition to a fully digital transactional environment is essential for the current stage of digital transformation.

Romania needs to improve the consistency of the national digital transformation strategy for enterprises and for the public sector. The strategy should be more clearly focused and coordinated actions for its implementation must be taken.

Implementation of digital technologies should be programmed considering the socio and economic impact as well as the dynamics of the public policies.

The legislative framework often brings lack of clarity and unanimous interpretation of the established rules and this is a factor that discourages use of electronic documents and electronic signatures.

The regulatory framework, both at European and national level, should reflect the reality of technological development; it often lags behind, failing to fully capture the innovative aspects of using new technologies. Important European regulations have been adopted on e-commerce, electronic payments and instruments, electronic document management and electronic signature, eLearning, teleworking, personal data processing, electronic communications, cyber security. Challenges continue to be raised by the regulation of taxes, copyrights, platform accounting, competition in the digital economy. At national level, legal rules have been transposed, implemented or adopted in the spirit of the European ones but the process of amending and updating the legislation is a complex and a continuous one.

In terms of electronic signature regulation, Romania failed to adopt an internal legislation for harmonising existing rules to Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market, (eIdas Regulation, 2014); digital IDs which incorporate electronic signatures

are not yet regulated. The existing national law, (Law no. 455, 2001) on the electronic signature is outdated and needs immediate modification.

Until recently, when an emergency ordinance (OUG no. 38/2020) regarding the use of electronic documents at the level of the public institutions and authorities was adopted, the public institutions were lacking a general legislative framework for developing public infrastructures for signing documents, exchange of data and acceptance of electronic documents as valid legal documents. The timid start of fiscal exchange of information introduced in 2016 was periodically updated and new operations were designed.

Regarding cybersecurity, measures for operators of essential services are applicable since 2019; it aims to increase the level of awareness and ability to cope with computer security incidents and to increase citizens' trust in the digital single market.

The main changes in human history are the four social revolutions: domestication, agriculture, industrialization, and information; discussing how technology changes society, the major thesis is that because technology is the organizing force for social life, when it changes, its effects can be profound. (Mutekwe, 2012).

The complex diagram of digital transformation cannot be operationalised unless technology, legal framework and conceptual change are embraced by people who can see the value of the change, the opportunities brought by transformation on a medium- and long-term basis. Therefore, people's education plays a very important role.

The impact of the innovative technologies is huge and thus, for supporting transformation, people' s education is essential. The impact of new technologies on education is major. On the one hand, it is necessary to increase the level of awareness and education regarding the implementation and use of new technologies and on the other hand, the educational process, as part of the transformation, needs to be adapted to current requirements, evolving from the use of traditional methods to the incorporation of support technologies in education (e-learning, as an accessible tool) and even − to some extent – to artificial intelligence, which brings challenges in terms of implementing platforms to facilitate communication and interconnection of people, with digital content, flexible, focused on development of management skills.

Support from public institutions can be initiated through programs for inclusion of digital technologies in all sectors, stimulation of the implementation and operation of digital platforms, of e-learning, of teleworking.

In order to deal with such challenging factors, transformational leaders are needed too. The concept of transformational leadership was introduced in 1978 as a process in which leaders and followers help each other to advance to a higher level of morale and motivation (Burns, 1978). The focus is on knowledge, on intellectual competence, on technical and socio-emotional talents, on interpersonal competencies and this type of leadership is needed.

The digital transformation will lead to the creation of new competencies and new professions and for this to happen, the leaders should know the value of knowledge transfer and advanced technologies.

Thus, it seems that the complex processes of digital transformation should be planned considering all factors that can be of support or of any opposition, including taking into account their socio impact on people's lives.

The digital transformation strategy should be thoughtfully programmed and considered with regards to all factors which may impact the change process.

It may be coordinated from the level of the Romania' s state authorities through dedicated teams made of experts from various fields of activity who work together and for the benefit of sharing the knowledge and experience they have. The necessary expertise to be addressed is coming from computer science experts with skills in both infrastructure and internet telecommunication areas, cyber security experts, business affairs experts or representatives of the relevant business areas, legal experts, sociologists, psychologists, public policy experts, project managers, teachers. The outcome brought by best practices shared and by the involvement of a transversal team of experts may bring advancement in the process and may optimize the business potential Romania has.

The social impact of any change cannot be ignored, and people's education is a key factor; therefore, programs for education are to be designed and implemented. Policies on education should support the training of skills needed for digital transformation, the development of the educational process, the creation and development of new professions.

## 6. Conclusions

The paper offers a brief presentation of the digital transformation status in Romania, enlisting the most important opinions identified by the author in the scientific literature. It offers a possible synergistic, transversal and multidisciplinary approach for designing and conducting implementation of digital transformation, for integrating the need of education and people's embrace of the transformation for transition to a more digitalised economy.

Although the objectives of the paper are met, further documentation and analysis might be needed (eg a focus group research made with the contribution of experts and representatives of all business areas, public policy makers, experts in education, sociologists, may validate the approach and may bring valuable insights for further strategy development in Romania).

## References

[1] Burns, J. M. (1978). *Leadership*. New York. Harper & Row, retrieved https://www. langston.edu/sites/default/files/basic-content-files/TransformationalLeadership.pdf.

[2] Collection of Authors (2015). *Principles of Management*, University of Minnesota Libraries Publishing Edition, Minneapolis, Mn, retrieved https://courses.lumenlearning .com/principlesmanagement/.

[3] Digital Economy and Society Index (DESI) (2020). retrieved https://ec.europa.eu/digital-single-market/en/scoreboard/romania.

[4] Digital Economy and Society Index (DESI) (2020). *Thematic chapters*, retrieved https://ec.europa.eu/digital-single-market/en/desi.

[5] Gaftea, V.-N. (coord.), Ionita, A., Nitu, I., Popa, I.-F. (2017). Romania and the Digital Single Market of the European Union. Challenges and Opportunities, European Institute in Romania, *Studies of Strategies and Politicies*, SPOS 2017, Study number 3, pp. 9-10.

[6] Mutekwe, E. (2012). The Impact of Technology on Social Change: a Sociological Perspective, Journal of Research in Peace, Gender and Development, *International Research Journals* (ISSN: 2251-0036), 2(11), pp. 226-238, November, retrieved http://www.interesjournals.org.

[7] Price Water House Cooper's (2018). *Study on the Implementation of Digital Transformation in Romania*, p. 4 & 14, retrieved https://media.hotnews.ro/media_server 1/document-2018-10-11-22752549-0-studiu-guvernare.pdf.

[8] Price Water House Cooper' s (2020). PWC *Study Regarding Pandemic's Effects on Business*, retrieved https://www.pwc.ro/ro/media/press-release-2020/studiu-pwc-privind -impactul-pandemiei-covid-19-asupra-afacerilor.html.

[9] Turcan, G. (2015). *Interdisciplinarity in Social Sciences*, retrieved https://irek.ase.md/ xmlui/bitstream/handle/123456789/120/Turcan-G_8-mai-2015.pdf-8.pdf?sequence=1& isAllowed=y.