DIGITAL TECHNOLOGIES: KEY VECTOR IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

ALEXANDRA-MARIA DANILEȚ
Phd, University Stefan cel Mare Suceava
e-mail: alexandra.galan@usm.ro

Abstract
When addressing the issue of sustainable development, we need to consider both a microeconomic and a macroeconomic perspective. This is necessary because it is only through cooperation between business organisations and states that we can ensure an environment favourable to the development of future generations. Measures taken at state level and promoted by international organisations form the basis of the policies adopted by national and multinational economic players who aim to ensure that their operations are consistent with sustainable development. The current context in which socio-economic activities are carried out requires a reconfiguration of the strategies implemented by companies, institutions and other international organisations whose activities have an impact on the global economy. Increasing interdependencies between organisations located in different parts of the world indicate the need for a unified approach to the use of their resources because their activity is influencing individuals globally. The future progress of society will be influenced by the extent to which high-performance technologies are integrated into the infrastructure for doing business (regardless of the sector of the economy), whether we are talking about business organisations or state institutions. From this point of view, a major role in the digitalisation of the society and the promotion/implementation of sustainable development principles lies with ICT companies that produce software and develop new technologies that enable better use of the resources available to various market players. In this context, the need for macroeconomic interventions to create a favourable framework for the development of new technological and social innovations by supporting education and the business environment becomes necessary. These two components of the society are essential in promoting and respecting the principles of sustainable development.

Keywords: *digital technologies, performance, eficiency, business organizations, strategy, sustainable development*

Clasificare JEL: *M15, O33, O44*

1. INTRODUCTION

The issues addressed in this study have attracted the attention of many researchers and business practitioners because of their high impact on the long-term progress of the society. At the same time, concepts such as performance and efficiency have become key elements in policies and strategies adopted and implemented at organisational and government level. Moreover, the current framework for socio-economic activities, largely influenced by the coronavirus pandemic and a series of natural disasters in different parts of the world, highlights a number of vulnerabilities of today's society which, if not addressed, will affect future generations. To what extent will the inclusion of digital technologies in the activities of individuals, companies, institutions or other types of organisations improve performance and efficiency, i.e., the use of resources? Through this study we aim to analyse the relationship between digitalisation, i.e., digital technologies and sustainable development. Our purpose is to identify the links between the mentioned processes, and more specifically to determine the extent to which the development and adoption of digital technologies in the work of both business organisations and state-level institutions is conducive to sustainable development principles.

In conducting the research, we opted, on the one hand, for the use of qualitative tools and, on the other hand, for the use of quantitative tools whose interaction allows a more complex approach to the analysis. Thus, initially we resorted to the study of some works in the literature in order to create an overview of the issues studied and to determine the level of knowledge in the

field. Subsequently, we analysed a series of indicators reflecting aspects of sustainable development and digital technologies in developed countries. The research was based on a range of data available in reports published at international level.

2. DIGITAL TECHNOLOGIES: THE CORE IN DEVELOPING NEW STRATEGIES IN THE DIGITAL SOCIETY

The business environment has changed significantly in recent decades, due to technological developments and the increased interest in developing new innovations. In this context, studies in the field highlight the need for a digital transformation at the level of companies, institutions and all other categories of organisations. Moreover, prosperity, well-being and progress are linked to the ability of business organisations and others to adopt digital technologies and thus digitalise their business. To succeed in this direction, business actors need an ICT partner (sometimes called digital architects in the literature) to integrate software and hardware components into their operations that are tailored to the needs of the companies, but in line with the market (Abolhassan, 2017). The digital transformation of business organisations is facilitated by the extent to which their management succeeds in developing digital competencies, building a digital platform (the technology used to run their operations) and developing strong relationships with business actors specialised in IT (Westerman G. And others, 2014).

At the heart of the digital transformation of society is the ICT sector, specifically the ICT companies that provide IT solutions that can help improve the competitiveness of business organisations, foster the development of new innovations and ensure better working conditions for employees. At the same time, managers aim to reduce the costs of doing business, streamline processes, increase the quality of products/services, etc. (Schwartz M., 2019). Therefore, digitalisation shows that technology not only facilitates operations in companies, but can also constitute an optimal framework to maintain their market position and face global competitors. Moreover, the same digital technologies can improve the performance of state institutions by streamlining the way they conduct their business, reducing costs and providing quality services to individuals.

The role of the ICT sector in the digitalisation of socio-economic activities is becoming paramount, which can be seen from the increase in the number of companies operating in this field globally, from the share of the ICT sector in GDP, but also from the fact that in international rankings of the most innovative companies, the main positions are held by companies with this profile. For example, in the report published by the Boston Consulting Group in 2021 on the top 50 most innovative companies, six companies operating in the ICT sector (Apple, IBM, Alphabet, Microsoft, Samsung, Sony, Huawei, etc.) are in the top 10.

At the same time, we state that the issue of digital technologies can be approached on the one hand, from the perspective of the providers of such digital technologies/solutions (ICT companies), and, on the other hand, from the perspective of those who benefit from these tools by including them in their daily activities. The ICT entrepreneurs face in this respect a growing demand for digital technologies, both for those they use in their own activities and for those they create. The global IT industry has been estimated to be worth USD 5.2 trillion by 2020, including hardware, software, services and telecommunications. The largest share of purchases is made by companies and government institutions, followed by individual consumers (Comptia, 2019).

Digital technologies are embedded in all sectors of the economy and are becoming the cornerstone of strategies implemented by business and policy makers (OECD, 2015). Long-term success is therefore influenced by the extent to which socio-economic activities use such tools to improve how they respond to the challenges of the external environment.

3. SUSTAINABLE DEVELOPMENT: WORKING TOGETHER FOR A BETTER WORLD

When we analyze sustainable development issues, we need to consider the three pillars of sustainability (Mishra D. and others, 2018), i.e., environment, society (education, health, lifestyle, etc.), economy (jobs, GDP, R&D investment, etc.) in order to identify to a greater extent, the factors that are influencing each component that can contribute to the sustainable progress of the society. Achieving the specific objectives of each pillar involves a combination of measures taken at the microeconomic and macroeconomic levels in order to provide resources efficiently. In addition, it should not be overlooked that successful sustainability outcomes require a set of coherent, clear and consistent measures at the level of business organisations and institutions. It is therefore up to management to adopt and implement innovative strategies that will also have an impact on the environment and society.

The 17 goals of the 2030 Agenda for Sustainable Development proposed by the United Nations include issues aimed to improve the well-being of individuals (reducing poverty, eradicating hunger, increasing access to health services, education, promoting lifelong learning, access to water, sanitation and energy), promoting inclusive and sustainable economic growth through the creation of decent jobs, developing infrastructure and industries that support innovation, as well as security issues. At the same time, it addresses issues of sustainable global consumption and production, global warming measures, conservation of ocean and marine resources, protection of ecosystems, increasing forest cover, combating desertification and limiting biodiversity loss. Last but not least, issues related to access to justice and increasing the efficiency of institutions are addressed (UN, 2015). What are the necessary means that states and business organisations need to achieve these goals? Will policy makers identify a way to work together to solve global problems?

Globally, renowned organisations such as the OECD, the UN and The World Commission on Environment and Development are heavily involved in identifying solutions to limit environmental and social degradation. One of the issues they highlight in their reports and studies is the link between the state of the environment and economic development, in the sense that accelerating environmental degradation and overuse of natural resources will have an impact on the level of social and economic development of society (in the sense that all the progress achieved so far will not be able to meet the current needs of society without a healthy environment). Last but not least, it highlights that sustainable development requires global cooperation between states, institutions, companies and individuals (OECD, 2008).

4. THE NEXUS BETWEEN DIGITALISATION AND SUSTENABILITY

The aspects presented in the previous paragraphs indicate the existence of a favourable relationship between the two processes analysed. In order to create a clearer picture of this connection, we have opted to analyse specific indicators, namely the IDI (ICT Development Index) and the SDG (Sustainable Development Goals) Index, which show the situation at macroeconomic level with regard to the issue in question. To this end, we made a selection of countries based on the level of economic development and position in the specific ranking analysed for each area and a selection of data (from a time perspective) based on their availability in international reports. Figure 1 shows the evolution of the IDI between 2012 and 2017 for the 8 best performing countries in the top 20 positions (out of 155) in the ranking, to which we have added Romania (ranked 52nd in 2012).

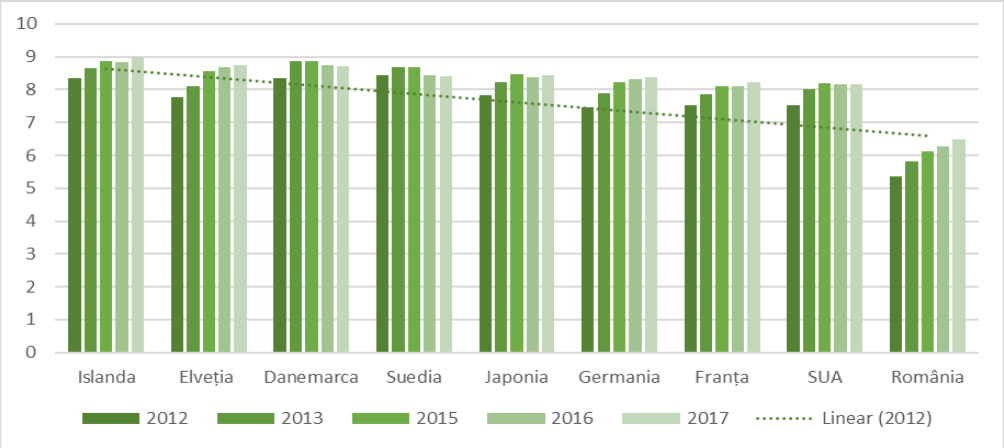

Fig. no. 1 The evolution of IDI for some of the most developed countries worldwide
Source: International Telecommunication Union, *Measuring the Information Society* for 2012, 2013, 2015, 2016, 2017, Geneva

The IDI was determined in 2008 by the ITU (International Telecommunication Union) in order to establish and monitor ICT development at country/economy level (using a scale from 0 to 10). It consists of 11 other indicators that are grouped into 3 levels: access to ICT (specific infrastructure), ICT usage and digital skills (ITU, 2012). With regard to the data shown in the figure above, we see that the highest values are found in countries such as Iceland, Denmark and Switzerland. The maximum value of the index analysed in the interval 2012-2017 is recorded in 2017 for Iceland, followed by Switzerland with a score of 8.74 and Denmark with a score of 8.71. As for Romania, the score for 2017 is 6.48, an increase of about 20% compared to 2012. A common feature of the IDI evolution for the countries analysed is the upward trend. Thus, in recent years at the global level there have been favourable results in terms of ICT infrastructure, the level of use of ICT technologies in socio-economic activities, but also in terms of digital skills of individuals.

Regarding the SDG Index, we mention that it can take values between 0 - 100% and ranks countries according to their achievements on the 17 goals of the UN 2030 Agenda referred to above. In figure no. 2 we show the most recent SDG Index data published for the countries analysed above from an IDI perspective:

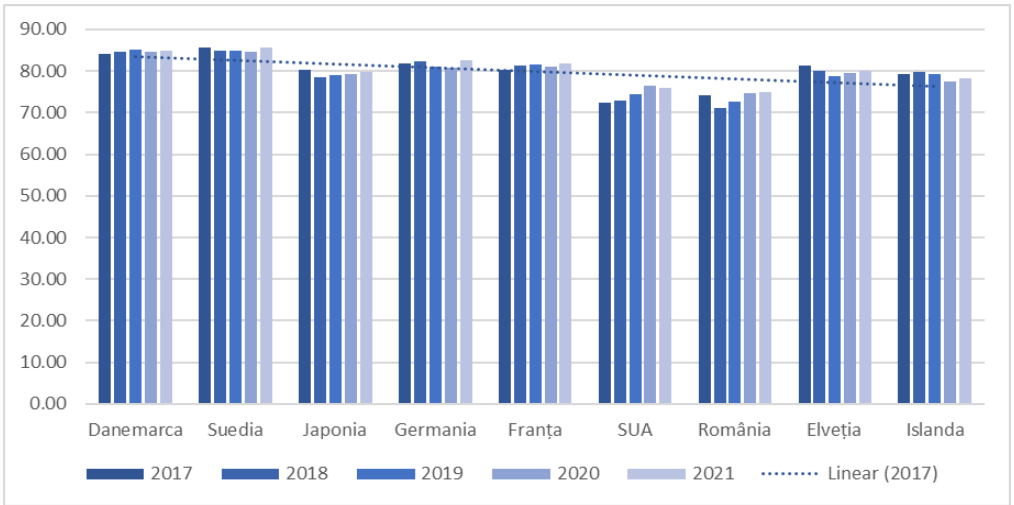

Fig. no. 2 The evolution of SDG Index for some of the most developed countries worldwide
Source: Sachs J. and others, *SDG Index and Dashboards - Global Report*, Bertelsmann Stiftung and Sustainable Development Solutions Network, New York, 2017 - 2021

With regard to the SDG Index, it is necessary to mention that the data selected are not for the same period as those for the IDI due to the fact that the measures taken from the perspective of digitalisation are not targeted in the sphere of sustainable development in the immediate future, as time is needed to implement the measures and analyse the results obtained. More specifically, the effects of using digital technologies in the various areas covered by the SDG Index are visible over time, as they require investments, changes in strategies and the development of digital skills among individuals, i.e., users of ICT technologies.

The data shown in the figure above shows that the countries under study have achieved high performance in terms of sustainable development, in the sense that the values for the SGD Index are high for the whole range analysed. Thus, in 2021 Sweden stands out with a score of 85.60% followed by Denmark with a score of 84.90%. Regarding Romania, we note that the SGD Index for 2021 is 75%, a favourable result compared to the USA whose score for the same year is 76%.

At the same time, we emphasize that for all the countries analysed the SGD Index trend is upwards, the same situation being found in the case of the IDI referred to above. From this perspective, we can deduce that there is a positive correlation between the evolution of the two indices analysed for the 9 countries included in the research.

Therefore, achieving the goals proposed by the UN 2030 Agenda can be performed through digital technologies. For example, in health, the ICT sector has had a major impact, helping to reshape medicine by facilitating remote consultations, facilitating global dialogue on related topics, disseminating information and results from studies/research, diagnostics through telemedicine, collaboration between people working in the field globally, streamlining the way research in the field is conducted, improving the ability to identify factors negatively influencing the health of individuals and effectively address health challenges, and improving national health systems (Marolla, 2019). Examples can be extended to other areas such as education, agriculture, culture, etc., issues that have been more evident in the context of the COVID-19 pandemic.

Analysing the global situation, we can state that the changes imposed by the COVID-19 pandemic have led to an increase in demand for ICT products/services as a result of the restrictions, respectively measures taken to maintain social distance. While companies from sectors such as tourism and air transport companies, hotels and restaurants have faced major difficulties, the ICT sector has seen an increase in activity worldwide, with a significant increase in demand for the tools/technologies needed to digitalise the work of companies and state institutions.

5. CONCLUSIONS

The issues that we have highlighted throughout this work show a favourable connection between what digital technologies represent and sustainable development. The subject proposed in this research requires from our perspective a more detailed analysis, in order to study the situation in several countries for a longer period of time, due to the high level of interest in the issue. Also, when analyzing digitalization and sustainability we must take into consideration that such all the industries, ICT uses energy and requires significant resources in order to produce the specific technologies. Therefore, it is necessary a strategy regarding the balance that can be achieved in this direction given to all the principles of sustainable development.

In addition, the analysis of the relationship between the two processes can be a starting point for business and policy makers to implement measures to ensure that sustainable development objectives are met. Digitalisation is undoubtedly a necessity for organisations in today's society to perform and operate in line with sustainable development principles, taking into account the equity and balance referred to in many studies that promote long-term well-being and progress.

6. BIBLIOGRAPHY

[1] Abolhassan F., *The Drivers of Digital Transformation. Why There's No Way Around the Cloud*, Springer Publishing, Switzerland, 2017
[2] Boston Consulting Group, *Most Innovative Companies 2021. Overcoming the Innovation Readiness Gap*, 2021
[3] Computing Technology Industry Association (CompTIA), *IT Industry Outlook. Taking the next step*, 2019
[4] International Telecommunication Union, *Measuring the Information Society*, Geneva, 2011, 2012, 2013, 2015, 2016, 2017
[5] Marolla C., *Information and Communication Technology for Sustainable Development*, CRC Press Taylor & Francis Group, Boca Raton, 2019
[6] Mishara D., Nayak M., Joshi A., *Information and Communication Technology for Sustainable Development*, Proceedings of ICT4SD 2016, Volume 2, Springer, Singapore, 2018
[7[OECD, *OECD Digital Economy Outlook 2015*, OECD Publishing, Paris, 2015
[8] Sachs J., Schmidt-Traub G., Kroll C., Durand-Delacre D. and Teksoz K., *SDG Index and Dashboards - Global Report*, Bertelsmann Stiftung and Sustainable Development Solutions Network, New York, 2016, 2017, 2018, 2019, 2020, 2021
[9] Schwartz M., *War and peace and IT: business leadership, technology, and success in the digital age*, IT Revolution Press, Portland, 2019
[10] Strange T., Bayley A., *Sustainable Development: Linking economy, society, environment*, OECD Publishing, 2008
[11] United Nations, *Transforming our world: The 2030 Agenda for Sustainable Development*, United Nations Publishing, 2015
[12] Westerman G., Bonnet D., Mcafee A., *Leading digital. Turning technology into business transformation*, Harvard Business Review Press, Boston, 2014