

The Impact of Social Media in the Digitization Process

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Abstract: Digitization is the use of digital technologies to change a business model and provide new revenues and opportunities to produce value. The concept of the Fourth Industrial Revolution was first introduced in 2011 by a team of scientists who developed a high-tech strategy for the German government. In the case of sustainability, resilience is the relationship between different types of urban hazards, including ecological resilience, the resilience of urban and regional economies or institutions. In this paper we present a comparative analysis between the “Digital Economy and Society Index” (DESI) at the level of developed and least developed countries a composite index that summarizes relevant indicators of Europe's digital performance and tracks the evolution of EU Member States in terms of digital competitiveness.

Key-Words: social media, digitalization, Industry 4.0, resilience, “The Digital Economy and Society Index” (DESI).

1 Introduction

Several definitions of digitization are proposed. From an academic perspective, (Brennen and Kreiss 2014) define digitalization as "digital communication and the impact of digital media on contemporary social life."

In the Gartner IT Glossary, digitalisation is defined as “the use of digital technologies to change a business model and provide new revenue and value opportunities; it is the process of moving to a digital business ”. (Information Technology / Digitalization 2021)

Along with business innovation, digitalization - the development of digital innovations - is one of the most important business trends for the future of the economy. Companies need to develop digital strategies and focus on what are the key success factors of digital transformation. Digitization increases productivity and efficiency, while reducing costs. Digitization improves an existing business process or processes, but does not change or transform them. That is, it takes a process from a human-driven event or a series of events to software-driven.

Digitization is crucial for the processing, storage and transmission of data, as it "allows information of all types in all formats to be transported with the same efficiency and also mixed." Digital preservation is a principle that also applies to digital born materials. One such example is “a Microsoft Word document saved as a .docx file or a post on a social networking site. Instead, digitization applies exclusively to analogue materials. Digital-born materials present a unique challenge for digital preservation not only due to technological obsolescence, but also due to the inherently unstable nature of digital storage and maintenance. Most websites last between 2.5 and 5 years, depending on the purpose for which they were designed.” (Crestodina 2017)

Social networks (Hudson 2020) „refers to websites and applications that are designed to allow people to share content quickly, efficiently, and in real-time. While many people access social media through smartphone apps, this communication tool started with computers, and social media can refer to any internet communication tool that allows users to broadly share content and engage with the public.”

„The ability to share photos, opinions, and events in real-time has transformed the way we live and the way we do business. Here are the basics of understanding social media and how it can be used to help promote your business. Social media is any digital tool that allows users to quickly create and share content with the public. Social media encompasses a wide range of websites and apps. Some, like Twitter, specialize in sharing links and short written messages. Others, like Instagram and TikTok, are built to optimize the sharing of photos and videos.“

What makes social networks unique according to (Hudson 2020) „is that they are both broad and relatively uncensored. While many social media companies impose certain limitations - such as removing images that

display violence or nudity - there are far fewer limitations on what one can share than there are with other mass media, such as newspapers, radio stations and television channels.”

Anyone with internet access can sign up for a social media account that can be used to share any content they want to share, and the content they share reaches anyone who visits that page or profile, except for the restrictions set by the account holder.

2 Implications of social networks in the process of digitalization and evolution of industry 4.0

The concept of the Fourth Industrial Revolution was first introduced in 2011 by a team of scientists who developed a high-tech strategy for the German government. The fourth industrial revolution, also known as Industry 4.0, is characterized as the continuous automation of traditional industrial and manufacturing practices, which involves the use of modern and intelligent technology.

Large-scale machine-to-machine (M2M) communication, which involves wired or wireless communication channels, and the Internet of Things (IoT) are integrated for increased automation, resulting in improved communication and self-monitoring. The aim is to develop technology at a high level, without the need for human intervention. The digital industrial revolution is developing a number of combinations of advanced digital technologies, such as:



Source: Gazeta Afacerilor - "About Industry 4.0 and the implementation of the concepts it promotes within the Romanian foundry industry"

Industry 4.0 integrates its own technologies and terms, such as the Internet of Things (IoT), Big Data, **Cloud computing, etc.**

The Internet of Things (IoT) is "the concept of connecting any device with a switch on and off the Internet (and / or each other)." (www.headland.com.au 2020) This includes mobile phones, coffee makers, washing machines, headphones, lamps, wearable devices. Machine components are also included, such as an aircraft jet engine or an oil rig drilling. If it has a on and off switch, then it is possible to be part of the IoT.

The term Big Data (big data, metadata) refers to "the extraction, manipulation, and analysis of data sets that are too large to be routinely processed." (Sfetcu 2019)

Cloud computing is "a distributed set of IT services, software, applications, access to information and data storage, without the user needing to know the location and physical configuration of the systems that provide these services" (gazeta-afacerilor.ro 2018)

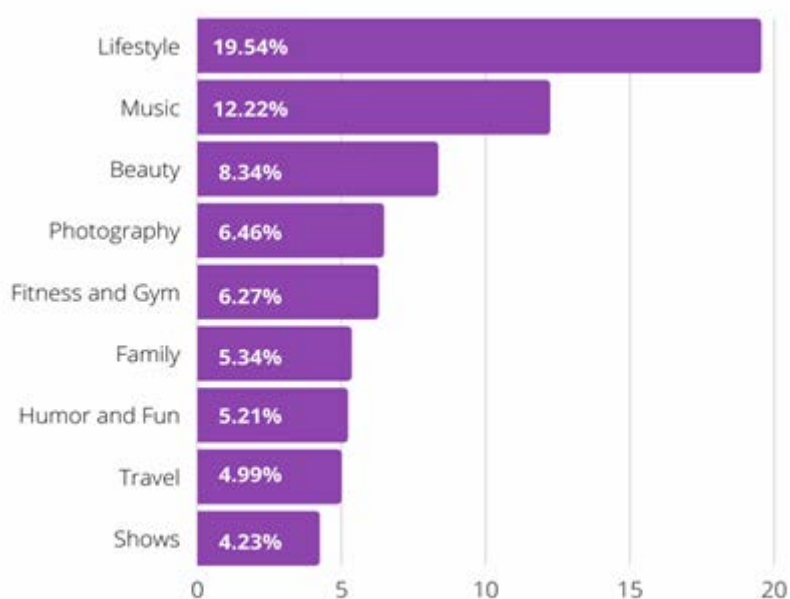
2.1 The level of use of social networks in Romania

Starcom Romania has made through the Social Media Stars Index, a top of the most watched content creators in the field of entertainment. For the elaboration of this ranking, "the online activity of over 900 accounts from Romania and their communities was analyzed and followed, in order to provide a unitary image of the social media activity.”

The top analyzes the presence of the most followed accounts on the three major online platforms - Facebook, Instagram and Youtube - but also the size of the channel and the engagement of the communities of each account. Thus, in the Top 10 most watched accounts in December 2020 we find: Inna, Andra Măruță, Adelina Pestițu, Andreea Bălan, Selly, Smiley, Flick Domnul Rimă, Mircea Bravo, MaxINFINITE and Andrei Zbir. ” (Starcom 2021)

Nr	Social Media Star	Social Media Points	Overall Rank	Facebook Rank	Instagram Rank	Youtube Rank
1	Inna	1.86	1	14	1	7
2	Andra Măruță	1.83	2	5	6	63
3	Adelina Pestițu	1.82	3	6	3	264
4	Andreea Bălan	1.52	4	4	15	99
5	Selly	1.36	5	158	14	2
6	Smiley	1.33	6	12	12	128
7	Flick Domnul Rimă	1.32	7	2	28	379
8	Mircea Bravo	1.24	8	1	117	40
9	MaxINFINITE	1.15	9	331	103	1
10	Andrei Zbir	1.15	10	685	2	24
11	Andreea Marin	1.14	11	3	70	475
12	Antonia	1.12	12	41	5	132
13	Andreea Mantea	1.10	13	25	8	156
14	Delia	1.05	14	62	4	236
15	IAN	1.03	15	9	39	411
16	Mihai Morar	1.02	16	8	46	539
17	Vlad Munteanu	0.99	17	647	7	18
18	Dorian Popa	0.97	18	129	13	6
19	Elena Gheorghe	0.94	19	18	17	135
20	Jamila Cuisine	0.85	20	11	254	91
21	Eduard CRBL	0.85	21	10	138	367
22	Alina Eremia	0.84	22	59	11	144
23	Exploit	0.84	23	480	105	3
24	Mihai Trăistariu	0.84	24	7	269	408
25	Nicole Cherry	0.75	25	107	9	369
26	Lora	0.72	26	32	21	278
27	Tudor Chirilă	0.69	27	13	158	374
28	Cristina Almășan	0.66	28	359	10	108
29	Adela Popescu	0.65	29	45	20	471
30	Vlăduța Lupău	0.65	30	17	139	86
31	Anda Adam	0.64	31	40	24	539
32	Chef Florin Dumitrescu	0.63	32	16	114	487
33	Cătălin Măruță	0.62	33	30	45	139
34	3 Chestii	0.62	34	20	214	35
35	Loredana Groza	0.61	35	19	84	403
36	Alex Velea	0.60	36	63	37	37
37	BRomania	0.58	37	127	23	31
38	Diana Condurache	0.55	38	452	16	59
39	Alex Dima	0.55	39	15	274	539
40	Mimi	0.51	40	269	19	78

Source: <https://cutt.ly/Alfj8tD> accesat pe 18 Feb 2021, ora 7:37 PM



The most popular content niches of Romanian influencers on Instagram according to:

<https://www.startupcafe.ro/afaceri/influencer-femei-frauda-instagram.htm> accessed at 18 Feb, 8:17 PM

Studies indicate that “the number of Internet users had largely the same growth rate in 2020 and 2019 - 7.3% last year; 7% two years ago. However, social media had a faster growth in 2020 (13%) compared to 2019 (9%), a sign that the pandemic kept us at home and on social networks.

In Romania, we can say that in 2020 the time spent on average on the Internet daily increased by 5 minutes from 7:21 hours to 7:26. The number of social media users in our country has increased significantly. Last year, 62.6% of Romanians used social networks compared to 57% in 2019. "In January 2021, there were 12.00 million social media users in Romania. The number of social media users in Romania increased by 1.0 million (+ 9.1%) between 2020 and 2021. The number of social media users in Romania was equivalent to 62.6% of the total population in January 2021." (Kemp 2021)

2.2 Digitization - a strategy to increase resilience and sustainability

Resilience is "the ability of a system to absorb disturbances and reorganize itself so as to retain its functions, structure, and identity." (Elmqvist, et al. 2015) In the case of sustainability, resilience is the relationship between different types of urban hazards, including ecological resilience, the resilience of urban and regional economies or institutions.

Factors that have an influence on resilience and sustainability

Economic influencing factors refer to “the capacity of urban systems to implement resilience and sustainability programs. The general level of income, the initial economic structure or the consumption patterns associated with a large part of the population are all fundamental elements. ” (Iojă, et al. 2016) Sustainable transport, economic growth and, implicitly, jobs are the main factors influencing the resilience and sustainability that are influenced by economic factors are related to the promotion of sustainable transport and growth and jobs.

Social influencing factors include social, ethnic, religious categories. Resilience and sustainability measures “must be adapted to the specifics of the existing structure. Resilience is measured on different scales, from individual, household, community, municipal. Sustainability and resilience are interconnected in multiple ways with phenomena such as health and well-being, social cohesion and lifelong learning ”. (UNDP 2014)

Administrative influencers refer to "the ability of system actors to make deliberate decisions and actions, as well as strategic choices that contribute to resilience through their ability to learn and responsiveness." (Iojă, et al. 2016)

Environmental influencing factors target "different categories of measures aimed at protecting and improving heritage, protecting landscapes and geodiversity, conserving biodiversity or adapting to climate change." (Iojă, și alții 2016)

Cyber resilience refers to "the ability of an entity to continuously deliver the desired result, despite adverse cyber events." (Björck, et al. 2015) The concept essentially brings together the areas of information security, business continuity and organizational resilience.

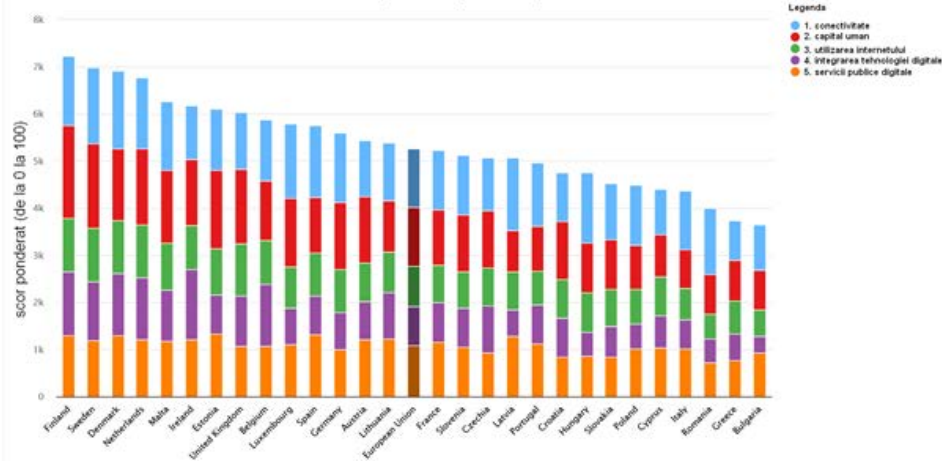
3. Comparative analysis between the “Digital Economy and Society Index” (DESI) at the level of developed and least developed countries

Digitization is the use of digital technologies to change a business model and provide new revenues and opportunities to produce value.

The Digital Economy and Society Index (DESI) is "a composite index that summarizes relevant indicators of Europe's digital performance and tracks the evolution of EU Member States in terms of digital competitiveness." ((DESI) 2020)

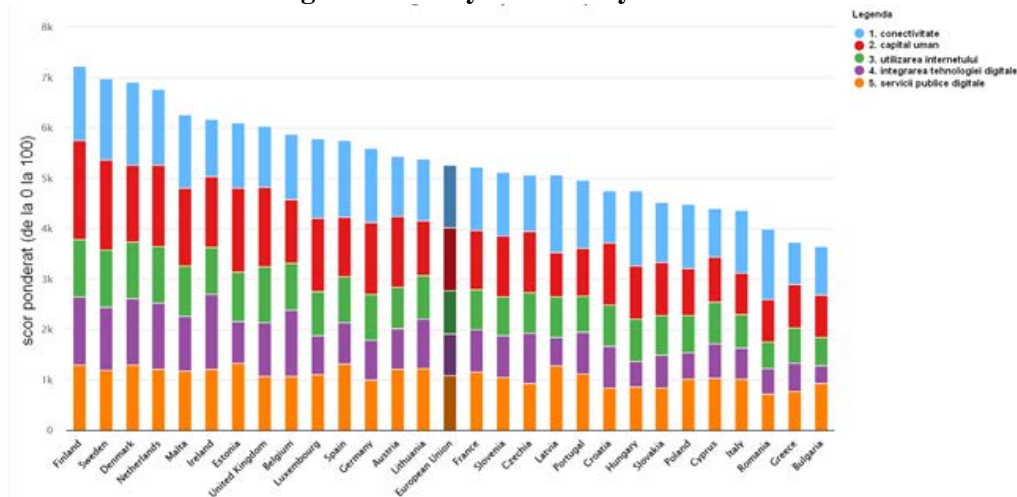
We will perform a comparative analysis at the level of developed and least developed countries, based on the DESI report from 2020, whose data are based on the evolution and involution of countries in 2019. In 2019, Romania falls at the level of less developed, so the case study will focus on developed countries.

Digital Economy and Society Index 2020 (DESI)



Source: DESI composite index 2020 <https://bit.ly/3u6StCU>

Digital Economy and Society Index 2019



Source: DESI composite index 2019
<https://bit.ly/3u6StCU>

The global DESI index is "calculated as a weighted average of the five main DESI dimensions with the weights selected by the user: 1 Connectivity, 2 Human capital, 3 Internet use, 4 Integration of digital technology and 5 Digital public services." ((DESI) 2020)

Through connectivity, the social connections forged through mediated communication systems are approached. The concept of connectivity developed with the development of the Internet, first with the introduction of Web 1.0 and later Web 2.0. Social networks, websites that provide access to user-generated content, trading and marketing web pages, and gaming sites have become an essential part of everyday life. As mentioned above, connectivity is built on the principles of Web 2.0. and creates the vision of empowering the user in generating new content and coordinating the flow of information on the Internet.

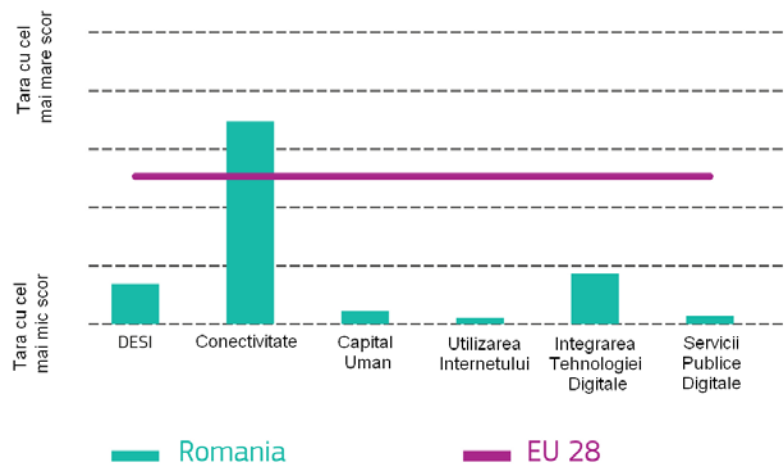
Human capital is the economic value of the skills and qualities of work that influence productivity. The investment in these qualities generates a high economic production. Human capital is divided into three categories, namely intellectual capital, social capital and emotional capital.

The Internet has various functions, and is currently used for learning, entertainment, work, to socialize. The most common uses are for: sending emails, doing research, downloading files, discussion groups, games, for educational and self-improvement purposes, to make friends, or meetings, to read online newspapers, for employment and shopping.

The integration of digital technology covers two topics: business digitization and e-commerce. DESI divides the digitalization of the business into five indicators: "electronic information sharing, radio frequency identification (RFID), social media, electronic invoices and cloud solutions. E-commerce has three indices: the

percentage of small and medium-sized enterprises (SMEs) that sell online, the turnover of e-commerce as a percentage of the total turnover of SMEs and the percentage of cross-border online sales of SMEs. " (Digital Economy and Society Index Report, 2018)

The integration of digital technology is a "composite index that summarizes the relevant indicators of Europe's digital performance and tracks the evolution of the digital competitiveness of UN member states."



(Europe's Digital Progress Report 2017)

Sursa: Shaping Europe's digital future European Commission 2020 <https://ec.europa.eu/digital-single-market/en/scoreboard/romania>¹

Romania ranks 26th out of 28 EU member states in the 2020 DESI report. According to the study published by (Purice 2020) the data refer to the period before the pandemic. Romania has recorded a relatively similar path for four of the five dimensions of DESI measured, which is based on „slow progress, but also caused by political developments, as it has had four different governments in the last three years.”²

In terms of connectivity index, Romania recorded the best performance, “thanks to the high take-up of ultra-fast broadband and the wide availability of very high-capacity fixed networks, especially in urban areas. 49% of Romanian homes subscribe to ultra-fast broadband (at least 100 Mbps), the fifth highest figure in the EU ” (Preda 2020)

Romania ranks 27th out of 28 European Union countries in terms of human capital, a position it has stagnated compared to the previous year. Less than a third of Romania's population of people aged 16 to 74 have at least basic digital skills, compared to 58% in the EU as a whole, while 35% have at least basic software skills, compared with an EU average of 61%.

Romania ranks last in the EU in terms of basic digital skills, only 10% of people with knowledge in this field. Compared to the previous year, there was a slight increase in the percentage of information technology specialists.

In terms of ICT graduates, Romania rises and ranks 5th among the Member States of the European Union, with 5.6% of all graduates. "The Ministry of Education and Research implements the national strategy 2014-2020 for strengthening public administration. In addition, the Ministry is implementing an administrative simplification project for the national education system, with a budget of RON 28 million (approximately EUR 6 million) from SIPOCA (Structural Instruments under the administrative capacity operational program). ” (Purice 2020)

In contrast to connectivity, for the index of use of internet services Romania occupies a leading place among EU member states. This index may, however, be directly related to the low level of basic digital skills across the country. 18% of people aged 16 to 74 have never used the internet, compared to the EU average of 9%. However, Romania ranks 6th in the EU for two online activities: the use of social networks, where Romania registers an average of 82%, compared to the EU average of 65%, but also video calls (67%; EU average: 60 %). Romania remains on a stable position compared to last year, registering almost no change in the case of this indicator.

¹ Conectivity, Human capital, Internet use, Integration of digital technology, Digital public services

² <https://outsourcing-today.ro/?p=2340>

Romania occupies a place at the end of the ranking in terms of the integration of digital technology by enterprises, ranking 27th out of 28 among EU countries. Compared to the previous year, Romania's ranking remained stable in terms of digital technology index. 23% of Romanian companies share information electronically and only 8% use social networks, the European Union average being 25%. "Romania does not have a national strategy for digital transformation for enterprises. Romania supports the ecosystem of start-ups through the Start-up Nation program, including start-ups that produce innovations or integrate them into new products and services." (Purice 2020)

For the index of digital public services, Romania ranked, both in 2019 and in 2020 on the last place among the EU member states. Romania ranks 8th for users of e-government platforms, with 82% of internet users, compared to an EU average of 67%. The high level of online interactions between public authorities and citizens refers only to those internet users who have to submit forms.

"The lack of interoperability of IT systems in public administration is a problem for years, which no government has yet managed to solve. In June 2019, a public consultation was launched on the draft law establishing a national reference framework for achieving ICT interoperability (CNRTIC). The aim is to fulfill the vision expressed in the government's 2017-2020 program (especially in the chapter *Communications Policies - Digital Convergence*), in order to simplify procedures and reduce bureaucracy through e-government." (Purice 2020) One of the problems facing the state is the high cost of a qualified digital signature (40 EUR / year per user).

Other problems that Romania faces in facilitating "digital public services are: lack of coordination between public institutions in establishing these services, migration of IT specialists from the public sector to the private sector or even in other countries, and the general lack of digital skills." A well-implemented e-government solution would help businesses to operate easily in relation to the government.

Romania has not made significant progress in 2020 compared to 2019 and continues to face many problems at the level of digitization. An average of the five indices places Romania on the 26th place out of 28 EU member states, being followed only by Greece and Bulgaria, both in 2019 and in 2020.

4 Conclusion

Integrated communication uses all marketing channels and strategies, interconnects them, and then merges them into a single message. Social media marketing complements the integrated marketing strategies of many organizations. The involvement of social networks is particularly oriented towards social and environmental issues.

Digitization is the use of digital technologies to change a business model and provide new revenues and opportunities to produce value. We conducted a case study through which we evaluated Romania in relation to the EU using the Digital Index of Economy and Society (DESI).

The five DESI indices are connectivity, human capital, internet use, digital technology integration and digital public services. Regarding the connectivity index, Romania registered the best performances, but did not register progress for the other indices and is placed at the end of the ranking compared to the rest of the EU member states. Romania has not made significant progress in 2020 compared to 2019 and continues to face many problems at the level of digitization. An average of the five indices places Romania on the 26th place out of 28 EU member states, being followed only by Greece and Bulgaria, both in 2019 and in 2020.

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