Digitalization is rapidly changing the assumptions of the way of organization of work and life work and digital practices are changing business landscapes. While the use of data in business-to-business marketing is not a new phenomenon, the digitization and digitalization of firms’ business models have recently attracted a great deal of attention. There is a wave of “digitization” in many parts of the world as private businesses, as well as the public sector, embrace information and communication technologies to achieve lesser cost, efficiency, and competitive advantage. However, what we are witnessing is just the beginning of an economic revolution as the full potential of the digital economy is about to be harvested. Nevertheless, this question should be studied more in the future. At the same time, the concept of digitalization in the literature has many meanings and is used in different ways. Consistent communications can make future conversations easier because the definitions are concrete, discussions about misunderstandings and ambiguities are avoided, and trust is built. The research tries to clarify the concept by giving an overview of the existing theory and terms, explains the differences between them based on the recent research on this topic, and specifies the importance of these digital processes in the modern world. The main finding is the meaning of digital transformation, which is not only about powerful technologies but also about resources and people in the first way.

**Keywords:** digitalization, digitization, digital transformation, digital globalization, digital technologies

**Introduction**

In the last years, digitalization has been identified as the most important technological trend that is changing both business and society [1]. It is becoming increasingly important for organizations to quickly, efficiently, and appropriately plan the digital transformation to achieve flexibility, find more clients and maintain market competitiveness [2]. Nowadays, firms are constantly under pressure to use digital technologies and to adapt their business models to this new reality. In this context, the understanding of digitalization and related concepts is vital. It affects not only the organizations and companies, but the whole society as well, as digital...
technologies are being used everywhere these days. However, what is really meant by this mysterious word — digitalization? What are the prerequisites for it? All the discussions surrounding it reminds us, and indeed it is somewhat like the massive hype of the Big Data some years ago. It was expected to solve many different problems, but the actual usage is limited and specific, there are not that many solutions that work with it successfully [3]. That’s why it’s important to understand the meaning of the ’digitalization’ term in their research. However, it is crucial to introduce another word, digitization, before continuing the research on the digitalization word history. Information technology sphere uses binary digits (numbers), such that a digit can have a value of either 0 or 1. When digits are used to represent data, the data become digitized. In contrast, analog data cannot be available as strings of zeros and ones.

The term digitization can be described as a process in which ’older’ analog data is transformed into digital one for further usage [4]. It includes the conversion of paper, audio, and visual data to electronic formats. There are many examples of digitization today, and they have been there for a few last decades, for example: we have some papers, we scan them and then receive them as digital documents, in PDF format, for instance. So, it’s a process that converts something non-digital before into a digital representation. That allows to improve speed of access to that information, its usability, and the very important possibility for further usage by other applications or users. There are alternative definitions, like this one by Ross [5]: “Digitization involves standardizing business processes and is associated with cost cutting and operational excellence.” However, this opinion is not very popular nowadays, as it has a limited scope when comparing with the first one.

Now one can better understand the prerequisites to digitalization. It’s important to mention that it’s the information that is being digitized, not the processes. The first use of ‘digitalization’ term was in 1971, “as a humane man he naturally fears the digitalization of society” in an essay by Robert Wachal [6]. The fear of technology and automation was present then and is still present today. Nowadays it is mentioned in many discussions about digital transformation and artificial intelligence that can potentially substitute human work and lead to loss of jobs. Later, Maxwell and McCain [7] believed that “by transforming an analogue signal into discrete pieces, digitalization makes it possible to manipulate information, text, graphics, software code, audio, and video in ways never before thought of.” This statement is supported by some other researchers, although this definition is very similar to the digitization term that was discussed previously. According to Brennen and Kreiss [8], the process of digital transformation is how many domains of social life are restructured around digital communication and media infrastructure. If we return to an example with scanned documents, here we have an additional step where those PDFs are uploaded into a cloud service which can be accessed at any time and from anywhere. So, in this case the process of scanning the documents was also digitalized, as now we clearly have advantages when working with the same information. This example shows that in order to achieve digitalization we definitely need digitization as a first step.

There is another opinion that broadens the digitalization as “changes associated with the application of digital technology in all aspects of human society” first mentioned by Stolterman and Fors [9]. Many other researchers such as Eling and Lehmann [10], Srai and Lorenz [11], Clerck [12], etc, support this opinion and extend it noting that digitalization impacts both economic and social domains. They also believe that digitalization can be interpreted as a usage of digital technologies to improve and transform business and to create revenue [12]. Digitalization restructures the media infrastructures, improves data availability and business processes. I support this opinion and think that digitalization must be connected to both social life and business processes to be able to extract the most valuable information and bring new value to decision making. The table below (Table 1) summarizes the definitions that were discussed.

There is another term that is newer than the previous ones and yet connected with them — digital transformation. Many researchers use term digital transformation interchangeably with digitalization, many researchers use term digital transformation interchangeably...
with the previous ones. Due to the rapidly growing number of publications with results from different spheres and points of view it becomes harder to comprehend the meaning of this term. With this in mind, the paper provides an overview of this term and how can we distinguish it from digitalization, if this is a different concept. With this in mind, the paper provides an overview of this term and how can we distinguish it from digitalization, if this is a different concept. Researchers believe that because of the globalization the importance of digital transformation has increased and that it should be included into the business plans and perspectives [14]. Moreover, digital transformation impacts societies as well and that is why very high expectations are place on it. Most researchers believe that the idea of it is to improve the company’s performance [15] and to enable business improvements like new business models or enhanced customer experience [16]. One can summarize the previous statements and say that it changes a business process to become more efficient or effective [17]. In the recent years a global focus on researching and understanding digital transformation is made, however no established definition is in place, and any boundaries that could help define it remain blurred. The definitions mentioned previously were from business processes area, where this term is used very frequently. Additionally, digital transformation is one of the most commonly used phrases in the Information technology (IT) industry, yet again the definitions vary. What everyone can agree on is that digital transformation involves serious and important changes to business culture, including changing the underlying technology stack, rethinking business models, enhancing customer experience and potentially remaking company culture. What lies behind the word “changes” in digital transformation? That is also a good question. Sebastian tries to answer it by pointing out that only implementation of digital technologies is not enough, because digital strategies additionally have to be formulated [18]. Here we come to a point that this term is not only about the changes itself, but also about a strategy. Companies that are unable to rapidly develop and implement transformation strategies and new digital business models are unlikely to keep pace and compete with the new digital reality. As mentioned by Bloomberg [4],

Table 1. Digitalization definitions

<table>
<thead>
<tr>
<th>Authors (Year)</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Brennen &amp; Kreiss (2016) [8]</td>
<td>“The adoption or increase in use of digital or computer technology by an organization, industry, country, etc.”</td>
</tr>
<tr>
<td>Eling &amp; Lehmann (2018) [10]</td>
<td>“The integration of the analogue and digital worlds with new technologies that enhance customer interactions, data availability and business process”</td>
</tr>
<tr>
<td>Srai &amp; Lorenz (2019) [11]</td>
<td>“Digitalization is defined as the way many domains of social life are restructured around digital communication and media infrastructures. In simple terms, digitalization may be defined as the use of digital technologies”</td>
</tr>
<tr>
<td>Clerck (2017) [12]</td>
<td>“Digitalization is defined as the use of digital technologies and of data in order to create revenue, improve business, replace/transform business processes and create an environment for digital business, whereby digital information is at the core”</td>
</tr>
<tr>
<td>Maxwell &amp; McCain (1997) [7]</td>
<td>“Digital technology takes information and breaks it down into its smallest components. By transforming an analogue signal into discrete pieces, digitalization makes it possible to manipulate information, text, graphics, software code, audio, and video in ways never before thought of, thus its informing, transforming capabilities”</td>
</tr>
<tr>
<td>Ringenson et al. (2018) [13]</td>
<td>“Digitalization is about social life’s restructuring around digital communication and media infrastructure”</td>
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“this broader term refers to the customer-driven strategic business transformation that requires cross-cutting organizational change as well as the implementation of digital technologies.”

We can summarize that every definition of digital transformation is different, depending on the industry. Let us try to decompose the existing definitions and come up with a more general one. The following properties can be identified: entity — the unit of analysis (organization, company, etc), scope — which changes are taking place within the entity, and resources — technologies involved in creating the change. The most important point is that we want to cut out the term organization or company from the meaning, as this process may occur anywhere. Using these properties, we can say that digital transformation is a process that improves some entity by making specific changes to its properties using technologies, information and communication.

Now that we know what the term stands for here is another example to show the difference with the previous terms. Let us return to our examples with scanned papers. Digitalization happened and now they are stored in some cloud storage and can be accessed from different places at any time. Yet there is no idea, no strategy in it. Why are they being stored there? What benefit does specific organization have from it? You need to pay for using some provider’s cloud services. Here is a part where strategy comes into play. We have an inefficient working process where people must work with papers manually, no matter they are digitized or not. However, by using advanced technologies (like artificial intelligence and object character recognition) organization can transform those paper records into relevant information and place it into some organized storage. Now it becomes possible to search digital records and run reports in a way that would have been unthinkable or at least unmanageable in an era of paper records. Interestingly, few articles distinguish between digitalization, digitization and even less include the digital transformation as well. However, these three concepts are vital for every organization nowadays to adapt to the rapidly changing business environment. Many researchers mixed digitalization and digitization, where digitization is the material process of converting analogue streams of information into digital bits, and digitalization refers to the technology of digitalizing information. Ringenson [13] support those definitions and find them useful for showing the difference between the technological conditions needed for change — digitization, and the actual change — digitalization. While Clerck [12] assumes that digitalization and digital transformation are probably the same terms. The limited research regarding the usage of terms, evidenced that this is an area that can be explored and suggests future research on the topic.

Results

The core of our digital modern society is digitalization — a process that converts analogue data into digital one, that can be used by machines. Using digitalization, we use that data to create digital technologies and solutions. Digital technologies also encourage the generation of data. In the context of digital transformation, firms hope to use the potential of data for their own benefit, or in some instances, to monetize that data by selling it to the third parties. Using analytics, firms can offer services that better answer the needs of their customers or perform processes more efficiently (e.g., using data-driven algorithmic decision-making) for their competitive advantage. Bringing together new digital technologies and scientific components means a combination of hardware and software emerges, displaying a positive impact on economic growth. Throughout innovation processes, open innovation is increasingly used to exchange knowledge, ideas, and technologies with suppliers, competitors, and customers. Additionally, the impact of social networking increases, with social media being developed as important means of collaboration. As a result, the demand for information and connectivity is rising and that requires data analysis by powerful computer systems to interpret the new data. That is where digital transformation appears, where some entities are using a combination of resources, technologies, and strategies to bring positive changes into everyday life. So, it is not only about the use of digital data to improve business processes, but also realize the cost of not doing it and meeting the client’s needs. These are the main points on how companies can obtain different capabilities, knowledge, and resources using digital strategy which in turn will improve their reputation:

- Digitized solutions.
- Rapid implementation of IT changes.
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- Integration of data, services and products in the value proposition.
- Focus on customer preferences and needs.
- Recognizing opportunities to differentiate from main competitors on the market.
- Customer engagement.

This achieves a competitive advantage that enables companies to obtain a bigger market share due to the differentiated products and services they offer when comparing with their competitors. Organizations that introduce digital transformation as a part of their strategy can consequently obtain the respective benefits.

Despite the gains of digital transformation, more and more researchers see the negative effects of digitalization at the same time. A significant threat is impending job loss [19]. Digital processes and the increased usage of robot technologies will lead to employee reduction in mainly low quality jobs [20]. Also, there are risks concerning the possible data breaches, like the ones that happened in different social networks. Still, the general expectations towards digital transformation processes are high. Researchers from different disciplines contribute to an ongoing evolution, its risks, and possible future applications.

Conclusion

To sum up, digitization is a process of transforming analogue data into digital one. While digitalization is a phenomenon that uses digital technologies and digitized information to transform all aspects of the human society. It is a huge part of any today's organization's actions. The process itself has various parts and stages that makes it complicated and unique for every business model. The complexity lies in a fact that the needs of the people, organizations and processes change continuously, new tools and technologies are being created, which are more and more sophisticated and demanding. It is important to research more in the challenges and success factors in digitalization to be able to move forward with it and have competitiveness in the modern world. We can digitize information, we digitize processes and roles, and we digitally transform the business and its strategy. Each one is necessary on its own but not sufficient for the next term, and the most important difference is that digitization and digitalization are essentially about technology, but digital transformation is not.

Globalization in recent decades put a big pressure on businesses and they should efficiently integrate into the ongoing processes to stay alive and be profitable. This new reality offers huge potential for innovation and performance in organizations, but at the same time it makes the competitive advantage more fragile as company controls fewer elements of its environment. Also, concluded that additional debate on the transformation agenda is needed, to further develop a deeper understanding on how digital initiatives are changing existing business models and society.

References:

Войцех В. О.

Ретроспективний аналіз терміну “цифровізація”

Цифровізація швидко змінює уявлення про спосіб організації роботи та життя, а цифрові практики змінюють бізнес-ландшафти. Хоча використання даних у маркетингу між компаніями не є новим явищем, оцифрування та цифровізація бізнес-моделей компаній останнім часом привернули велику увагу. У багатьох частинах світу йде хвиля “оцифрування”, оскільки приватні підприємства, а також державний сектор використовують інформаційні та комунікаційні технології для зменшення витрат, збільшення ефективності та конкурентної переваги. Однак те, що ми спостерігаємо, є лише початком економічної революції, оскільки потенціал цифрової економіки скоро буде повністю розкрито. Тим не менш, це питання слід детальніше вивчити в майбутньому. Водночас поняття цифровізація в літературі має багато значень і вживається по-різному. Послідовна комунікація може полегшити подальші розмови в цій сфері, оскільки визначення є конкретними, уникнути непорозумінь і неясностей і будуть довірі. Досягнення намагається прояснити концепцію, даючи огляд існуючої теорії та термінів. Пояснення відмінності між ними на основі останніх досліджень на цю тему та уточнення важливості цифрових процесів у сучасному світі. Головний висновок — значення цифрової трансформації, яка стосується не лише потужних технологій, а й передусім ресурсів і людей.

Ключові слова: діджиталізація, цифровізація, цифрова трансформація, цифрова глобалізація, цифрові технології