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## THE IMPACT OF DIGITALIZATION ON CHANGING BUSINESS MODELS OF ENTERPRISES

### ВПЛИВ ЦИФРОВІЗАЦІЇ НА ЗМІНИ БІЗНЕС-МОДЕЛЕЙ ПІДПРИЄМСТВ

Digital business transformations began in the early twenty-first century. But over the past ten years, the pace has accelerated significantly, especially in the context of the end-2019 pandemic. Many papers on this topic have already been published, but there are still many aspects that have not yet been studied. In this paper, we consider the impact of digitalization on innovative business models (IBM). Based on analyzed and carefully studied previous research and scientific publications, this study highlights the impact of digital technologies on changing business models of enterprises in the last 3–5 years. The study found that the digital transformation of enterprises helps to improve competitiveness. Brings competition to a new level. The introduction of state-of-the-art technology can help companies create new strategies and create a foundation for long-term growth and market leadership. Digital technologies have forced entrepreneurs to rethink their business models (BM). The company's location is also directly dependent on the success of digital transformations. It was found that small and medium enterprises (SME) in developed countries are adapting faster and introducing new technologies. The problem of SMEs in developing countries is the difficult access to the latest technologies, the purchase of technologies that have newer substitutes in developed countries. Based on data on the activities of SMEs, as well as some corporations that are actively implementing new technologies to improve the efficiency of their own business. Quantitative research has shown that technologies such as large database analysis, the Internet of Things, artificial intelligence, and augmented reality technologies have the greatest impact on changing business models. Specialized research shows that the most susceptible to new technologies and changes in business models are IT companies. After all, they are the drivers of digital transformation. Examples of online goods companies and film companies are given. Options for further study of the impact of transformation on the business model are proposed. It is also proposed to explore methods of identifying competitive advantages and their use in building business models.

**Keywords:** business model, digital technologies, internet of things.

Цифрові трансформації бізнесу почалися ще на початку двадцять першого століття. Та за останні десять років значно прискорили темп, особливо за умов пандемії з кінця 2019 року. Вже опубліковано багато робіт на дану тематику, але залишається багато аспектів, які досі не вивчено. У цій роботі розглядаємо вплив цифровізації на інноваційні бізнес-моделі (ІБМ). На основі проаналізованих та ретельно вивчених попередніх досліджень та наукових публікацій, дане дослідження висвітлює, який вплив мають цифрові технології на зміну бізнес моделей підприємств в останні 3–5 років. У ході дослідження було виявлено що цифрова трансформація підприємств сприяє покращенню конкурентоспроможності. Виводить конкурентну боротьбу на новий рівень. Впровадження найсучасніших технологій може допомогти компаніям створити нові стратегії та створити основу для довгострокового зростання та лідерства на ринку. Цифрові технології змусили підприємців переглянути свої бізнес-моделі (БМ). Також пряму залежність на успішність цифрових трансформацій має місце розміщення компанії. Виявлено, що малі та середні підприємства (МСП) в розвинених країнах швидше адаптуються та впроваджують нові технології. Проблемаю МСП в країнах, що розвиваються є важкодоступність до останніх технологій, вкупу технологій, які мають більш нові замітники в розвинених країнах. На основі даних про діяльність МСП, а також деяких корпорацій, що активно впроваджують нові технології для підвищення ефективності власного бізнесу. Кількісне дослідження показало, що на зміну бізнес моделей найбільший вплив мають такі технології як аналіз великих баз даних, інтернет речей, штучний інтелект та технології доповненої реальності. Спеціалізовані дослідження показують, що найбільш сприйнятливими до нових технологій та змін у бізнес моделях є ІТ підприємства. Адже саме вони є рушіями цифрової трансформації. Наведено приклади компаній з онлайн продажу товарів та кінокомпанії. Запропоновано варіанти подальшого дослідження впливу трансформації на моделі ведення бізнесу. Також пропонується дослідити методи виявлення конкурентних переваг та їх використання у розбудові бізнес моделей.

**Ключові слова:** бізнес модель, цифрові технології, інтернет речей.

**Introduction.** With the beginning of the new millennium came a new force that shapes the new future of the world, erasing geographical boundaries, bringing together the culture and society of different countries. This force is information and communication technologies (ICT). Thanks to ICT, several transformations have taken place in recent decades, which has had a direct

impact on the change of doing business in companies. There is a common perception among researchers that ICTs play an important role in the global economy and at the level of individual industries and enterprises. They affect productivity, organizational infrastructure, international cooperation, investment attraction, business models. Digital transformations can reveal and increase

competitive advantages, they promote competition in the market.

**Setting objectives.** Currently, it is very important to study the impact of new technologies on the principles of doing business and organizing business processes. And illustration on real examples of companies of different sizes influences digitalization on their business models. The purpose of the article is to reveal the impact of digital transformations on the construction of business models. Highlight how the introduction of new technologies may affect the growth of efficiency and profitability of individual companies. Formulate ideas for further research on this issue.

**Methodology.** Many foreign scholars have researched and studied the impact of digital technologies on the global economy and individual enterprises. You can also find many studies aimed at studying the changing business models of enterprises under the influence of digital and transformations. Description of the importance of introducing new technologies in establishing business processes of individual companies. Availability and ease of digital transformation depend on the economic affiliation of the country. The study of the classification of countries was: A.F. Baumann, A.H. Beusen, G. Billen. Strategies for developing business models E. Brayby, M.H. Vanberg. Management of innovation and technology was studied by A. Chesbro, M. Zott. Methods of analysis, synthesis, historical and statistical methods were used for the research.

**Research results.** Due to the continuous impact of globalization processes on the world economy, competition in all sectors is growing. More and more players are appearing in the global market and the once blue oceans are turning red. This forces companies to constantly develop and be in search of new – blue oceans. Thanks to the development of technology, the business climate is transforming. If we look at countries in terms of economic development, in underdeveloped and developing countries, small and medium-sized businesses tend to operate in areas with limited funding and lack of sufficient human capital.

In some cases, small and medium-sized businesses (SMEs) in developing and underdeveloped countries either do not know or do not have sufficient technical capacity to implement the latest technologies in their production processes. However, SMEs in these countries are gradually adopting the Internet and related technologies to create businesses and develop new business models.

The revolution in information and communication technologies has provided new and accessible ways for SMEs to bring products to market and promote brands. However, the introduction of technology by small businesses in developing countries lags behind its counterparts in developed countries. Business literature and research related to information systems identify several competitive forces that each enterprise must overcome to gain a stable competitive advantage over others. These benefits will ensure the survival and development of the enterprise in the long run. The basic forces include traditional competitors, new players, new directions, and advanced technologies that can displace traditional market leaders, substitute products [1].

Other competitive forces: bargaining power, easily accessible information. As a result, the rapid development of technology can lead to drastic changes in business

models and frequent improvements or changes in business processes.

Globalization exposes SMEs to fierce global competition, although it also offers a wider market and other hidden opportunities. Thus, technological progress can be doubled as a stimulus and inhibitor of competitive forces. This means that state-of-the-art technology is a powerful weapon for initiating and fighting competing forces. Despite a competitive business environment, the introduction of state-of-the-art technology can help companies create new strategies and create a foundation for long-term growth and market leadership. The current technological revolution can benefit all businesses, regardless of company size, industry, or operating activity. For example, the use of statistics and a large amount of information about the society, consumers, and their needs allows you to create a profitable business, customer relationship management systems (CRM) open new and inexpensive channels of communication and customer base management [2].

Another potential benefit of implementing state-of-the-art technology is enhanced digitization and, as a result, automation of internal operations and processes, improving productivity and efficiency. Reengineering business models to ensure business survival. Currently, these technologies are mostly used by representatives of developed countries and companies operating in industries that are easily affected by economic changes or have a high level of competition. Development is intensifying under the influence of global problems. For example, COVID-19 has allowed more flexible companies to quickly change their business models, adapting to new game conditions, and break out of the market leaders. He also showed the weaknesses of companies with a focused and strict corporate policy. The events of 2020 gave impetus to the realization of the importance of technological innovations for the improvement of business operations and processes.

Some economists say we are now on the brink of a fourth industrial revolution. But we believe that it has already begun. It is more pronounced in developed countries, while in developing countries, only the most progressive can enjoy its achievements. New technologies are not only the improvement of production processes and automation of production. New technologies are a way to increase the efficiency of communications, reduce risks, identify competitive advantages and change business models based on existing knowledge.

Among the advanced technologies that have the greatest impact on companies' business processes are artificial intelligence, the Internet of Things (IIoT), and blockchain technologies for business management. Unlike their counterparts in developed economies, SMEs in developing countries do not yet experience all the benefits of technological progress due to several factors that tend to hinder the adoption of available advanced technologies. The inability of SMEs in such countries to use advanced technologies such as virtual reality and cloud computing for remote operations and the non-digitalization of business [3].

Let's look at some state-of-the-art technologies in more detail, illustrating how companies can use them to improve their business models, increase the efficiency of operational processes, identify and maintain their competitive advantages.

Cloud computing simplifies the work and does so without requiring careful measurement and forecasting of the necessary resources, allowing invoices for the use of post-factum payers without prior commitment. Users increase resource utilization, which allows for economies of scale and low costs. Finally, the main drivers of cloud computing include cost savings, smooth implementation, and simplification. There are various opportunities to use cloud technologies for dynamic development and efficiency.

Data science and analysis is a technology designed to economically extract value from vast amounts of diverse data, enabling the high-speed collection, detection, and analysis. Enterprise data increases the importance of large database analytics in Industry 4.0. We already need to focus on business intelligence and related matters. Large companies and IT companies are already actively using these technologies. Database analytics allows you to identify problem areas in production processes to minimize risks, including security risks. It allows you to help with complex business decisions in today's complex business environment [3].

Artificial intelligence (AI) involves learning, reasoning, and self-correction. Deep Learning methods are widely used for intellectual production in Industry 4.0. Cyberphysical equivalence is a promising area of research. It aims to implement solutions for using fairly fast three-dimensional capture devices to obtain moving objects, and then transfer this 3D information to a virtual environment. The purpose of this technology is to facilitate the task of planning and design [4]. The practical use of the above technologies improves the design, development, design, production, and market speed of new products.

Several scientific papers claim that technological innovations in the financial sector, popularly known as financial engineering (FinTech), increase consumer lending to small businesses, improve demand, and increase value-added, resulting in economic growth. The introduction of maintenance methods helps to perform accurate forecasting, preventive and corrective actions, thus overcoming breakdowns and downtime. For companies, it is the basis for efficient and smooth operation.

COVID-19 further imposes the need to digitize and move a business to cyberspace, reinforcing the need for state-of-the-art technology as healthcare organizations continue to recommend social distancing to avoid further spread of infection. There is currently a large gap between developed and developing countries in terms of the speed of the introduction of advanced technologies. Although developing countries make up a significant proportion of the world's population, the level of Internet use and technological proliferation is quite low relative to developed countries [5].

The outbreak of the new coronavirus COVID-19 caused significant disruptions in operations, which led to modifications to existing business models of companies around the world. Some of the digital technologies used include mobile and shared systems, IIoT and artificial intelligence, which have been described previously. For example, a significant shift in the business model of the enterprise due to COVID-19 is the deployment of virtual technologies for remote operations [6]. Starting in 2020, we can change the hairstyle on the virtual recommendation of a hairdresser, using virtual reality technology fitting clothes became possible without a physical visit to the store, and the founder of the label Hanifa Anifa Mvuemba made a show without spectators and without models. Clothes from the new collection appeared in 3D on a black background and paraded on the invisible catwalk "independently".

Much of this will remain in use after the pandemic is over, as such a change has a positive impact on business growth. World GDP in 2020 decreased by 3%, but in 2021 it is projected to grow by 4.3%. In developed economies such as the United States, Germany, the United Kingdom and Canada, a significant percentage of small businesses have been severely affected. Some sectors have become more vulnerable, such as aviation, tourism, hotels, restaurants, and entertainment with the biggest business disruptions, while other industries such as food, medical, pharmaceutical and information technology have grown. Graphical representation of the value of industries at the end of 2020 in Figure 1.

The new reality requires changes in business strategies, operations and business behavior. Companies need to

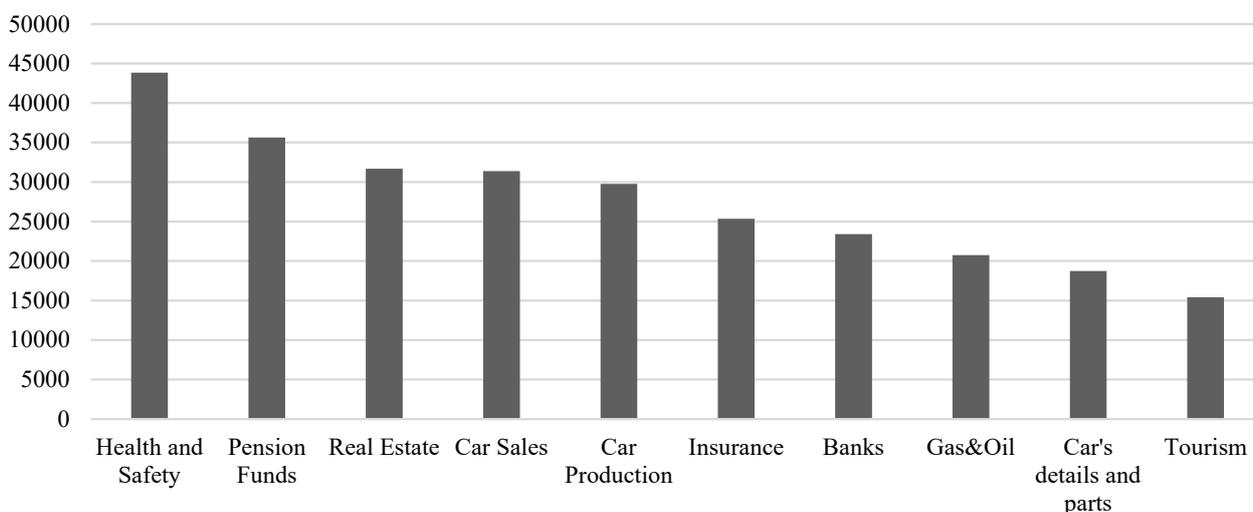


Figure 1 – Profits of the largest industries in the world, \$ billion

Resource: compiled by the author based on [8]

recognize and seek opportunities to reinvent themselves and develop new business strategies that are critical to overcoming the challenges that stand in the way of their survival. Under the influence of the pandemic, business relationships and consumer buying behavior have changed significantly. This has forced sales companies to most actively implement changes in their business models. A classic example of digital transformation and customer engagement is Netflix. Netflix started as a simple mail order service, but eventually disrupted the entire video rental business. Taking advantage of digital innovation, Netflix has made large-scale video streaming possible. Today, Netflix has almost replaced traditional broadcast and cable networks, simply offering a growing library of on-demand content at extremely competitive prices. Digitization has not only allowed Netflix to stream video content directly to its customers on the screens of its laptops and mobile phones, but also gained an unsurpassed understanding of each user's viewing habits and preferences [9]. The amount of massive data collected has helped Netflix develop better user interaction and understand the shows and movies that interest most of their audience. Thus, using the digital transformation, Netflix earned a net profit of more than \$1.86 billion in 2019.

The sales industry has always been the most sensitive to various economic changes. Every crisis or significant event in the world leaves its mark on the business models of retailers. An interesting example of a change in the business model that has made the company a sales leader is the history of Zappos. Which began its existence in 1999. Initially, the company focused on direct supply from producer to consumer, without its own warehouses. However, such a business model has proved ineffective in covering a large network of customers. Because it is easier for product manufacturers to ship their products in large batches than to deal with individual single orders. The company has made it a priority in its business model to fulfill orders in the shortest possible time and minimize the number of contractors in the formation and delivery of orders. For Zappos, the key element of business processes is the formation of the order and its fastest delivery, and they can not be 100 percent sure of the contractor. Therefore, the key function of the company is not outsourced. In 2009, the company was sold to Amazon, a major global competitor, for \$ 940 million [10].

In 2021, the ongoing pandemic allows companies to focus on the digitalization of processes and solve problems that hinder their development. However, there are a number of factors holding back this development, including a reduction in foreign investment.

The strongest weapon of Industry 4.0 is the Internet. It provides a channel for the dissemination of technical knowledge around the world. Unfortunately, a large part of developing countries is still cut off from the global network due to the lack of proper communication network infrastructure and the relatively high cost of equipment that is not available to the vast majority of the population. It is worth noting that companies are concerned about security issues and risks associated with new technologies, such as fear of data loss, confusion over technical issues, and cost in terms of the additional time and resources required to acquire new technological skills.

**Insights from this study and perspectives for further research in this direction.** Digitization has a significant impact on changing business models of enterprises. Recent developments in the global economy and the fiercely competitive business environment suggest that state-of-the-art technology is essential to enhance competitive advantage and ensure survival. Now that the achievements of Industry 4.0 are accelerating, as technology and innovation begin to drive operations and dictate the pace of companies' development despite limited financial resources, you can use the cloud computing option, which is now readily available for various Information Systems platforms. Besides, there are now cheap technologies that can help small businesses to carry out virtual operations in cases of community blockages, such as those that occur during the COVID-19 pandemic.

In today's competitive business, small businesses grow with the help of smart advanced technologies, you can create and maintain competitive strategies and create a basis for long-term growth and market leadership. In future research, it is proposed to explore in more detail the features of modern business models of companies. What are the main differences in the business models of corporations and small and medium enterprises? It is proposed to identify ways to identify and properly highlight the competitive advantages of individual companies to strengthen their competitive position in the market.

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