

## ГРОШІ, ФІНАНСИ І КРЕДИТ MONEY, FINANCES AND CREDIT

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### DIGITAL TRANSFORMATION IN THE BANKING BUSINESS

### ЦИФРОВА ТРАНСФОРМАЦІЯ В БАНКІВСЬКОМУ БІЗНЕСІ

*In the article examines the theoretical essence of digital transformation and digitalization of banks. The characteristic features of the implementation of digital services in the banking system are considered. The prerequisites for accelerating the development of digitalization of the banking business have been determined. The main positive consequences of the digitalization of the banking system (quick execution of payments and transfers, receiving information about account status and payment history 24/7; saving time visiting bank branches, access to information about credit or deposit accounts, etc.) and obstacles on its way are highlighted development (low digital literacy of the population, financial inability of some consumers of services and products to purchase the necessary gadgets for remote resource management).*

*The characteristics of digital stable convenient banking services (blockchain, crowdfunding, cloud banking, open banking, sharing) are considered in detail. It has been established that the new financial and digital paradigm is already an integral part of the rapidly changing environment and a tool for meeting the demanding needs of both consumers of banking services and banks themselves. The new financial and digital paradigm is already an integral part of the rapidly changing environment and an important tool for meeting the needs of both consumers of banking services and banks themselves.*

**Key words:** digital transformation, digitization, digital services, innovation, automation, blockchain, crowdfunding, cloud banking, open banking, sharing.

*У статті досліджено теоретичну сутність цифрової трансформації та діджиталізації банківської діяльності. Визначено, що цифрова трансформація є найвищим рівнем використання діджиталтехнологій і вимагає високого ступеня автоматизації; підвищення продуктивності за рахунок зменшення витрат часу на операції; зміну фінансових моделей в сторону концентрації фінансів ресурсів на розумінні вимог ринку, а не на транзакціях. Розглянуто характерні особливості впровадження цифрових сервісів в банківській системі. Визначено головні передумови активізації діджиталізації банківського бізнесу та впровадження цифрових трендів. Виділено основні позитивні наслідки цифрової*

трансформації банківської системи (швидке здійснення платежів і переказів, отримання інформації про стан рахунку та історію платежів 24/7; економія часу на відвідування банківських відділень, доступ до інформації про кредитні чи депозитні рахунки та ін.) та головні перешкоди на шляху її розвитку (низька цифрова грамотність населення, фінансова неспроможність частини споживачів послуг та продуктів у придбанні необхідних гаджетів для віддаленого управління ресурсами).

Визначено, що створення та впровадження цифрових трендів є основою досягнення максимізації прибутку та ефективного управління банками. Згруповано та детально охарактеризовано сталі цифрові банківські сервери: блокчейн — база даних, що зберігає впорядкований ланцюжок записів, який постійно подовжується; шерінг — механізм надання фінансових ресурсів або інформації у тимчасове користування; орен-банкінг — система відкриття своїх інтерфейсів програмування додатків (API); краудфандинг — метод збору коштів для зростання та розвитку проєкту, ініціативи за рахунок внесків великої кількості сторонніх осіб, які можуть не мати відношення до самого проєкту чи професійного інвестування бізнесу; банкінг у хмарах — технологія, яка пришвидшує і полегшує впровадження всіх інших інновацій. Нова фінансово-цифрова парадигма вже є невід'ємною частиною швидкозмінного середовища та важливим інструментом задоволення сучасних потреб як споживачів банківських послуг, так і самих банків.

**Ключові слова:** цифрова трансформація, діджиталізація, цифрові сервіси, інновації, автоматизація, блокчейн, краудфандинг, банкінг у хмарах, орен-банкінг, шерінг.

**JEL Classification:** G 19, G 21, O 14, O 16

**Formulation of the problem.** Modern globalization is closely related to the emergence of the latest technologies and the transition to the electronic format of providing many types of services, primarily banking. Traditional banking is gradually losing its popularity, as the use of the Internet to attract and interact with customers allows to improve the market position and move into a less saturated market niche. Mobility and focus on customer convenience are becoming priority tasks in any field. Mobile applications, specialized programs, electronic and personal accounts are becoming more and more widespread. The main goal of institutions now is the availability for wide use of financial services and operations 24 hours a day from anywhere in the world, with only an Internet connection.

The development of the banking services market also leads to an increase in the level of implementation of electronic technologies designed to simplify the process of receiving services by the client. An individual gets the opportunity to independently choose the territorial and time frame of receiving the chosen banking service in the form that will satisfy him the most. The use of innovative technologies and approaches for the development of the financial services market has a global character and it becomes an active player in the IT industry, acting as an investor, developer and generator of these ideas. All of the above indicates a digital transformation in the banking business, which is just beginning to be reflected in the works of scientists and requires research.

**Analysis of recent research and publications.** Today, the attention of scientists is devoted to the study of the essence and methodology of the implementation of digital innovations, modern technologies and the application of fintech opportunities, and many others. Among the researchers, it is worth highlighting the work of A. Boldova, S. Yegorycheva, L. Zveruk, O. Kaminsky, I. Karchevo, O. Korzachenko, N. Mizyuk, B. Samchenko, Yu. Tkachenko, and others. However, it should be noted that the vast majority of scientists consider only individual issues of digitization of banking products and services, which does not provide a complete picture of the functioning of the domestic banking business market based on the introduction of modern digital technologies and the identification of positive and negative consequences of their implementation.

**Formulation of the goals of the article.** The purpose of this study is to analyze the prerequisites of digitalization of the banking sector, to determine the state of implementation of digital technologies, as well as the positive and negative consequences of their implementation.

**Presentation of the main research material.** The process of digital transformation is characterized by the introduction of digital technologies for the purpose of optimizing and automating business processes, improving communication links with consumers of services and increasing the efficiency of economic activity. In the National Industry Development Strategy 4.0, developed by the Association of Industrialists and Entrepreneurs of Ukraine [1], digital transformation is explained as social or technological changes that are associated with the penetration of digital technology into all aspects of human interaction. The essence of these transformations is to find modern approaches and management concepts to solve traditional business tasks. In essence, the digitization process is a reformatting of analog data into a digital format.

If we generalize the scientific approaches to understanding the category "digitalization", we can conclude that by this concept scientists mainly understand the process of practical application, transformation into a digital format, collection and storage, analysis of certain information used in various spheres of the economy. Therefore, in our opinion, digitalization should be considered as a process of transferring economic activity to a new format, which involves the use of digital technologies and contributes to the optimization of business processes, increasing income from conducting business activities and improving the communication system with consumers.

Digital transformation is recognized as the basic foundation on which the fourth industrial revolution is based, which is characterized by the relationship with the "on-demand economy", which consists not only in the sale of goods or services, but also in obtaining uninterrupted round-the-clock access to them. This means that the actual placing of an order for a particular product or service is done online, and its actual fulfillment can be done both online and offline.

As in other areas, the development of the banking services market leads to an increase in the implementation of digital technologies designed to simplify the process of receiving services by clients. It is clear that mobility and focus on the convenience of the client becomes a priority task in any field [2]. The buyer gets the opportunity to independently choose the territorial and time frame of receiving the selected service in the form that will satisfy him the most. The use of modern technologies and approaches to the activation of the financial services market has a global character.

Scientist A. Boldova [2], based on the data of the company "Cisco", notes that the period of 2008–2009 was the starting point of the development of digitalization. It was during this period that the number of devices connected to the global Internet network increased, exceeding the number of the entire population of the planet. The scientific work [3] highlights three main definitions that describe the implementation of digital technologies in business and define digitization, including in the banking sector, in particular:

- digitization as the transformation of information from paper and other media into a digital format for further use in computer systems;
- digitalization as the transfer of operations, communications, business functions, business models and processes to the digital plane, which often allows combining traditional business with digital (for example, traditional marketing with digital marketing, physical after-sales service with digital service);
- digitalization as a way of restructuring many spheres of social life with the help of digital, communication and media infrastructure, they focus mainly on the social aspect of digitalization.

According to many scientists and practitioners, the corona virus pandemic was the stimulating impetus for the development of digital technologies in the work of the banking sector. According to The Harvey Nash / KPMG CIO Survey 2020 [4], a sharp increase in investment (by 47 %) in digital technologies in financial markets occurred during the first wave of the pandemic, as international financial institutions lost about 15 billion dollars every week. That is why almost half of the leaders of the financial sector accelerated digitization and the introduction of new technologies – namely, they doubled digitization.

Undoubtedly, like all innovative products, non-traditional banking services, in particular – telebanking, mobile banking, Internet banking, etc. – offer significant advantages for both the banking institution and the consumer: the efficiency of both the bank and customers is significantly increased; the costs of attracting new customers are reduced; the speed of customer service is not limited by the number and power of individual branches and branches of the bank, but by factors that are much

easier to manage, in particular, the power of the computer network; the quality of work with the bank's clients increases.

Commercial banks provide valuable storage services, rent safe deposit boxes to clients, carry out operations on the storage of securities with simultaneous receipt of income from them, repayment of bonds with an expired term of validity, exchange of securities, their purchase and sale, and also receive funds for mortgage bonds [5]. However, despite such a wide range of banking services, both traditional and modern, their use should not surprise anyone, since in the conditions of the rapid development of the economic system, a commercial bank must offer and use in its activities much more opportunities for the introduction of modern innovations and technologies. to ensure the expansion of the customer base and the differentiation of its customers. services in the banking market.

Digitization is perceived as a positive and timely phenomenon for the state – it is an opportunity to accelerate and develop the mobility of both the financial sphere and the economy as a whole, but in a more simplified way; for citizens and the population, it means saving time, promising professions and new jobs; for business, this means improving work, optimizing resources, reducing costs, etc. [1].

Digital transformation in the banking business leads to the expansion of the client base and providing users of banking services with advantages and new opportunities, in particular:

- quick implementation of regular payments and transfers;
- receiving information about the account status and payment history at any time without leaving home;
- saving time on visiting bank branches;
- submitting an application for opening credit or deposit accounts, ordering a credit card and increasing the credit limit on it;
- access to information about credit or deposit accounts;
- drawing up an insurance policy;
- reduction of tariffs and commissions for the use of services;
- timely payment of utility bills and bills;
- receiving other types of services in real time [6].

A special result of digitalization and the introduction of innovative technologies directly for the banking business is: optimization of bank resources, including the rental of premises; reduction of operational costs; a reduction in the number of physical branches necessary to fully satisfy the needs of customers, or their complete absence (Monobank); reduction of direct contact with clients; urgent satisfaction of the client's needs remotely and, as a rule, around the clock; expansion of the list of services; provision of financial, information and consulting services in real time.

Undoubtedly, the use of all technological innovations in the modern world only contributes to the intensification of the development of a separate sphere and the world as a whole, but it is worth noting that there are a number of problems that stand in the way of development. These problems include:

- digital literacy: the speed of development of this industry requires the ability to use a minimum set of online services of both banks and other institutions and their payment systems, so it is necessary to develop the digital literacy of consumers when using services;
- when developing a digital service through applications (phone, tablet), it is important to consider the financial possibility of purchasing the necessary gadgets for remote management of resources, since according to statistics, the use of digital services is more oriented towards the middle class.

Today there is a need for qualified specialists in the financial sector who are also specialists in professional financial digital trends. Therefore, the development of digital services in the banking business creates a demand for specialists in the field of financial technologies.

Today, the digital services of the banking business are extremely variable and develop very quickly. Their multitude and variability are sometimes very difficult to track in a timely manner. Despite this, there are still stable banking services, the importance and popularity of which has not decreased to this day, in particular:

1. Blockchain is a database that stores an ordered chain of records or blocks that is constantly being extended. Each block contains a time stamp, a hash of the previous block, and transaction data presented in the form of a hash tree [7]. The blockchain system for banks ensures complete data confidentiality and increases the level of cyber security of the bank's information space. Also, this technology provides a complete data registry and forms transaction histories. The formation of joint databases between banks, banks and their clients, in our opinion, will lead to a significant reduction in the number of bank employees, commercial banks, and a decrease in the price of bank products in the future.

2. Sharing is a mechanism for providing financial resources or information for temporary use. It is worth noting the new opportunities of banking institutions thanks to the introduction of sharing technology into the banking business. This technology involves the transfer of resources, so to speak, "for hire". In the banking business itself, this technology makes it possible to use the databases of other electronic applications; receive financial resources "on rent"; joint use of financial resources thanks to the formation of information platforms. The bank can cooperate with sharing companies on a common information platform, lending to sharing companies and forming its own resource sharing for clients [8]. Sharing for banks is also an opportunity to use information exchange, exchange of documents for opening accounts and obtaining other banking services.

3. Open banking is a system, the essence of which is that banks open their application programming interfaces, other companies get access to financial information, which facilitates cooperation with the consumer and contributes to the development of new applications and services, and the banks themselves only strengthen professional relations ties and cooperation [9]. The Open Bank Project is an open-source set of APIs used by a large number of developers and fintech companies. The first steps on the way to Open Banking in Ukraine were formed back in 2018 on the basis of the Let'sPartner marketplace, which currently has no analogues in the post-Soviet countries. This marketplace enables the exchange of information between banks, enterprises, startups and fintech companies.

4. Crowdfunding is a method of raising funds for the development of projects, initiatives, enterprises or individual programs due to the contributions of a significant number of outsiders who may not be related to the project itself or professional business investment [10]. Small business crowdfunding is an alternative to bank lending, and therefore banks may experience financial losses from it. But if banks combine their own resources, it is an opportunity to get additional profits for the banking industry. In addition, the bank can act as an intermediary in pooling the resources of individual citizens and investing them in a specific project.

5. "Banking in the clouds" is a technology that speeds up and facilitates the implementation of all other innovations. The use of "cloud technologies" in banking involves the use of cloud storage – a cloud computing model that involves storing data on the Internet with the help of a cloud computing provider that provides and manages data storage as a service. Cloud storage is provided on demand in the required volume, is paid as you use it, and eliminates the need to purchase and manage your own data storage infrastructure. This provides flexibility, global scalability and reliability. Data is available anytime, anywhere.

Yes, all the digital services listed above break the clear division in the banking sphere between customers and banks. A modern bank is a synergy of banking and digital space, which is realized due to the above and other technologies on the way to providing digital services.

**Conclusions.** In modern conditions, the development of the banking business is inextricably linked with automation, the introduction of digital products and progressive banking technologies, necessary for the maximum satisfaction of the needs of demanding customers and the promotion of banking products and services to the market, as well as with the search for modern tools to increase the attractiveness of banking services, why promote innovation. The study also found that, along with a large number of positive effects on the results of digital transformation of banks, there are a number of factors that prevent the digitalization of banking business, however, the new financial and digital paradigm is already an integral part of a rapidly changing environment and an important tool for meeting needs both consumers of banking services and banks themselves.

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