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**DEVELOPMENT OF BANKING BUSINESS IN THE CONDITION OF
DIGITAL ECONOMY**

**РОЗВИТОК БАНКІВСЬКОГО БІЗНЕСУ В УМОВАХ ЦИФРОВОЇ
ЕКОНОМІКИ**

**РАЗВИТИЕ БАНКОВСКОГО БИЗНЕСА В УСЛОВИЯХ ЦИФРОВОЙ
ЭКОНОМИКИ**

Summary. *In the digital economy, the introduction of new technologies not only increases consumer satisfaction with the banking product, but also ensures the development of the country's financial sector. The authors analyze the specifics of the banking sector in the digital economy and the main problems that arise in the process of their activities. It has been proven that the emergence of neo-banks as a new form of banking is associated with the significant development of Internet technologies and the emergence of a new generation of consumers who prefer total remote control over their own finances. The article*

examines the current features of the formation of digital banking in Ukraine. The role of modern digital technologies in the development of the banking system is also comprehensively revealed. The analysis of the reasons and segments of distribution of technologies of Internet banking in the period of digital world economy is carried out. The problems and opportunities of digital banking for the world banking business are described and perspective innovative opportunities of banks are formed. It is proved that the development of the digital economy is an important stage in the development of the digital market in Ukraine and its further integration into the single global digital market. It is noted that digital technologies are transforming banking in the global economy, making it more personalized and common to all devices and applications that provide banking services. These aspects are formed within the trend of innovative development of the global and domestic banking sector and the formative transition to digital banking products and digitalization of banking services. The main characteristics of the digital economy, factors, state, as well as the main issues of the current stage of development of banks were assessed. It was noted that these aspects are formed in the framework of the trend of innovative development of the global banking sector and accelerating the transition to digital banking products and digitalization of banking services. It was identified that the main problems for Ukraine are the legal framework, the need for significant investment and other aspects that slow down the implementation and reduce the profitability of banks based entirely on digital technologies.

Key words: *digital economy, digitalization, banks, banking, management, digital banking, innovation.*

Анотація. *В умовах цифрової економіки впровадження новітніх технологій не тільки підвищує задоволеність споживачів від банківського продукту, а й забезпечує розвиток фінансової сфери країни. Автори*

проводять аналіз специфіки функціонування банківського сектору в умовах цифрової економіки та основних проблем, що виникають у процесі їх діяльності. Доведено, що поява необанків як нової форми банківської діяльності пов'язана із значним розвитком Інтернет-технологій та появою нового покоління споживачів, які віддають перевагу тотальному дистанційному контролю за власними фінансами. В статті досліджено сучасні особливості формування цифрового банкінгу в Україні. Також всебічно розкривається роль сучасних цифрових технологій у розвитку банківської системи. Проведено аналіз причин і сегментів поширення технологій інтернет-банкінгу в період цифрової світової економіки. Описано проблеми та можливості цифрового банкінгу для світового банківського бізнесу та сформовано перспективні інноваційні можливості банків. Доведено що розвиток цифрової економіки є важливим етапом розвитку цифрового ринку в Україні та його подальшої інтеграції в єдиний світовий цифровий ринок. Зазначено, що цифрові технології трансформують банківську діяльність в умовах глобальної економіки, роблять її більш персоналізованою та загальною для всіх пристроїв та додатків, в яких реалізуються банківська послуга. Ці аспекти формуються в межах тренду інноваційного розвитку світового та вітчизняного банківського сектора та формуючого переходу до цифрових банківських продуктів та цифровізації надання банківських послуг. Оцінили основні характеристики цифрової економіки, фактори, стан, а також основні проблемні питання сучасного етапу розвитку банків. Зауважили, що ці аспекти формуються в рамках тенденції інноваційного розвитку світового банківського сектору та прискорення переходу на цифрові банківські продукти та цифровізації банківських послуг. Визначили, що основними проблемами для України є законодавча база, потреба у значних інвестиціях та інші аспекти, що уповільнюють впровадження та

знижують рентабельність банків, що повністю базуються на цифрових технологіях.

Ключові слова: цифрова економіка, цифровізація, банки, банківська справа, менеджмент, цифровий банкінг, інновації.

Анотація. В умовах цифрової економіки впровадження новітніх технологій не тільки підвищує задоволеність споживачів банківським продуктом, але й забезпечує розвиток фінансової сфери країни. Авторами проводиться аналіз специфіки функціонування банківського сектора в умовах цифрової економіки та основних проблем, що виникають в процесі їх діяльності. Доведено, що поява небанків як нової форми банківської діяльності пов'язана з значним розвитком Інтернет-технологій та появою нового покоління споживачів, які надають перевагу повністю дистанційному контролю за власними фінансами. В статті досліджено сучасні особливості формування цифрового банкінга в Україні. Також всебічно розкривається роль сучасних цифрових технологій в розвитку банківської системи. Проведено аналіз причин і сегментів поширення технологій інтернет-банкінга в період цифрової світової економіки. Описано проблеми та можливості цифрового банкінга для світової банківської бізнес-сфери та сформульовано перспективні інноваційні можливості банків. Доведено, що розвиток цифрової економіки є важливим етапом розвитку цифрового ринку в Україні та його подальшої інтеграції в єдиний світовий цифровий ринок. Зазначено, що цифрові технології трансформують банківську діяльність в умовах глобальної економіки, роблять її більш персоналізованою та загальною для всіх пристроїв та програм, де реалізуються банківські послуги. Ці аспекти формуються в межах тренду інноваційного розвитку

мирового и отечественного банковского сектора и формирующего перехода к цифровым банковским продуктам и цифровизации предоставления банковских услуг. Оценили основные характеристики цифровой экономики, факторы, состояние, а также основные проблемные вопросы современного этапа развития банков. Эти аспекты формируются в рамках тенденции инновационного развития мирового банковского сектора и ускорения перехода на цифровые банковские продукты и цифровизации банковских услуг. Определили, что основными проблемами Украины является законодательная база, потребность в значительных инвестициях и другие аспекты, замедляющие внедрение и снижающие рентабельность банков, полностью базирующихся на цифровых технологиях.

Ключевые слова: *цифровая экономика, цифровизация, банки, банковское дело, управление, цифровой банкинг, инновации.*

Problem statement. An important role in the financial services market is played by financial intermediaries, which are key figures in all market segments. The main purpose of financial intermediaries is determined by the ability to finance economic activities and ultimately ensure the effective redistribution of capital in society. The formation of the financial services market in Ukraine and promising tasks for the development of the country's economy make new demands on the stability and scale of banks as the main participants in the financial market.

The model of financial intermediation in Ukraine is bank-oriented, which is due to the internal processes of transformation in the economy. Banks play a dominant role as developers of financial innovations. As a result, a system of financial intermediaries was formed, the peculiarity of which is the advantage of banks over non-bank financial

institutions. At the same time, banks dominate both in the amount of assets formed and in the number and variety of financial services. The development of the modern domestic market of financial services indicates the need to improve the activities of banks in the system of financial intermediation, strengthen their competitive position and reorganize the system of regulation and supervision, which determines the relevance of the research topic.

Analysis of recent research and publications. Researching the financial services market and the impact of the digital economy on the activities of banks are devoted to scientific works of both foreign and domestic scientists: J. Burgers [9], V. Valikov [1], V. Makedon [7], G. Karcheva [4], M. Voynarenko [1], O. Stepanenko [17], V. Fishchuk [3].

The purpose of the article is to determine the role and place of banks in the financial services market of Ukraine in the digital economy.

Presenting main material. The development of the domestic market of financial services is one of the main reasons for the emergence of the concept of financial intermediation in the economic literature. In the current conditions of economic development, it is safe to say that the degree of development of the financial services market is characterized by the number and variety of financial intermediaries, as well as the range of financial services they provide to market participants.

It should be noted that financial intermediaries play an important role in the financial services market. Their activities help reduce the value of financial transactions, increase the liquidity of financial assets, diversify risk, create conditions for intensifying the work of all market participants.

Digitalization of the economy is the innovation of economic development through the implementation of digital resources in all spheres of society: production and consumption of goods and services, multilevel governance and more. At this stage of development of society it is possible to establish that today's economic direction is a neo-economy, which originates by definition [1,

p. 18], is interpreted as a post-industrial stage of development of the economic system, the fundamental theoretical constructions of which are information, innovation, digital and network economy. The delineation of these concepts is based on the allocation of key areas and resources of economic development.

The digitalization of business and business processes in general has been identified as the core of the digital economy and the main factor in Ukraine's growth. The transformative power of digital technologies allows to change traditional business models, production chains and causes the emergence of new products and innovations. Digitalization brings the sphere of production to a new level, forcing companies to make digital transformation the main task of development strategy.

Digital transformation is the introduction of modern technologies into the company's business processes. This approach implies not only the installation of modern hardware or software, but also fundamental changes in approaches to management, corporate culture, external communications [16].

As a result, the productivity of each employee and the level of customer satisfaction increase, and the company gains a reputation for progressive and modern.

In the banking sector, the features of digital transformation are analyzed by L. Kuznetsova, who identifies five main stages of development:

1) the emergence of digital channels; 2) creation and implementation of digital products; 3) change of business models of banks; 4) creation of artificial intelligence; 5) construction of digital DNA [2].

Modern banks operate in a situation of rapid and irreversible changes in technology, competition in the banking market with an increase in the number of non-banking organizations, changes in customer behavior and regulation. As a result, banks and their current operating models will not be able to remain unchanged in the future. The relationship between the processes of

digitalization and innovation in the transformation of the banking sector is presented in Figure 1.

Today, the state of digital transformations in enterprises can be described as follows [3]: more than 60% of companies already use digital technologies for customer needs; up to 20% are just starting to get acquainted with digital and are taking the first steps towards implementation; about 15% of companies attract and serve customers with digital technologies; only 3-4% of companies are fully digitalized.

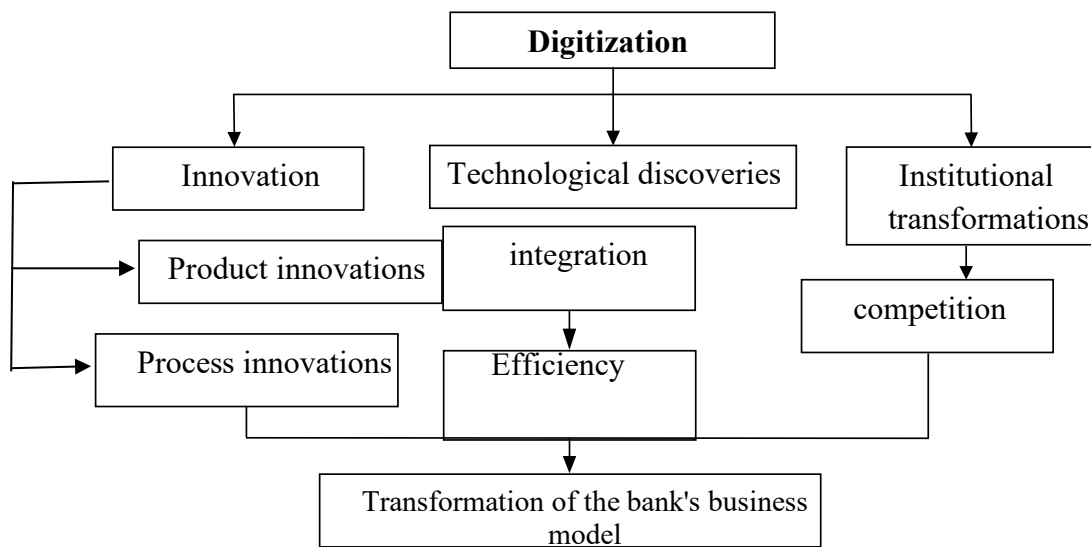


Fig. 1. Innovation of the bank in the digital economy

Given the presence of state institutions in the process of forming economic relations of digital economies, principles based on international legal norms and standards of regions on human rights protection, current practice of individual states, as well as general principles of law recognized by the international community should be applied.

Table 1

Factors in the development of the digital economy

Factor	Influence
COVID-19	Although the pandemic is detrimental to human development in general, it has accelerated digitalization. Most people around the world have been forced to work remotely, and most of the tools needed to work have already been created.

Digital finance	Introduction of digital technologies in the banking sector of the economy, online payments in e-commerce, e-transfers, e-bidding, e-government procurement, e-state budget, state social benefits, mobile money, digital currency, etc.
Social networks	Economically viable interaction is a source of innovative ideas and a basis for gathering and disseminating information, helping to involve participants in political life and social change.
Digital identification	Use of a single electronic identity system for secure banking, voting, access to social services, payment of utility bills and more.
The data revolution	The focus is on interconnected innovation - big data and data discovery. At the same time, the analysis of large data sets is used to improve transport flows, assess generalized macroeconomic indicators, improve management processes.
Improving the competitive position	In the absence of adequate and timely assessment of the level of its own competitive potential, identification and analysis of factors directly affecting the company's competitive position, its management makes it impossible to develop and implement a strategy for the existence and functioning of the organization.
Investment attractiveness	The assessment of the company's investment attractiveness is carried out by calculating the economic condition of the company and using financial indicators. These indicators include: liquidity, property status, business activity, financial dependence, profitability.

Source: revised by the authors on the basis of [4, p. 16-17]

In accordance with the order "On approval of the Concept of digital economy and society of Ukraine for 2018-2020 and approval of the action plan for its implementation" the Cabinet of Ministers of Ukraine adopted 8 basic principles of digitalization of Ukraine's economy: accessibility, purpose, transformation, development, cooperation, standardization, trust and security, complexity [5], which are fundamental for the development of the digital economy.

Analysis of the development of financial services shows that their evolution is closely linked to the stages of development of society, and the focus on meeting customer needs determined the direction of their development, encouraged the use of new financial instruments and technologies to expand customer and resource base of financial institutions.

Based on the current state of Ukraine's economy, the strategic guidelines for the development of the domestic banking market should be grouped in the following areas:

- creation of new specialized banks aimed at the development of priority sectors of the economy and the provision of qualitatively new services;
- introduction of innovative banking products and services.

It should be noted that due to certain circumstances related to the level of trust, solvency of legal entities, pursuit of goals for profitability of the banking business, domestic banks are more focused on providing services to individuals and enterprises with sufficient working capital, instead, much less attention is paid to the financing of the real sector of the economy.

Under such circumstances, the state, represented by the NBU and the Cabinet of Ministers, faces the task of finding ways to intensify lending to the real sector of the economy and, accordingly, create new and affordable banking services for priority and socially important sectors of the economy.

Thus, in Europe, the United States, Japan, China and other countries, specialized development banks have been established, which have provided significant support in the economic recovery of these countries. Their main task was to direct funds from public sources to key areas of the national economy. It should be emphasized that the establishment and operation of development banks does not contradict the principles of a market economy. Thus, the European Commission, which advocates a consistent reduction of the role of state regulation of the economy, recognizes the justification and legitimacy of the existence of such banks as an instrument of state economic policy in market relations. Without competing with commercial banks, they are designed to finance the industrial policy of the state, attracting and rationally allocating financial resources, eliminating the backlog in the economization of regional development and thus promoting sustainable, healthy economic development.

The main purpose of economic activity of these banks is the implementation of government socio-economic policy. Because development banks lend to government projects, they provide mostly medium- and long-term loans, and the interest rates on these loans are usually lower than the rates for similar loans in conventional commercial financial institutions. Investments occupy a major place in the use of capital of these banks and mainly serve the realization of macroeconomic goals.

Another important strategic direction of development of the domestic market of banking services is the introduction of innovations in the activities of banks, because innovative technologies nowadays play a very important role. The new vision of the development of banking services is based on the concept of "bank of the future" [6]. When creating a bank of the future, innovative technologies in the field of banking services are technologies that have a "strategic effect" of growing customer base, interest of important people, reducing the cost of banking operations at the optimal level of operational risk and operating costs. The development of information and communication technologies and on their basis the formation of the digital economy, in which the joint production of knowledge through joint projects, scientific and technical alliances, the concept of open innovation is formed; functioning of financial markets, which create a certain framework for the deployment of innovation activities of banking organizations.

Banking innovations are developing in two main areas - innovative banking products and services and innovative technologies.

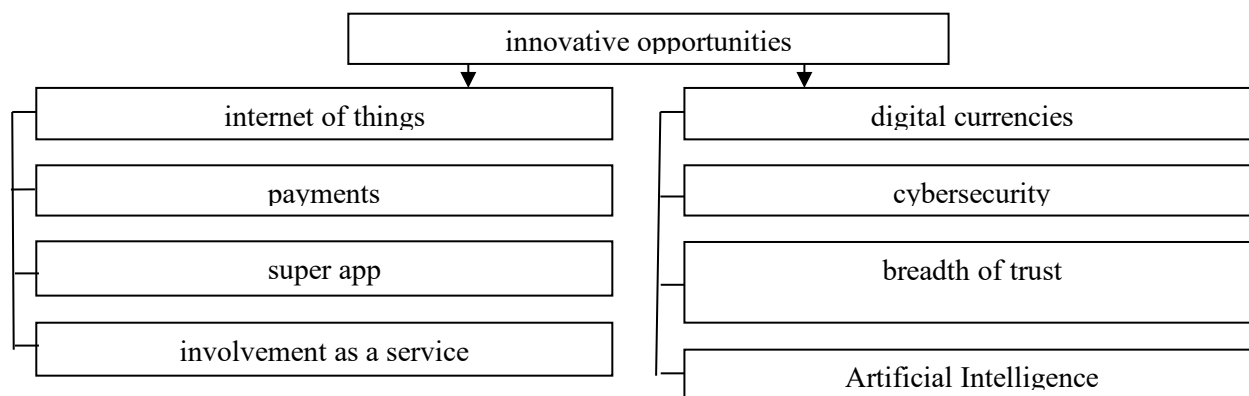


Fig. 2. Promising innovation opportunities of banks

Source: based on data [7]

New innovative technologies affect banking products and we can show the most real in terms of implementation by 2030 [8]. Figure 2 shows the main technological developments.

1. Augmented reality. Exciting technologies such as augmented, virtual and mixed reality improve customer interaction. The possibilities of implementing augmented reality technology in the banking sector are limited only by imagination, although they are still at a very early stage of development. The end state is to give consumers full autonomy in the actions and operations they can perform at home. Hybrid branches are provided by technology experts who believe that bank branches as we know them today are a thing of the past. One of the implementations of augmented reality technologies in the banking sector, which is already working, was carried out by the Commonwealth Bank of Australia [9].

2. Blockchain. Blockchain is a general phrase used to describe the technology of a distributed book. You can think of this as a distributed database without the involvement of the DBA. This allows multiple parties to access the same data at the same time, while ensuring the integrity and consistency of the records entered into the database. Currently, the world's leading banks are studying the evidence of conceptual projects in various aspects of banking and financial services. The first major implementation we will probably see are

clean-up and settlement areas. Syndicated loans, trade finance and payments are also other areas where smart blockchain contracts can be highly effective.

3. Robotic automation of banking processes. The amount of unstructured data that a bank must process grows exponentially with the growth of the digital economy. This is not just data from banking operations, but also other data on behavior that could potentially allow banks to improve and innovate their customers. This has made bankers realize that they need to find technologies that can mimic human actions and judgments, but with greater speed, scale and quality. The answer is a combination of different technologies that automate cognitive and robotic processes in banking. These technologies consist of machine learning, natural language processing, chatbots, robotic process automation and intelligent analytics in banking, which allows bots to learn and improve [10]. In the coming years, we will see how modern cognitive capabilities are combined with automated robotics to achieve even better results. This has already been implemented in point of sale solutions that automatically offer marketing campaigns that will be most effective for an individual customer.

4. Quantum Computing Quantum computing is a way of using quantum mechanics to work out complex data operations. As is commonly known today, computers use bits that can have two values, 1 or 0. Quantum computing uses "quantum bits", which can instead have three states - 1 or 0 or both. This unlocks exponential computing power over traditional computing - when the right algorithm is used. This is a huge leap in computing power, but decades before any commercial implementation. However, banking groups such as JPMorgan Chase and Barclays are investing in quantum computing research in partnership with IBM [11].

5. Artificial intelligence. The boom in growth over the past decade in the amount of structured and unstructured data available to banks, combined with the growth of cloud computing and machine learning technology, has

created the perfect storm for artificial intelligence for use across banking and financial services. Business needs and AI opportunities have grown hand in hand, and banks view artificial intelligence as a differentiator to overcome emerging competition. Artificial intelligence allows banks to use the large history of the data they collect to make much better decisions about a variety of functions, including back office operations, customer experience, marketing, product delivery risk management, and compliance. These opportunities apply to deposits, loans, payments, investment management, capital markets and market infrastructure. Artificial intelligence will revolutionize banks by shifting the focus from the scale of assets to the scale of data. Now banks are trying to provide individual experience to their customers, rather than creating mass products for large markets. Instead of retaining customers at the expense of high switching costs, banks will now be able to become more customer-oriented and retain them, providing high retention benefits [12].

6. API platforms. The time when banks could control all customer experience with a

7. monolithic system that controlled everything from accounting to every customer interaction is long gone. Both regulatory requirements and consumer demand have turned this vast system into a dinosaur. Today, banks need to create a "banking stack" instead, which will allow them to be a platform to which customers and third-party service providers can connect to provide a flexible and personalized end-user experience. To do this, they can use API platforms for banking. The banking platform API is designed to work through APIs that are located between the server execution of banks and external experience provided by either the bank itself or third-party partners. This allows banks to apply completely new business models and use cases (for example, to help raise wages) and experiment with new technologies, such as blockchain, at low cost. APIs also help banks to ensure the reliability of their systems in the future, as the interface is no longer connected to the server base [13].

8. Intellectual banking security. The nature of cyber risk is changing rapidly. This makes traditional approaches to risk management obsolete. It is now clear that organizations cannot eliminate all possible sources of cyber threats, and limiting the impact of attacks as soon as possible is the best way to combat them. Banks need to be adept at cybersecurity. Banks are increasingly using advanced real-time analytical monitoring to identify threats and stop them from crashing. Using big data analysis techniques to get threats earlier and stop them before they happen is called predictable security. Although disruptions caused by the introduction of new technology can lead to increased vulnerability in the beginning, it is a way forward to stop the ever-increasing data breaches reported by various organizations [9].

9. Hybrid clouds. One of the biggest challenges facing the digital age in banking is the need to respond quickly. The market, in which banks are constantly evolving, is constantly evolving, requiring them to be as agile as possible. They should be able to provide timely resources to the enterprise to solve business problems faster. High-performance banks have found that the most effective way to achieve this is a hybrid cloud for the entire enterprise [13]. This allows them to choose both public and private preferences, while addressing issues such as data security, management and compliance, as well as the ability to mobilize large resources in minutes.

10. Instant payments. As the world moves to a less cash economy, consumers' payment expectations have changed dramatically. Both customers and businesses expect payments to be made instantly, and this is where instant payment systems come into play. Instant payment is required if online payments need to replace cash transactions [14]. Therefore, banks around the world are finding ways to provide their customers with instant payment, even when the infrastructure needed for the service is lacking.

11. Smart machines. Smart machines are beginning to act as digital concierges for the customer in cooperation with banks. Banks will have to invest

in digital interoperability to ensure long-term customer relationships. Remember that customers will gravitate to the banks that are easiest to work with when they use the technology they are used to.

Visiting a bank branch and even looking for the most profitable options for investing savings is no longer necessary, as a virtual financial advisor can provide such services instantly and even withdraw from your account the monthly amount of money needed to save. Some analysts even believe that FinTech companies represent the future of banking services and can almost completely oust the banks themselves from the market.

The direction of global banking innovation shows that in the first place in innovative development are not only technical advances, but also the social component. There are three main components of global banking innovation:

1. Further deepen the "bank-client" relationship into more partnership and customer-oriented ones (for example, birthday reminders and gifts chosen for family or friends).
2. Increasing automation of banking processes and the transition of most online banking, mainly through mobile applications. Distribution of digital banks, where all banking operations are carried out only online.
3. Integration of banking operations into new areas of customers' lives (for example, parents transfer pocket money to their children's electronic wallet, which looks like a toy).

According to the results of recent years, the most innovative banking systems are: Turkey, Italy, Poland and Spain. Thus, European banks are confidently leading in the implementation of banking innovations. Interesting innovative products are being introduced in neighboring Russia. It is worth mentioning the program for schoolchildren, through which the latter can pay for food in school canteens using a mobile phone, and parents control the amount and direction of use of the child's funds. That is why Ukrainian banks should be more active in introducing innovative products.

The main directions of Ukrainian banking innovations in recent years have also been:

1. Internet and mobile banking and a significant expansion of banking operations that are available through these systems.
2. Cardless payments via mobile phone.
3. Activation of presence in social networks.
4. Availability of self-service terminals.
5. "24/7" operating mode.
6. Electronic balance (service when the balance in kopecks is transferred to the account or replenishes the customer's mobile phone).
7. Individualization of customer needs (used mainly for VIP clients of the bank).

However, the pursuit of technological innovations may have its pitfalls. After all, innovative technology may simply not be perceived by consumers, while the investment will not pay off. Therefore, it is necessary that banking innovation is economically viable for the bank and useful for customers. Thus, many global digital banks, ie banks that provide online services and advice to their customers, began to open branches in the form of coffee shops or free spaces where customers can come to drink coffee and talk to the manager about their needs or claims. No banking operations are conducted in such branches, only cooperation between the bank and customers is established.

Many experts argue that despite technological innovation, social innovation will still play a dominant role in the future. And Ukrainian banks will also have to learn to put their customers first in the priority of their goals and establish closer relationships.

Conclusions. Based on the above, we see that banking innovations are developing in two main areas - innovative banking products and services and innovative technologies. According to research by foreign analysts, the most important global trends in banking innovation over the past few years have been

the following areas: data monetization, in which information is the main resource of modern business; social value; robotics; constant availability; cardless payments and banking operations without banks.

It should be noted that some innovative technologies are partly risky for the banks themselves. Thus, fintech companies are actively entering the market, replacing banks in the provision of once exclusively banking services. Some analysts even believe that fintech companies represent the future of banking services and can almost completely oust banks themselves from the market. At the same time, banks are actively cooperating with such companies, as evidenced by the growth of bank investments in fintech companies in recent years. The trend of innovative development of the banking services market is that digital banking innovations today have almost completely moved to the Internet.

Thus, despite the difficult and not always predictable economic situation, banking innovations can become a tool that can ensure the further development of the Ukrainian banking sector. And because competition in the banking market is high, the timely implementation of innovative solutions becomes an important element of competition.

Global trends in banking innovation are characterized by interesting technical innovations and the desire to form close and long-term relationships with customers. It should be noted that Ukrainian banks also follow these trends, and some global banking innovations are already successfully used in the Ukrainian market.

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