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KEY TRENDS IN THE DIGITAL TRANSFORMATION OF BANKING SERVICES IN UKRAINE

КЛЮЧОВІ ТЕНДЕНЦІЇ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ БАНКІВСЬКИХ ПОСЛУГ В УКРАЇНІ

***Summary.** Introduction. In the context of globalization and technological revolution, the range of banking services is undergoing significant changes that require a complete rethinking of traditional approaches to their organization and implementation in Ukraine. Growing demands for quality, energy efficiency, timeliness, completeness, and accuracy necessitate the implementation of innovative solutions for the digital transformation of banking services. Innovative advances are becoming not just a competitive advantage, but a prerequisite for the successful development of the banking sector. In turn, the lack of a comprehensive approach to the classification of areas of digital transformation of banking services in Ukraine hinders the effective implementation of innovative strategies. In today's conditions, digital transformation in the field of banking*

services is one of the main arteries in the development of the modern financial sector of the economy. The relevance of the study is determined by the growing need for innovative approaches, the growth of digital technologies in banking services to improve efficiency in conditions of martial law, which creates new opportunities for providing services and increasing their mobility. Banking institutions are adapting to the latest financial technologies, improving the quality and efficiency of operations, and reorganizing their work in line with changes in consumer behavior, which favors digital communications. Materials and methods. The paper uses methods of content analysis of scientific publications, comparative analysis of different approaches to the transformation of banking services, methods of systematization and generalization. To achieve the set goal, modern scientific research on innovative advances in the digital transformation of banking services was studied. Results. The study found that the key trends in the digital transformation of banking services in Ukraine and the main areas of innovation are the ever-growing technological and economic directions of development. Prospects. Further research should be focused on the context of the war and post-war period in Ukraine, opportunities for successful functioning and development.

Key words: digitalization, banking services, modern technologies, key trends, financial services, digital transformation, innovative directions.

Анотація. Вступ. В умовах глобалізації та технологічної революції спектр банківських послуг зазнає істотних змін, що вимагають повного переосмислення традиційних підходів до їх організації та проведення на теренах України. Зростання вимог до якості, енергоефективності, вчасності, повноти та точності зумовлює необхідність впровадження інноваційних рішень щодо цифрової трансформації банківських послуг. Інноваційні поступи стають не просто конкурентною перевагою, а обов'язковою умовою успішного розвитку банківського сектора. І в свою

чергу відсутність комплексного підходу до класифікації напрямів цифрової трансформації банківських послуг в Україні стримують ефективну реалізацію інноваційних стратегій. Саме у умовах сьогодення цифрова трансформація в царині банківських послуг є однією із головних артерій в розвитку сучасного фінансового сектору економіки. Актуальність дослідження зумовлюється зростаючою потребою у інноваційних підходах, зростанні цифрових технологій в банківські послуги для підвищення ефективності діяльності в умовах воєнного стану, що обумовлює нові можливості для надання послуг, підвищення їхньої мобільності. Банківські установи перелаштовуються до новітніх фінансових технологій, підвищуючи якість та ефективність операцій та перелаштовують роботу відповідно до змін у поведінці споживачів, які віддають перевагу цифровим комунікаціям. Матеріали і методи. У роботі використано методи контент-аналізу наукових публікацій, порівняльного аналізу різних підходів до трансформації банківських послуг, методи систематизації та узагальнення. Для досягнення поставленої мети були опрацьовані сучасні наукові дослідження з тематики інноваційних поступів щодо цифрової трансформації банківських послуг. Результати. У результаті проведеного дослідження було визначено, що ключовими тенденціями цифрової трансформації банківських послуг в Україні, основними напрямками інноваційної діяльності є всезростаючі технологічні, економічні напрямки розвитку. Перспективи. подальші дослідження мають бути спрямовані у контексті воєнного та післявоєнного періоду в Україні, можливості для успішного функціонування та розвитку.

Ключові слова: цифровізація, банківські послуги, сучасні технології, ключові тенденції, фінансові послуги, цифрова трансформація, інноваційні напрямки.

Analysis of recent studies and publications. Today, the development of the banking sector is an important direction for the modernization of commercial banks and the economy as a whole, as evidenced by the scientific studies of this issue by researchers N. Didusenko (2023), O. Zaslavska (2023), V. Zianko (2024), V. Ilyin (2022), K. Kushnir (2022), K. Klooba (2018), A. Onishchenko (2021), and other scientists.

The purpose of the article (problem) is to analyze the results of digitalization implementation, the current state of the banking services market, and key trends in the digital transformation of banking services in Ukraine that affect economic growth, structural changes in the economy, and support the competitiveness of the national economy, especially the banking sector.

Presentation of the main research material. The transition to a digital economy has become one of the most important trends in modern social development, significantly transforming the financial sector. In today's environment, banking services are undergoing significant changes, which are particularly reflected in the banking sector, which is now a driver of innovation. Digital transformation in the banking sector is becoming one of the main trends in modern economic development. Banks are actively adapting their processes, structures, and tools to implement new cloud-based digital technologies in order to remain competitive. Digitization is changing both internal operational processes and external communications between banks and their customers, allowing them to reduce costs, increase efficiency, and improve customer service.

Digital transformation is a key factor in economic development, including the banking sector, and involves the introduction of innovative technologies that change traditional business processes and create new opportunities for optimizing operations.

According to L. Klooba's research, digitalization in banking is a complex of modern economic, organizational, managerial, and institutional innovations in

any area of a bank's operations. Today, the result of digitalization is the emergence of new innovative products and services.

The most common types of domestic digital transformations are as follows:

1) mobile banking – thanks to mobile phones, it is possible to carry out most operations with your own accounts, opening up a wide range of services, including account balances, payments, money transfers, loans from one individual to another, etc. With the help of NFC chips, customer identification by the bank will be possible using only a phone. This trend has emerged in the US and European markets, where identification is already possible even using the customer's email address;

2) Internet banking – a key innovation of the coming decade, which is now offered to customers by most banks. Ukraine is among the top 10 countries in Europe in terms of the number of users, but due to low penetration in the regions, it still has significant potential for growth of the Internet audience in the future.

Internet banking as a form of digital financial service functions thanks to the implementation of a number of high-tech solutions that ensure stability, scalability, security, and personalized interaction between the bank and its customers. Among the key elements of the information infrastructure of banking institutions are cloud computing, Big Data analytics, integrated open interfaces (APIs), cyber security technologies, and mobile banking applications.

1. Cloud computing

The use of cloud technologies is the basis for a flexible, scalable, and efficient banking IT architecture. Cloud computing reduces the cost of maintaining physical servers and increases the availability and reliability of banking systems. Cloud infrastructure provides fault tolerance, backup, the ability to process customer requests in a geographically distributed manner, and adaptation to peak loads [5]. As a result, banks can quickly launch new services, update software in real time, and ensure continuity of service, even in critical conditions.

2. Big Data technologies and machine learning

The processing of large data sets (Big Data) is an important component of modern banking analytics. Big Data systems enable the recording, storage, aggregation, and analysis of transactional, behavioral, and external data to create customer profiles, assess credit risk, predict financial behavior, and combat fraud. The use of machine learning algorithms allows banks not only to automate scoring processes, but also to implement product recommendation systems based on customer history [4, p. 24].

3. Open APIs and Open Banking

An API (Application Programming Interface) is a tool that allows banking services to be integrated with external platforms and software solutions. The concept of open banking involves banks providing access to certain data to third parties (with the customer's consent), which paves the way for the creation of new financial products and services. The use of APIs achieves speed of integration, modularity, and the development of a financial ecosystem around the banking platform [1, p. 185].

4. Cyber security in digital banking:

Security is critical for online banking. Banks are implementing multi-factor authentication (2FA) systems, payment data tokenization, end-to-end encryption, and anomaly detection systems. This combination effectively counteracts phishing, social engineering, SQL injections, and other types of fraud in the digital space. Cyber security is integrated into all levels of banking systems, from the interface to the database.

5. Mobile banking applications

Mobile applications have become the main channel of communication between the customer and the bank. They provide access to current accounts, payment instruments, credit lines, transaction history, etc. In today's environment, mobile banking applications integrate elements of UX design, support voice

interfaces, FaceID/TouchID, QR codes, P2P transfers, and integration with government services such as the Diya app.

Thus, the technological infrastructure of internet banking is a multi-level system that includes computing platforms, analytical tools, open interaction mechanisms, and cyber security measures. Its continuous development determines the future of the banking system in the context of the digital transformation of the economy.

3) "Zone 24" – with this product, customers can independently manage their accounts, receive advice from call center specialists, submit requests for services, and make appointments at any bank branch. Virtually every "Zone 24" is equipped with an ATM, a CashIn cash replenishment module, and a telephone for accessing the information service. This area of digital transformation in banking continues to improve.

4) Electronic balance – the introduction of this service at bank tellers reduces the cost of coin circulation, as balances of less than one hryvnia are credited to the customer's mobile phone account or in the form of an electronic voucher [4].

The further increase in the share of the digital economy has prompted companies, including banks, to shift their focus to digital communication channels and sources of profit that require new competitive advantages in the digital environment. According to V. Zianko (2024), the digital transformation of the banking sector is an important condition for ensuring its adaptability and sustainability in the context of global economic changes and growing competition. The digital transformation of the banking sector is a complex process that involves profound changes in customer service approaches, business models, data management, and organizational structures [3].

Agreeing with the scientist's research, we affirm that it is innovative activity and digital transformation that have become key processes in the development of the modern economy, solving pressing issues related to the

creation of goods and the provision of services more efficiently than before. The use of technologies such as artificial intelligence, cloud computing, big data analysis, and other tools and methods developed in the context of innovation and digital transformation allows for more effective risk management, minimizes the likelihood of fraudulent activities involving customer funds, and automates a significant portion of employees' routine cognitive tasks.

Therefore, consideration of the implementation of modern achievements, in particular in the formation of the bank's digital transformation, contributes to strengthening its competitiveness.

Scientific research by O. Zaslavska (2023) shows that the digital transformation of banking services in Ukraine is characterized by several key trends: the growth of mobile banking, the introduction of digital wallets, the expansion of online banking, the use of artificial intelligence and bio Table 1

Table 1

Key trends in mobile banking

Application Sector	Financial Technology	Applications
Payment Services	E-Wallets Mobile Banking Peer-to-Peer (P2P) Payments Online Transfer Services Cloud Cashiers B2B Transfers P2P Currency Exchange Pay Later)	All payments initiated, processed and received electronically, ensuring fast and secure transfers. Unlike traditional transactions, new payment services prevent theft and other cash crimes.
Crediting	Crowdfunding Crowdlending P2P Lending BNPL (Buy Now	The technology allows banks to streamline the loan application process: customers can apply online and get approved in minutes
Insurance Services	Blockchain Smart Contracts Insurtech P2P Insurance	Improving existing insurance products and services with financial technologies that can reduce costs, increasing the quality and transparency of the company's activities.

Source: according to research [2]

Summarizing the research of the scientist, that in modern conditions banks use different approaches to organizing innovative activities, we agree that there may be the creation of a separate autonomous unit, which belongs to the middle office and has permanent staff, or the formation of units in the functional services of the bank, which cooperate with different departments to carry out certain aspects of the process of creating and implementing innovations. Among the relevant innovative proposals on the Ukrainian banking market, Internet and mobile banking are traditionally noted.

The National Bank of Ukraine and the financial system of Ukraine work harmoniously and effectively, understanding their responsibility for the preservation of client funds, continuous payment transactions and supporting the economy of our country. An important role in maintaining the stability of the financial system was played by the high level of digital transformation of Ukrainian banks and non-banking institutions, which Ukraine managed to achieve before the start of a full-scale war. In addition, this was facilitated by the convenience and popularity among Ukrainians of cashless payments and remote receipt of financial services, which became possible thanks to the persistent work on implementing innovative changes carried out by the regulator together with financial market participants over several pre-war years, as well as the introduction of the possibility of remote identification and verification of clients of financial institutions in 2020. The impetus for digital transformation was the National Bank's policy to spread the Cashless Economy and digital finance in Ukraine as a driving force for the development of financial services, which is a priority and one of the key areas of the National Bank's Strategy until the end of 2025. In August 2025, open banking will be introduced in Ukraine, providing access to user accounts through application programming interfaces (APIs), which will ensure data exchange between institutions servicing accounts and providers of non-financial payment services. The key benefit of open banking is that fintechs and banks will be able to establish mutually beneficial cooperation

and gain more opportunities for business development. This will facilitate the emergence of new payment startups and ensure healthy competition in the payments market. Confirming the scientific achievements of economists, we note that today paying for purchased goods with a bank card is a convenient and fast way to pay. It allows you to get rid of queues at store checkouts and misunderstandings during payment. Currently, this method is used by the vast majority of entrepreneurs. The reason for this is not only the order of the country's authorities, but also convenience. Connecting contactless payment makes it possible to sell goods and services throughout the country and even abroad. This method of accepting non-cash payments from a bank card is called acquiring. The main tool in this operation is a POS terminal. This device is always connected to the bank via the Internet. The algorithm of the procedure is not particularly complicated:

- attach, swipe or insert a payment card to the terminal;
- the application scans the information, the bank confirms the payment transaction;
- the buyer receives a check, which is proof of the successful completion of the process.

In this case, the participants in the transaction are:

cardholder (Buyer) - a person who pays for goods or services using a card issued by the issuing bank;

merchant (Seller) - a trade and service company with the ability to accept bank cards;

acquiring bank - an intermediary who concludes an agreement with an entrepreneur and provides him with the equipment necessary for accepting payments (PIN pads, mobile or stationary POS terminals, etc.).

He is also responsible for technical support, payment processing and collecting the acquiring commission from the seller (approximately 1.5 - 2% of

the purchase amount). In the future, the money will be distributed between the participants in the process;

Issuing bank - a financial institution that is a participant in the payment system and issues the buyer's card. Responsible for the correctness of settlements with customers, checking account balances and comparing them with the requested amount. Accumulates cashback and other bonuses for buyers;

Payment system - transmits information about the transaction from the acquiring bank to the issuing bank and vice versa[8].

The NovaPay payment system is socially important for Ukraine, which, according to the NBU, is one of the leaders among non-bank institutions specializing in money transfers. According to current data, about 2 million transactions per day pass through the NovaPay system (this can be compared with the processing of the largest Ukrainian banks), and the service occupies more than 40 percent of the Ukrainian remittance market. The company was created in 2012 under the Forpost brand. It was and remains part of the Nova Poshta Group, and specializes in financial services based on state licenses. These services include:

- money transfers;
- currency transactions;
- lending[9].

According to official information, NovaPay offers a set of services for individuals and corporate clients. In particular, private clients can transfer funds in cash, pay for parcels at Nova Poshta branches on cash on delivery terms, withdraw cash and top up a card, pay bills and top up mobile numbers, pay for parcels in the Nova Poshta mobile application, send online payments to other persons, and set up auto-debit payments.

NovaPay cooperates with other transfer systems: in particular, Western Union and Ria. Clients can receive currency transfers with automatic conversion into hryvnia. The exchange rate is set by the partner payment system.

The developers of the NovaPay application have significantly simplified the process by adding a function for parsing details. To make a payment by details, it is enough to simply copy them (for example, from a message) and paste them together into one IBAN field. The application will arrange everything in its place. You can also take a picture of the details, then the account number will appear in the appropriate field. You can also do the same if you download a PDF file or a photo of the account from the gallery, as well as take a photo directly through the application.

FacePay24 is a biometric payment service that allows you to pay for purchases with your face. In the literal sense. Thanks to FacePay24, the terminal at the point of sale identifies the buyer by scanning his face and debits money from his card when paying. That is, you can pay for lunch, buy groceries, a cup of coffee and much more without having cash, a bank card or even a mobile phone with you[10].

Access to the function is opened in Privat24. You need to activate FacePay24 payment in your profile settings, then, following the prompts, take three selfies from different angles and link a bank card from which the funds will be debited. No one except the personal recipient of the funds can pay via FacePay24.

- The bank does not store photos, but converts them into a digital code, which is stored and compared with others for recognition and payment.
- Payment security is ensured by additional entry of a PIN code for each transaction.

The digital banking services market of Ukraine in the conditions of martial law is one of the most dynamic sectors of the economy, which at the same time remains highly concentrated in structure. Further modern digital transformation leads to the restructuring of the main and auxiliary business processes of credit institutions, improves the quality of management decisions and reduces the sensitivity of banks to various financial and non-financial risks. With these

changes, the analysis of the impact of innovations on the development of banking activities becomes even more important. In the context of the banking industry, innovations are focused on the systematic and proactive implementation and application of new or significantly improved solutions in various areas of banking activities. This is aimed at optimizing processes, expanding the range of services and improving financial indicators and stability.

One of the elements of the banking infrastructure is the unified banking network "Power Banking" - this is a unified network of branches of Ukrainian banks, created at the initiative of the NBU, which will operate and provide necessary services to clients even during a blackout. The "Power Banking" network already has more than currently has about 2,400 bank branches throughout Ukraine, which are equipped with alternative energy sources and backup communication channels, enhanced cash collection and additional staff. This is almost 55% of the total number of bank branches. Currently, about 70% of all branches of the "Power Banking" network are systemically important banks, a third are branches of other banks. Currently, the systemically important banks participating in the Power Banking Network project are: PrivatBank, Oschadbank, Ukreximbank, Raiffeisen BANK, Ukrgasbank, Sense Bank, FUIB, Ukrsibbank, OTP Bank, Universal Bank, Pivdennyi, Kredobank, Taskombank, A-bank. Most branches of the Power Banking network operate "ATM national roaming". The goal is to provide Ukrainians with the opportunity to withdraw an increased amount of cash from an ATM of any bank in the network, sufficient to meet current needs and form a certain reserve [8].

An innovation is the WayForPay payment service, which has been operating on the Ukrainian market for almost 10 years and helps entrepreneurs quickly launch their own online business. At the same time, you do not need to be a cool IT guy or invest a lot of money in development. In 2024, the company offered three innovative and improved business solutions at once.

The digital constructive product Shop.WayForPay is a simple designer that allows you to easily and quickly create your own website with ready-made delivery modules and integrated payment acceptance - everything you need for customers to immediately place and pay for an order.

One-click payment has changed the established rules of the game: reducing the number of actions required to complete a purchase, reduces the level of abandoned carts and increases conversion. This is exactly what entrepreneurs expect, and what ensures timeliness, security, and accessibility from Banivka institutions. Built-in delivery modules without additional settings. Payments are controlled through a personal account or mobile application.

The proposed "Subscription Pages" represent the purchase of goods and services by subscription - which is one of the most popular trends in the field of e-commerce. A business using the subscription model has specific needs, such a product is a convenient solution for regular payments that does not require plugins or programming [11]. The product has features that allow companies to launch and scale prepaid businesses - from online courses and consultations to the sale of prepaid goods. The solution easily integrates with any online banking system for legal entities and opens up new opportunities for banks and financial institutions. It helps to quickly and safely attract customers remotely, increases work efficiency and meets modern market requirements.

Conclusions and further research prospects. In the post-war period, Ukraine will face the task of comprehensively restoring not only infrastructure, but also economic, social and other. Today, new financial technology companies are emerging that are aimed at improving the quality of people's lives. Existing fintech firms have their own achievements and continue their development, proving that the key trends in the digital transformation of banking services in Ukraine, the main areas of innovation are the ever-growing technological and economic areas of development. Prospects. Further research should be directed in the context of the war and post-war period in Ukraine, opportunities for

successful functioning and development with existing advantages, the most important of which are speed and convenience, a wide range that is constantly updated based on a global analysis of consumer requests; lower cost of services due to the lack of need for companies to invest in physical infrastructure; deeper personalization that arises from the ability to collect, programmatically analyze customer data (including through social networks) and automatically generate profitable individual offers for them. In this area of research, there are quite a lot of models for applying digital technologies, and their percentage is growing significantly every year (in synergy with the essence and trendiness of the service), and with regard to the key trends in the transformation of banking services and fintech models, it is possible to generate the following: personal finance management, investment platforms, crowdfunding and crowdsourcing, Big Data analysis services (technologies and methods used to analyze and process a huge amount of both structured and unstructured data), cryptocurrencies and blockchain technology, payments and settlements, digital security, neobanks (banks without branches), platforms using artificial intelligence for business and consumers, and so on. It is worth noting that all this is the layer of further research by scientists and practitioners.

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