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USE OF DIGITAL TECHNOLOGIES BY FINANCIAL INSTITUTIONS

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Розглянуто питання розвитку фінансової системи на основі використання цифрових технологій. Цифрові технології є ключовим елементом цифрової трансформації, яка їх використовує для покращення процесів фінансового, інвестиційного і ризик менеджменту, взаємодії з клієнтами та налагодження зворотного зв'язку із споживачами та підвищення ефективності діяльності. Зазначені технології охоплюють широкий спектр інструментів, включаючи комп'ютери, смартфони, планшети, хмарні технології, штучний інтелект, машинне навчання, розширену та віртуальну реальність та багато інших. Встановлено, що сучасний етап цифрової трансформації фінансового сектору характеризується стрімким збільшенням обсягів використання цифрових технологій та надання фінансових послуг у цифровому форматі, що посилює потребу у розробленні та використанні нових наглядових і регуляторних механізмів і технологій.

Ключові слова: *фінансовий сектор, фінансовий продукт, цифровізація, фінансова послуга, економічна ефективність, ризик, інновації.*

State of the problem. The current stage of development of the global financial system is taking place in conditions of increased competition and crisis phenomena in its markets. One of the main factors of successful development of financial activity is the policy of constant innovations. Currently, innovations are a key factor in stability, competitiveness and sustainable economic growth of financial institutions. Among the main trends in the development of financial innovations, it is necessary to note the shift in emphasis on service and quality characteristics of financial products and services. The bulk of customer requests are aimed at extraterritoriality and continuity of systems, which forces financial institutions to focus on appropriate management tools, which is due to both changing customer demand and the broad development of information technologies. Given the depth and scale of digital transformations, as well as the importance of financial services, it is important to study the features of the development of digitalization of the financial services sector, as well as to identify areas for increasing the economic efficiency of their use.

Analysis of recent research and publications. A significant contribution to the study of the impact of digital technologies on the development and functioning of the financial market of Ukraine was made by the following domestic scientists: V. Korneev, G. Zabchuk, O. Ivashchuk, and T. Vynnyk [1]. Numerous studies by domestic scientists are also devoted to the issues of digital transformation of the economy and the introduction of financial instruments based on digital technologies: M. Dubyna [2], O. Zarutska [3], and O. Popelo [4].

These researchers investigated various aspects of digital technologies in the financial market, examining digitalization and its impact on development and functioning while studying problematic issues and potential solutions. In particular, they explored the process of digitalization and its influence on financial market development, providing practical examples and developing methodological foundations for implementation [5–7].

The scholarly work of these authors has established a comprehensive framework for understanding how digital transformation affects Ukraine's financial sector, contributing valuable insights into both theoretical foundations and practical applications of financial technology innovations.

Research methodhology. The study uses general theoretical methods. The system method of technology was used to study the theoretical aspects of digital financial services. The analysis method was used to study the most popular information about digital financial services. Using the abstract and logical method, conclusions and proposals for the introduction of digital financial services in modern conditions are made.

Research results. We live in an era of change and innovation in the financial services sector. Currently, nine out of ten transactions are carried out cashless. Studies show that almost half of Ukrainians are ready to abandon cash altogether in the near future. Digital technologies are technologies that use electronic devices and software to process, transmit and store information and are a necessary tool for implementing digital innovations [5–7]. They ensure the speed and efficiency of the service provision process, as well as allow for decision-making and the implementation of new ideas in accordance with modern requirements of the financial market and consumer needs. The use of digital technologies allows financial institutions to increase productivity, reduce costs and risks, improve the quality and availability of products and services. In addition, digital technologies are an important factor in globalization processes, as they allow financial institutions to conduct business internationally and contribute to ensuring their competitiveness.

Digital technologies are a key element of digital transformation, which uses them to improve financial, investment and risk management processes, customer interaction and feedback, and improve operational efficiency. These technologies cover a wide range of tools, including computers, smartphones, tablets, cloud technologies, artificial intelligence, machine learning, augmented and virtual reality, and many others.

Currently, the following innovative technologies have already been used in the financial sector of the national economy, ensuring the speed, efficiency and security of financial transactions: cloud technologies, blockchain, smart contracts, the Internet of Things, artificial intelligence, and others.

Cloud computing allows you to access a large amount of resources (software and hardware, statistical and analytical data, etc.) via the Internet. The use of this technology reduces the time to implement other new technologies, allows financial institutions to reduce the cost of maintaining IT infrastructure, increasing its scalability and agility, provides flexibility in resource management, creates data storage capabilities, while ensuring their mobility and availability for use for calculations, analysis, planning and modeling. In addition, cloud technologies provide the ability to back up and restore data in case of loss / damage due to security breaches and other circumstances.

Blockchain is a distributed database that stores information in the form of blocks, each of which contains data from the previous block and a time stamp, which ensures the security and inaccessibility for changing data already recorded in blocks that are linked together by a chain [8, 9]. The use of blockchain technology ensures the reliability and security of financial transactions and minimizes the risks of data falsification. The use of this technology by financial institutions contributes to increasing the efficiency of their work, reducing the costs of financial transactions and reducing the number of intermediaries in the chain of transactions.

Smart contracts are programs that can automatically fulfill contractual terms without the need for an intermediary [10, 11]. A smart contract can replace a classic contract that requires legal services for execution, as it can provide automated execution of the transaction without mediation.

In the financial sector, smart contracts can help reduce transaction costs, including legal fees, improve process efficiency, accuracy and reliability of transactions, and reduce the risk of fraud, as the terms of the contract will be automatically executed without the possibility of change by any party to the process. For example, a smart contract can automatically check the fulfillment of contractual terms between two parties and make a payment if the terms have been met. Financial institutions such as banks can use smart contracts to automatically process payments and sign contracts with customers, and parabank institutions such as insurance companies can use smart contracts to determine insurance payments based on concluded insurance contracts.

The network of various devices that can exchange data with each other without direct user intervention reveals the meaning of the concept of "Internet of Things (IoT)". Accordingly, the introduction of IoT technology into the financial sector of the economy has created opportunities for collecting data about users and their behavior and allowed financial intermediaries to adapt to the needs of consumers of financial services [12]. For example, banking institutions can use data from monitoring the activity of banking users to understand what financial products they need and to form appropriate personalized offers of such services.

Machine Learning is a technology that allows software systems to learn independently based on the use of large amounts of data and independently select optimal solutions in the process of work. The most significant strengths of using this technology for financial institutions are process automation, improving the accuracy and speed of data analysis, the ability to reduce labor costs and attract new customers and, as a result, increase operational efficiency.

One of the most promising technologies in the financial sector of the economy is artificial intelligence, the use of which by financial intermediaries can contribute to improving the quality of customer service, reducing decision-making time and minimizing / neutralizing / optimizing both financial and non-financial risks.

In particular, with the help of data analytics and machine learning tools, it is possible to increase the accuracy of forecasting market trends. These digital technologies have found practical application in electronic payments, banking applications and online banking, in financial data analysis, in making decisions by financial institutions regarding lending and investment, in building algorithms and risk assessment models, etc. In particular, electronic payments allow transferring money between different accounts and users online, facilitating transactions, reducing risks and making the money transfer process faster and more efficient [13].

Banking applications and online banking allow customers to use communication devices – mobile devices or computers, and with an Internet connection, to carry out payment, settlement and other operations at any time from any location, which makes the banking process more convenient and efficient for consumers of financial services and reduces the costs of financial institutions for maintaining physical branches.

Financial institutions now owe the use of blockchain to ensuring the security and reliability of transactions and operations with cryptocurrencies, by storing data in distributed networks, storing and processing confidential data and other confidential customer data.

The use of digital technologies allows financial institutions to analyze large volumes of data and obtain valuable information about the main trends, events and processes in the financial and other spheres, which helps owners and managers of financial institutions make better decisions regarding investment, lending and other financial transactions. Given the unconditional advantages of these technologies, it is advisable for financial institutions to foresee their implementation and application in the development and implementation of tactical and strategic development plans [14].

The introduction and use of innovative digital technologies by financial institutions may be accompanied by the following risks:

– the risk of unequal access to financial services for certain groups of the population (elderly people, people with disabilities and other categories), which can lead to inequality in access to financial services;

– technical and technological risks – caused by the failure of equipment or software, which can suspend the operation of the financial institution's system and negatively affect customer service and reputation;

– legal risks as a result of a violation of data confidentiality and intellectual property rights can cause significant financial, reputational and other losses for the financial institution. And changes in regulatory and legal support can lead to changes in the activities of the financial institution and create a high level of uncertainty about its prospects;

– financial risks – which, among other things, are caused by insufficient qualifications of specialists - developers of digital technologies, the corresponding disregard for risk-forming factors when building algorithms, and other factors, can negatively affect financial indicators;

– criminogenic risks may arise as a result of the risk of leakage of financial information (client data, money and transaction information, etc.), personal data of clients and their use for illegal purposes;

– the risk of job loss is that the introduction of digital technologies may lead to the automation of more processes and cause a decrease in the need for employees, and, consequently, to a reduction in staff, which may lead to staff rejection of innovations and an inadequate reaction to new technologies;

– the risk of technology dependence associated with the use of digital technologies may become an object of dependence for certain groups of users and negatively affect their psychological state and physical health.

The implementation of digital technologies by financial institutions may be accompanied by significant risks, which certainly requires further scientific research, but their use also has significant promising consequences, to which we consider it appropriate to attribute the following:

− increased efficiency and productivity due to process automation, reduced data processing time and increased speed of operations, improved customer service quality, reduced errors related to the human factor, reduced transaction costs, including through the introduction of electronic document management, costs for data storage and processing, etc.;

− expanding the range of opportunities for customers due to convenience and online accessibility to various financial products and services, which contributes to increasing their satisfaction and loyalty to the financial institution;

− development of new products and services through the use of digital technologies, access to new markets and customers, in particular due to the possibility of remote transactions and attracting customers from different regions can lead to an increase in the volume of transactions and profits and an increase in the competitiveness of financial institutions and the development of the financial market in general;

− the use of digital innovations allows financial institutions to increase the level of personalization of services and ensure better satisfaction of customer needs; − improving analytics and decision-making through fast and accurate data analysis, which will allow for more informed decisions and minimize / optimize risks.

Conclusions. The introduction of digital innovative technologies into the activities of financial institutions can be an important factor in increasing their efficiency and competitiveness, ensuring wider accessibility and reducing the cost of financial services. However, it is necessary to take into account the risks and take the necessary measures to ensure economic security and data confidentiality.

Digital financial services are significantly different from traditional financial services. Based on modern digital technologies, they are significantly different in their transformative significance and role in shaping new approaches to financial interaction between people, businesses and the state.

Digital financial services represent a combination of key characteristics of digital, financial and traditional services, products and services provided by fintech companies as a result of the synergy of business models of the digital economy, network and information and communication technologies and the corresponding development of

socio-economic relations within the globalized world and the processes of forming an information society.

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Annotation

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Use of digital technologies by financial institutions

The article discusses the development of the global financial system based on the use of digital technologies. Digital technologies are a key element of digital transformation, which uses them to improve financial, investment and risk management processes, interaction with clients and establish feedback with consumers and increase the efficiency of activities. These technologies cover a wide range of tools, including computers, smartphones, tablets, cloud technologies, artificial intelligence, machine learning, augmented and virtual reality and many others.

It has been established that the current stage of digital transformation of the financial sector is characterized by a rapid increase in the use of digital technologies and the provision of financial services in digital format, which increases the need for the development and use of new supervisory and regulatory mechanisms and technologies. The use of digital technologies allows financial institutions to analyze large amounts of data and obtain valuable information about the main trends, events and processes in the financial and other spheres, which helps owners and managers of financial institutions make better decisions regarding investment, lending and other financial transactions. Given the undeniable advantages of these technologies, it is advisable for financial institutions to provide for their implementation and use when developing and implementing tactical and strategic development plans.

The introduction of digital innovative technologies into the activities of financial institutions can be an important factor in increasing their efficiency and competitiveness, ensuring wider accessibility and reducing the cost of financial services. However, it is necessary to take into account the risks and take the necessary measures to ensure economic security and data confidentiality.

Digital financial services are significantly different from traditional financial services. Based on modern digital technologies, they are significantly different in their transformative significance and role in shaping new approaches to financial interaction between people, businesses and the state. Digital financial services represent a combination of key characteristics of digital, financial and traditional services, products and services provided by fintech companies as a result of the synergy of business models of the digital economy, network and information and communication technologies and the corresponding development of socio-economic relations within the globalized world and the processes of forming an information society.

Key words: *financial sector, financial product, digitalization, financial service, economic efficiency, risk, innovation.*