

MODELING THE PROCESS OF IMPLEMENTING BANKING INNOVATIONS IN A DIGITAL ECONOMY

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Abstract. Financial technologies have a significant impact on the functioning of the modern banking system. Technological companies such as Google, Microsoft, Intel, which previously did not provide banking products and services, are starting to play an increasingly important role in this industry. The objective need to modify approaches to the formation of innovative banking infrastructure and the implementation of modern financial and credit methods for managing banking innovations increases the importance of studying the processes of interbank competition.

The article examines the changes in the main components of the innovative banking system under the influence of digital technologies. Special attention is also paid to the need to shape the process of introducing banking innovations into the digital economy.

The object of the research is banking innovations and features of their development in the digital economy.

Keywords: financial technologies, banking innovations, digital economy.

JEL Classification: G21

1. Introduction

The introduction of banking innovations in the context of the digitalization of the economy is characterized by the following: the evolution of the national payment system takes place, which acts as a basic element for ensuring efficient banking operations and is based on digital technologies, ensuring the increase of banking business profits while the margin of banking services decreases.

The introduction of banking innovations in the development of additional banking products makes it possible to meet the growing needs of the client sector, which, compared to traditional banking services, will make it possible to form priority areas: the development of fast operations with low costs; creation and implementation of customized products and financial services; formation of the bank's presence in all forms of interaction with the consumer; building algorithms for obtaining intelligent solutions; coverage of new social groups of consumers of banking services in the financial market through telecommunication networks.

The main advantage of introducing banking innovations in the context of digitalization of the economy based on mobile banking technologies is undoubtedly the reduction of banking costs for customer service.

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Table 1.

Analysis of traditional and digital banking models

Analysis criteria	Traditional model	Digital model
Customer service time frame	Working hours are limited by the working hours	24/7, limited by transaction confirmation time
Speed of customer transactions	Due to the qualifications of the operational employee of the bank	Immediate
Threading customer service	Flexible and multi-channel, through an accessible and convenient communication channel for the customer	Flexible, limited by the variety of service channels available
Cost of service charge	Includes bank, staff and departmental expense items	It depends on software support or is offered for free
Legal status of an operational officer in the banking process	Bank employee confirming the operation	The bank customer forms and confirms

2. Description of the problem

The development of banking activities in the context of the digitalization of the economy creates the need to develop the following elements of a program to achieve the target financial condition of the bank's activities: a model for predicting threats and determining the level of financial security of the bank in the context of digitalization; financial plan for the development of the bank in terms of innovation; bank's financial flow management strategy; automated assessment of the effectiveness of the implementation of the bank's strategy. The mechanism for the formation of a program to achieve the target state of the bank's activities in the digital economy is shown in figure 1.

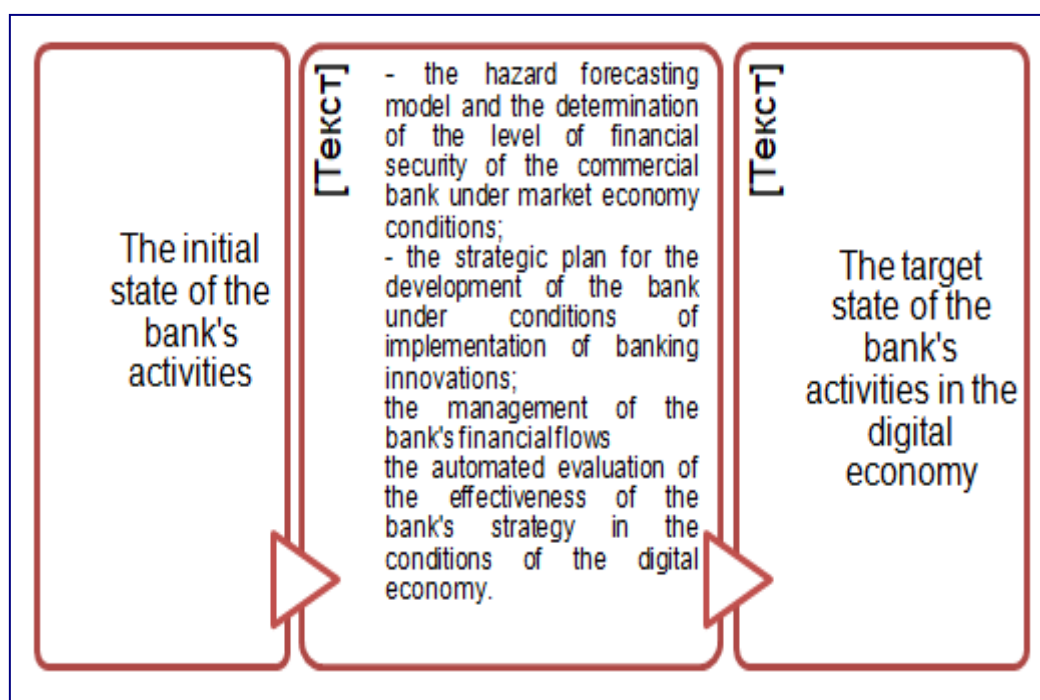


Figure 1. Formation of a program to achieve the target state of the bank's activities in the digital economy

Source: elaborated by the author

The timely introduction of banking innovations in the context of the digitalization of the economy will create a unique digital space that will include the banking business and the digital environment.

The main message in creating a modern concept of working with customers, partners and counterparties aims at a transformation both external and internal. The transformation vector is changing and targeting the customer, and not the conditions and requirements for providing a banking product. This principle is at the heart of modern business and is aimed at creating innovative open banking ecosystems that replace classic communication channels.

The step-by-step global goal of developing modern banking services in the context of digitalization is to create a barrier-free environment for the provision and receipt of services by bank customers and their needs. The main obstacle to the growth of innovative digital banks is the current legislation. The insufficient development of digital customer service channels is hampered by the low financial literacy of customers and their fears of transferring all their settlements and interaction with the bank to a non-cash format. Expert opinion indicates a low willingness to carry out the transformation of banking automation tools and software that does not have a high degree of customization, coordination with the new software, which makes it difficult for them to fully function and complicates the shortage of highly qualified engineers and developers. The presented mechanism, which shows the transformation of the national banking system in the light of the influence of significant factors, is presented in figure 2.

The research conducted helped to underpin three basic approaches to the digital transformation of the banking sector.

The first approach is based on the introduction of banking innovations, which are their own project, which do not include the transformation functions in the digital environment under construction, the ongoing digital transformations being implemented in stages, based on long-term planning and the development of pilot projects, this approach is followed by 26% of banks in the global financial environment [6].

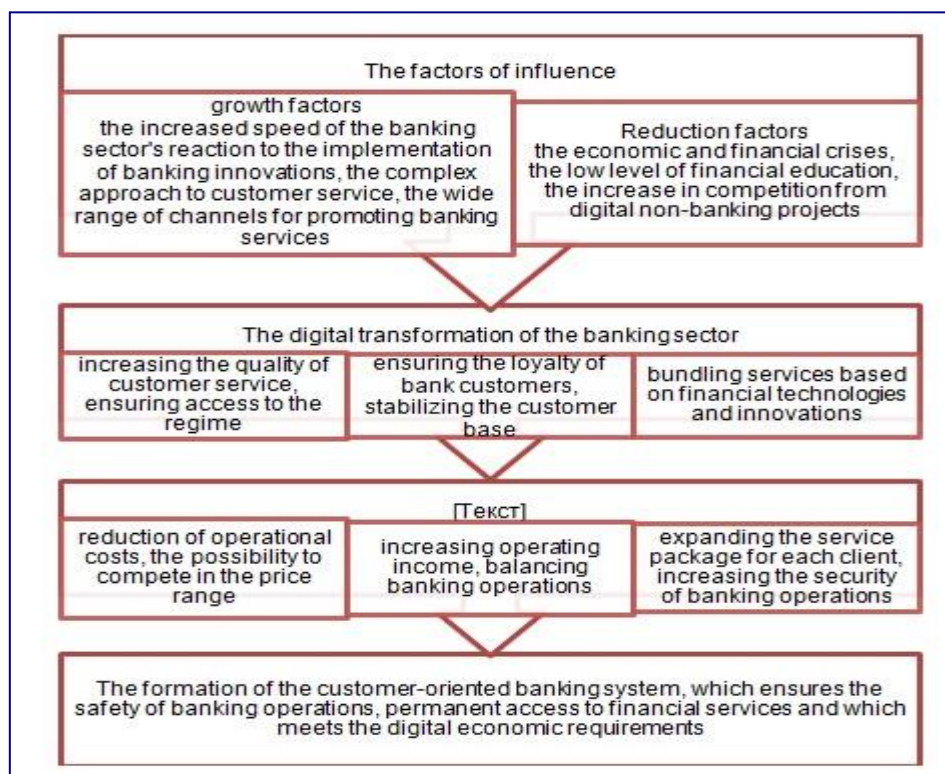


Figure 2. Mechanism of transformation of the banking sector with regard to the implementation of banking innovations in the conditions of digitalization

Source: elaborated by the author

The second approach is implemented through pilot projects, the development and implementation of which include subsidiary financial companies, activities and software based on the requirements of the digital economy. 42% of banks pass through digital transformation. The main advantage of this approach is client-oriented; the long-term needs of clients are at the head. The structure of the bank is created on the basis of teams led by specialists in different areas: - information technologies, software, analytics and marketing. This approach brings high flexibility to the built organizational structure, allows testing of innovative directions within the structure, without affecting the working directions.

The third approach to the digital transformation of the banking structure is to recognize the primacy of the implementation of banking innovations - which are the main value of the organization. The detailed construction of the structure may use elements of other approaches, but within the framework of the full implementation of the digital strategy, through the transformation of both internal and external technological processes of the bank. This direction of implementation of digital transformation is carried out by 32% of banks.

Digitization includes great potential for the development of financial services and the entire banking sector, but it is necessary to remember the increasing risks and dangers associated with the growth of electronic networks. The main risk is the loss of national digital sovereignty with all the resulting consequences, which suggests the need to strengthen and ensure cyber security in the digital banking ecosystem that is being built. It is necessary to carry out calculation and constant monitoring of increasing risks, when implementing new technologies, do not get carried away by the game of getting ahead. At the same time, financial technologies are the instruments of risk management by banking specialists, who take weighted decisions on most of the problems and issues that arise.

By characterizing banking innovations, a parallel is made precisely with the digitization process, linking it with the development of the banking sector as a whole, the reduction of costs through a single digital platform and the close interaction with consumers involved in the process of creating and providing banking and non-banking services (related services) (figure 3).

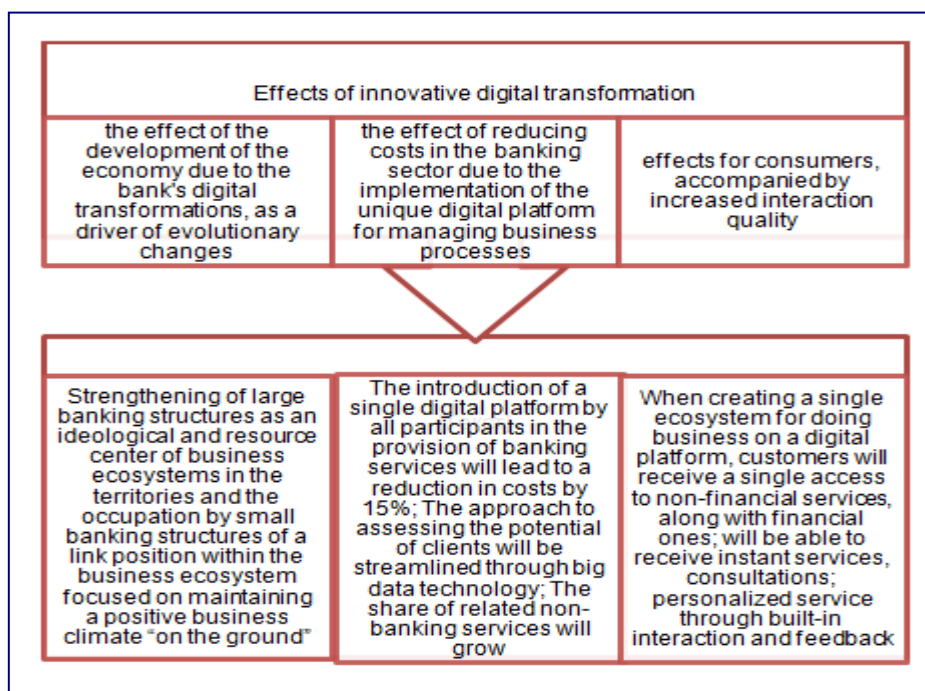


Figure 3. Effects of innovative digital transformation of the banking sector

Source: elaborated by the author

As part of the trends involving the transformation of banking in the context of digitalization, two priority areas are noted: one of them is the production of new banking products created and provided on the basis of digital technologies; the second direction involves the strengthening of interaction with companies operating outside the banking sector, and the creation together with them of non-banking products that are of value to consumers in the form of related content, services to classic banking products.

3. Methodology and Data Sources

In today's banking business, bank leaders focus on three key areas of activity: customers, operations, and business models. It is in these three directions that transformation.

Bank clients become not just consumers of services, but their generator. Based on available technologies, banks collect a large amount of data about the client, his requests and are able to form and offer him the necessary service or their complex, while they will be provided in a format convenient for the client. Changes in the client structure also have an impact on the technologies used by the bank.

The introduction of systems that allow collecting the maximum amount of information about the client and, as a result, making it possible to form a "picture of the modern consumer" and, on its basis, offer an actual service, is a competitive advantage.

Comparison of traditional and digital banking is presented in tables 2.

Table 2.

Comparison of traditional and digital banking

Traditional bank	Digital bank
All experience and knowledge about the client is concentrated at a certain point of service, a branch of the bank	The focus of knowledge about the client and client experience is the client himself
The branch or office of the bank is the starting point of interaction with the client	The client himself chooses how it is more convenient for him to start interacting with the bank, in order to start communication it is not necessary to come to the office
Digital services are an extension of the services of the branch where the client is served	Digital services are at the center of the model
Customer service regardless of the branch	Products and services are standardized Products and services are developed under customer needs
Customer knowledge and service experience can be different depending on the service channel	Omnichannel, experience and knowledge about the client are accumulated at one point, regardless of service channel
The distance to the branch matters, the client must be able to physically get to the bank	The client can be physically anywhere, the distance to the bank office does not matter

Source: 1, p.12

In order to compare the 2 types of banking activity, it is necessary to mention that traditional banking involves the use of cash payments, and the innovative one involves the presence of cashless settlements, using for example bank cards. In the banking system of the Republic of

Moldova, different types of cards are accepted for payment, which offer unlimited access to the money in the bank account. Table 3 shows the results reported per banking system in the card classification chapter according to the type of technical solution.

The results presented in the table indicate an upward evolution of the number of cards in circulation from 1736 thousand units to 2350 thousand units, due to the considerable increase of proximity cards from 645 thousand units to 2178 thousand units. Hybrid cards in the domestic payment system decreased from 1022 thousand units to 169 thousand units, which indicates the lack of interest in them. The same trend was present for magnetic stripe cards, and virtual cards remained practically constant during the analyzed period. Thus, the population of the Republic of Moldova successfully uses the innovations of the banking business, but still has reticence regarding the type of cards that are made available by local banks.

Table 3.

Cards issued by payment service providers from the Republic of Moldova

Analyzed period	017	018	019	020	021
on the type of technical solution					
proximity card (contactless)	645332	966465	1392338	1748825	2178272
hybrid card	1022508	913346	610757	428492	169518
magnetic stripe card	64024	53151	7025	2580	502
virtual card	4192	3303	2446	2179	2126
The number of cards in circulation at the end of the analyzed period - total	1736056	1936265	2012566	2182076	2350418

Source: elaborated by the author based on data from
<https://www.bnm.md/bdi/pages/reports/dsp/DSP1.xhtml>

The main field for the implementation of digital economy methods in the banking sector is the use of intelligent computing, big data technologies based on the integration of robotics and machine learning, in other words, data and knowledge-based management, or, in other words, Data Driven & Data Science. A classic example is BPM-systems (business process management) - business process management, which involves the use of automation tools and the integration of information technologies necessary in the process of making managerial decisions.

4. Results and discussion

In order to carry out a successful digital transformation in the banking services market in the format of modeling the process of introducing banking innovations in accordance with the key areas given earlier, it is necessary, in addition to the technological platform, to carry out a number of organizational transformations in the internal environment of the banking structure, as well as targeted work with representatives of the external environment; along with this, it is necessary to form a strategy for the introduction of banking innovations and strives, in a series of successive steps, to implement it. In this context, a number of researchers rightly point out

the need to demonstrate “internal flexibility” and the ability to work with partners as part of building a digital business ecosystem, in this case in the banking sector [3]. The digital banking ecosystem implies a single platform for solutions and communications based on the formation of cross-channels.

Internal organizational transformations also concern the personnel potential of employees in terms of its possible expansion by attracting specialists who are not directly related to digital technologies, but are in demand in promising areas for the bank due to the emergence of resources accumulated from profit growth due to the introduction of digital innovative solutions [4]. Various organizations, including banks, in such conditions seek to attract personnel with broad competencies, which makes it possible to make a profit through the introduction of banking innovations in the context of the digitalization of the economy [2].

The general directions of transformations in the internal and external environment of the bank, necessary for the full implementation of digital innovations in banking activities, can be presented as follows (figure 4).

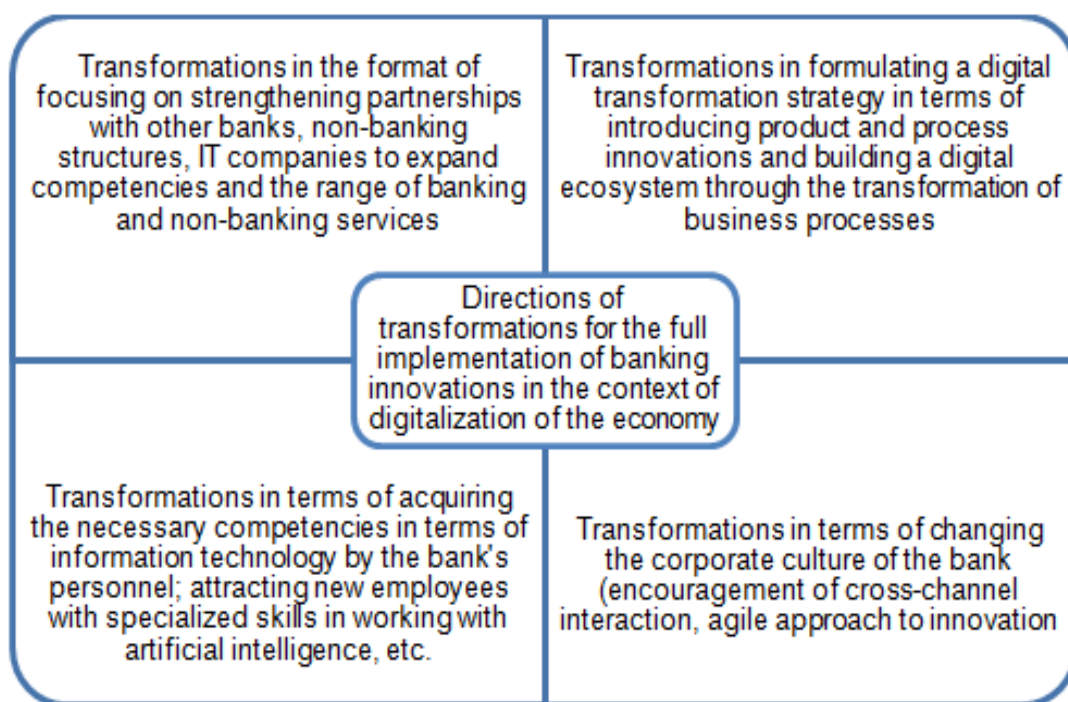


Figure 4. General directions of transformations in the internal and external environment of the bank, necessary for the full implementation of banking innovations in the context of digitalization of the economy

Source: elaborated by the author based on 7

It should be noted that the options for modeling the process of introducing banking innovations in the digital economy, consisting in the activation of product innovations, the introduction of process innovations and innovations in the business model, namely the construction of a banking business ecosystem, ideally, built into an ecosystem of a higher level, can be effectively implemented and should be developed on the basis of a cross-channel banking infrastructure, which is the basis, "cementing" element of the digital innovative transformation of banking.

For this reason, the very process of introducing banking innovations in the digital economy is based precisely on the successful development of a cross-channel banking infrastructure that

allows the formation of a banking ecosystem and its congruent integration into a higher-level digital ecosystem.

In the digital banking ecosystem, the key parameter that ensures the conditions for its well-coordinated and mutually beneficial work is mutual trust, transparency in the creation of new products or services and the provision of existing ones. This means the need for a simultaneous transition to a single digital platform by all participants in the emerging banking ecosystem based on the use of modern cross-channel banking infrastructure.

5. Conclusions

The innovative approach to banking used today forms the conditions for the expansion of banking products and services, involves the evolution of customer service in the bank, which determines the level of efficiency in the development of banking services. The growth in quality and the expansion of the banking product line are based not only on their development, but also on the growth of information transparency in terms of obtaining information by bank customers, directly by banks.

The influence and development of the implementation of banking innovations, the penetration of digitization in all spheres of banking activity, will inevitably lead to the transformation of the banking sector of the economy. Digitization of banking activity carries significant advantages for end users of banking services, banks and the state. Innovative-technological development in the banking sector creates prerequisites for the formation of a perfect financial system, which inevitably contributes to the growth of public-economic development. In the process of developing optimal innovative and technological strategies for the development of banking services and technologies, it is necessary to calculate the positive advantages, but it is also necessary to forecast possible negative consequences and take into account the requirements for the safe transition of banking operations to the area of digitization and electronic payments.

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