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DIGITAL BANKING TECHNOLOGIES AND THEIR FEATURES

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Innovative activities implemented by commercial banks currently allow remote (online) banking services. Examples of such innovative services are "Internet banking", "mobile banking applications", "contactless bank cards", "virtual bank cards" and integrated platforms of various payment and government services.

Innovative banking services, as a characteristic of digital banking services, completely exclude the transparency of the system, the limitations of the human factor, corruption and nepotism, and a number of similar vices.

Another important aspect of the digitalization of the industry is that the offers provided by the service provider and the information entered by the user are stored in the memory of information technology and quickly provide information when needed. In this case, it is impossible to provide special opportunities for some clients, or to leave without consideration the information provided by other clients, or to limit their capabilities, or to conclude secret transactions. This, in turn, ensures equality and openness of banks' activities for everyone.

The main goal of commercial banks is to attract customers and obtain high profits in competitive conditions. One of the most promising areas of development for occupying high positions in the market of services in interbank competition, occupation of a certain market of banking services is the development of modern banking services (Fig. 1.1).

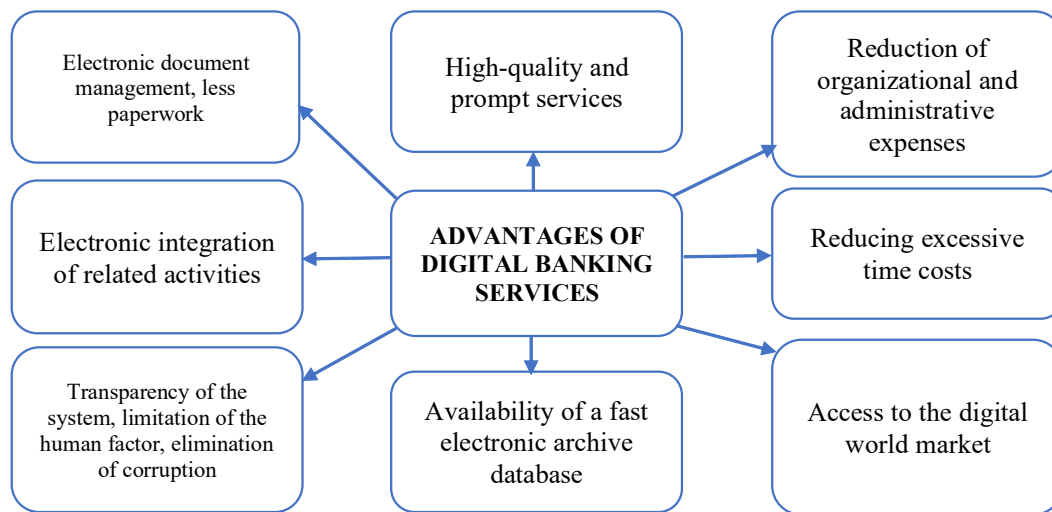


Figure 1.1. Innovative banking services - unique features of digital banking services

M. Kovalev, G. According to Golovenchik, digital banking is the implementation of financial services using a mobile and online platform, which improves the quality of the bank's work with the client, saves time and costs, increases the security of personal data, as well as the quality and speed of service.

The definition of a digital bank given by M. Kovalev and G. Golovenchik describes the important features of a digital bank. There was only one error. That is, the security of data in a digital bank is not guaranteed until now.

Recently, since many people use mobile phones, they have become an indispensable technical means for people, financial services are also organized within these means of communication.

According to the online publication "PwC", the number of people who prefer to use banking services using their smartphones is increasing. With the help of mobile banking, the bank and its clients can manage funds without physical contact, without entering the bank building.

According to A.Babkina, the XXI century began with the information revolution based on the development of digital technologies and the processes of economic globalization. Information in society and economic processes has become the main source of resources. This information becomes knowledge in the hands of a person, socio-economic relations are transferred to global networks. The main factor of digital transformation in the activities of market entities is the development of digital culture.

In this conclusion, A. Babkina recognizes that the introduction of digital technologies in the context of economic globalization is the main factor of digital transformation. However, his statement that information becomes knowledge in human hands is controversial.

The expansion of the distance of servicing banks brings a number of amenities to the population and business entities. In particular, they include such amenities as solving issues related to banking services in real time, reducing unnecessary time spent on this and transaction costs, and doing it from anywhere in the world.

After all, as the President of the Republic of Uzbekistan Shavkat Mirziyoyev said, "There is no future for the country's economy without the digital economy."

Modernization of banking activities is impossible without intensive implementation of the latest achievements of scientific and technological development. As can be seen from world practice, scientific and technological development and the rapid growth of new information technologies (IT) have a significant impact on the overall assessment of the attractiveness of the bank. The development of the technological process allows not only to increase the speed of processing documents and cash transactions, but also to expand the circle of customers.

In turn, the development of modern technologies significantly reduces the distance between banks and users of banking services, increases interbank competition and thereby contributes to the quantitative and qualitative development of banking services. В экономической литературе и научных исследованиях даются разные взгляды и объяснения "банковским технологиям". Например:

According to M.V. Dubinin, banking technologies are various telecommunications, information technologies, computer networks, software products, internal procedures, risk management models, etc. used in banks.

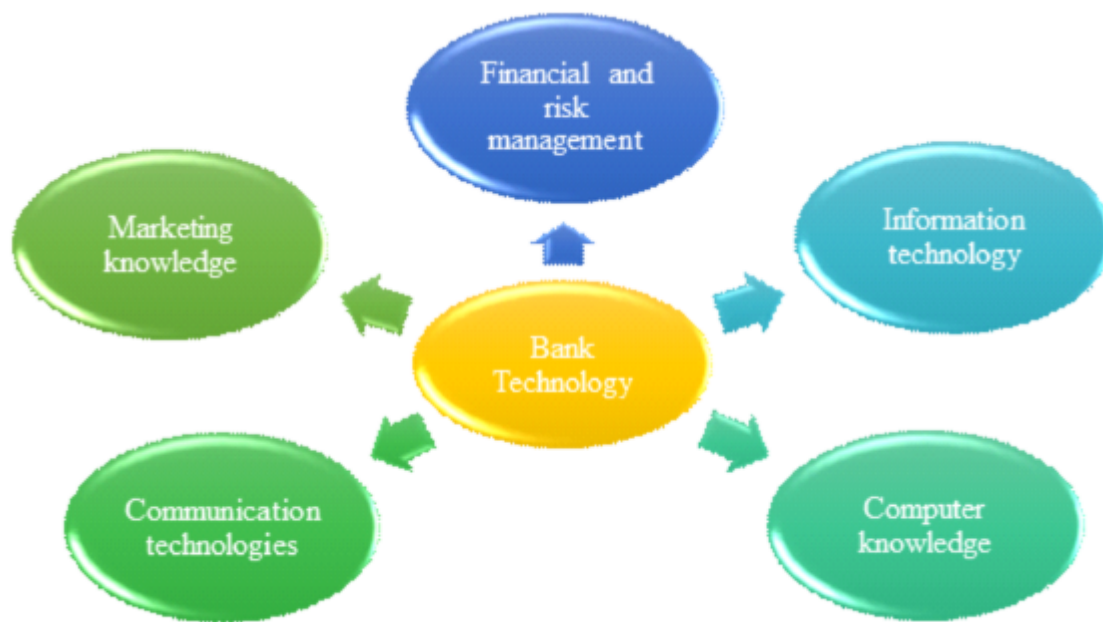
Digital technologies, which are one of the promising forms of banking technologies, were not reflected in M. Dubinin's conclusion.

According to R. Vadlamani, the term "banking technology" means the use of modern information and communication technologies so that banks can offer safe, reliable and better services to their customers at low prices and achieve competitive advantages in the banking services market. Banking technologies also include the use of modern computer algorithms to identify customer behavior patterns by sifting through customer information such as demographic, psychographic and transaction data. This activity, also known as data mining, helps banks achieve their business goals by solving various

marketing tasks such as customer segmentation, customer evaluation, target marketing, consumer basket analysis, cross-selling, customer retention modeling, etc. .

R. Vadlamani recognized a number of unique advantages of banking technologies, including offering reliable and affordable banking services, helping banks achieve their business goals by solving marketing tasks.

Also, the successful use of data collection helps banks to significantly increase their profits, thereby maintaining a steady advantage over competitors. Theoretically, banking technologies are not a separate discipline, but finance is formed as a result of the integration of several areas that differ from each other, such as risk management, information and communication technologies, computer and marketing knowledge, and its structural elements can be described as follows (figure 1.2)



**Fig.1.2. Components of banking technology**

In R. Vadlamani 's research , from a functional point of view, banking technologies have the following three important aspects:

1. The use of appropriate equipment and appropriate software to work and serve customers through various delivery channels and payment systems is one of the aspects of banking technologies.

2. Modern computer programs are used to classify (categorize) customers and analyze the banking services market and solve problems. This measure allows banks to manage and use their data warehouses efficiently.

3. Quantification, measurement, reduction of all types of risks and their management is the third important dimension of banking technologies. This measure covers the process of measuring and managing credit risk, market risk and operational risk.

In our opinion, banking technologies are understood as a set of the latest approaches, methods and tools for the implementation and maintenance of banking activities.

It should be noted that the above-mentioned concept of banking technology did not exist earlier in some sources, that is, it is said that it was founded during the period of today's scientific and technological development.

The Preclassic period. Simple forms of basic banking operations began to take shape. Including credit, deposit operations, settlements between depositors.



The classical period. It is characterized by the emergence of banks as enterprises engaged only in banking operations, and it is these limited operations that constitute banking technologies.

Also during this period, regional and national banking systems were formed, issuing banks appeared, systems of banknotes, accounting of transactions and document management were integrated.

Non-classical period (period of systematic development). Attention has been paid to the relationship between the bank and the client. Also, the technologies introduced into banking activities are aimed at creating a convenient customer service infrastructure, improving the quality of service, offering new services demanded by the client.

The purpose of the introduction of new banking technologies was to gain a competitive advantage, expand the customer base and increase profitability through in-demand technological services.

The post-non-classical period (the period of socio-economic integration). This period includes the constant participation of the bank in the life of the client. Banking services are first integrated into the complex of financial relations of the client, and then with all spheres of his economic activity.

In general, banking technologies of the modern era are aimed at ensuring maximum accessibility, reliability and convenience of service as a means of achieving the client's goals, which serves his interests and takes into account his motives. The technologies implemented by the bank are aimed at meeting the needs of the client using complex banking services as a partner.

Banking technologies include the creation of a customer service system for individual transactions and the bank as a whole, a set of tools (including technical ones) for conducting transactions, for example, plastic cards, interactive customer service or any other. The sphere of banking technologies includes automation and information systems, work with modern payment systems, implementation of intersectoral interactions, management technologies and security systems, telecommunications and much more, without which it is impossible to imagine a bank today.

Today it is impossible to imagine solving any tasks related to banking operations and process management without banking technologies, since over the past few years the requirements for the speed of decision-making have changed dramatically, the computer software used in the process of banking operations has improved, and the amount of data has increased.

The concept of "traditional banking" and the science of the same name are now moving into "banking technologies" and the science of them. Because today, not theoretical, but practical methods of providing banking services and technical means of their implementation are in the first place.

That is why banking technologies play an important role in the modern world of communications. They are a combination of information and telecommunication technologies.

Banking technologies include special computer programs, internal procedures and various models related to risk management.

The financial stability of banks is ensured by a balanced monetary policy. Modern banking technologies are being introduced to ensure the loyalty of account holders and expand the customer base. Therefore, banking technologies describe a set of methods for analyzing the activities of banks that help to increase financial stability, effective

interaction with customers.

In the future, more technologies will be introduced and used in developing and developed countries. The development of technology will greatly help in the development of the banking sector. Some of the technologies used in the banking system today include:

**Automated Teller Machine (ATM).** This is an ATM, a technology that is used all over the world. The ATM helps customers to have access to cash when they need cash. The PIN code provided by the bank is used to identify the customer. To use this service, the customer must have a bank account, debit or credit card. Money can be withdrawn from anywhere in the world.

**Mobile Banking.** Mobile banking is the latest technology used in the field of banking services offered to customers. The client must have a smartphone, tablet or personal digital device. A program has been developed that is compatible with the operating programs of Windows, Android, iOS and other mobile phones. The mobile application is downloaded directly to the mobile device. The client must have an active Internet connection via mobile Internet or Wi-Fi network to be able to use the mobile banking service.

**Internet Banking.** Customers will be able to access their bank account balance request online, make payments, make money transfers, international money payments, create and update standing orders and direct debits, as well as check recent transactions. The client accesses the website via a PC or laptop, and account information can be accessed from anywhere in the world. The following services can be used on the Internet; including account balance request, money transfer between accounts, creation and updating of standing orders and direct debit payments, money transfers, account overview, account history, loan repayment, prepayment card replenishment and password change.

**Video Teller Machine (VTM):** a new and innovative service provided by banks. The customer remotely connects to the customer service representative via VTM for all banking transactions. All VTM branches offer banking services to customers.

**Secure Short Messaging Service (SSMS):** SSMS banking is used to send and receive text messages to customers' mobile phones. Banks track customers' mobile phone numbers, and customers can request their bank account numbers. To use the SMS banking service through the bank, the customer must register their mobile phone number. The bank also sends a message to customers about each operation that occurs on the account. The operation is carried out by sending an SMS to the number assigned to the mobile banking service.

**SIM Application-toolkit:** It is presented in the form of a standard SIM card with an interactive menu programmed to interact with the client. The interaction takes place between the client and the network, and the exchange is carried out by entering information to the client through an interactive menu and program. Mobile operators can either issue in-network updates of their SIM cards to customers, or issue completely new SIM cards.

The biggest advantage of implementing SIM-based programs for mobile operators and financial institutions is that it ensures that the applications of these firms are on the SIM card, which gives the bank a competitive advantage.

**Near Sound Data Transfer (NSDT):** This is a fast, secure and convenient contactless payment technology used in mobile banking using any mobile phone. NSDT does not use SMS or USSD technologies, but uses a one-time audio password that is issued every time a customer wants to make a payment to confirm a transaction. The NET platform



provides secure transactions. NSDT transactions are carried out through the customer's mobile connection and the dealer's or operator's payment acceptance device. The client deposits money through a registered agent, and the money goes into a virtual wallet.

The goal of all MSDTC transactions is communication speed and data compression, security and cryptography, error detection and correction, and ultimately voice optimization. Thus, NSDT performs efficient and flawless operations and can be used even in very noisy environments.

**RFID Technology.** The bank card is equipped with a payment chip, and payment is made by simply bringing the card to the RFID reader, and payment is made automatically.

**Telephone Banking or Interactive Voice Response (IVR).** Telephone banking is an information technology that allows the client to interact with the system after calling a special number provided by the bank. The client interacts with the selection of various options from the voice message system or can speak for the selection options. The client must choose the most suitable option by hearing a pre-recorded voice at the specified telephone bank number. The voice prompt system uses speech recognition, which interprets the client's voice. To choose an option, the client must use simple words such as "yes", "no" or a number.

**Wireless Application Protocol (WAP).** This is a technology used in mobile banking when a customer connects to the bank's website via the Internet using a browser on their mobile phone. A customer can access information about their bank account using a mobile phone that acts as a computer. The client gets access without downloading any software.

**Unstructured Supplementary Service Data (USSD).** This is an SMS service with a menu and a fixed session. This is the standard used by all phone models. The client must choose from a list of options in the menu to proceed, rather than using suggestions to answer. The main advantage of USSD: the client responds quickly by selecting the appropriate options from the menu. USSD provides communication between the client, the mobile network and the bank. To use the USSD service, the commands necessary for the service are pre-installed on the client's SIM card. The Client uses the numbers allocated for the USSD service provided by the bank or mobile operator. The client starts the request by dialing the USSD service number, the mobile operator returns the menu. The client chooses one of the available options.

**Contactless Payments using Near Field Technology (NFC).** This is a form of mobile communication and wireless payments using two-way radio wave communication, as well as intelligent mobile devices running compatible software and located in close proximity to each other. NFC is a short-range high-frequency technology that allows data exchange between devices at a distance of 10 cm. NFC is built on RFID technology. Allow wireless communication and data exchange between devices. The device operates in active or passive modes. Encryption is used to protect confidential data, in case of loss or theft of the phone, you should use an antivirus and lock the phone to protect it. NFC technology is mainly popular in Europe, America and Asia. The goal of NFC is to make transaction queues shorter and faster, carry fewer cards with you, since all you need is to carry a mobile device with you to pay.

**Mobile Money.** Also known as mobile wallet, mobile payment and mobile money transfer. The mobile money service is used all over the world, mainly in Africa for those who have bank accounts or not. The service is provided by mobile operators in cooperation with commercial banks. Mobile money accounts can also be linked to a customer's bank account. The Mobile Money service is another way to top up your account without the

hassle of opening a bank account. Money in a virtual "wallet" can be used to pay for anything, for example, to buy a mobile loan, pay bills and certain products and services. In this case, the PIN code is used to verify transactions.