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WAYS OF USING DIGITAL TECHNOLOGIES IN BANKING ACTIVITIES

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Abstract:
This article covers digital banking technologies and their composition and elements. The scientific views of foreign and domestic scientists on banking technologies have been thoroughly studied, analyzed and author's opinions have been expressed. It also presents the banking technologies used today in the world's banks and reveals their unique features and advantages. In addition, scientifically based proposals have been developed for the effective use of banking technologies and further increase their efficiency.

Keywords: Banking, banking technology, information technology, mobile banking, credit, risk, computer, card, NSDT, USSD, NFC.

INTRODUCTION

At the end of the 20th century and the beginning of the 21st century, that is, at the present time, humanity all the advances in the fields of technology and their software cannot be imagined without supplies. Because don't take any field, technologies are used. It includes everything from nano-technologies to mega-technologies. Today's technological advances have reached remote control and artificial intelligence technologies

There is almost no field where such advances of technological progress have not penetrated didn't stay. Including information, computer, communication, medicine, transport technologies, social spheres (education, medicine, culture, art, etc.) and economy (agriculture, industry, construction, service, transport and (such as communication) networks, as well as in the banking sector is being used.

Intensive implementation of the latest achievements of scientific and technical development of banking activities modernization is impossible without As can be seen from world practice, rapid growth of scientific and technical progress and new information technology (IT). has a significant impact on the overall assessment of the bank's attractiveness. The development of the technological process is not only the formalization of documents and to increase the speed of cash transactions, but also the range of customers also allows expansion [1].

In turn, the development of modern technologies banks and banking distance between users of the service significantly decrease, increase inter-bank competition and therefore contribute to the quantitative and qualitative development of banking services.

LITERATURE REVIEW

IT is developing the bank and their relations, speeding up the activity allows to redesign [2]. Instead, the banking sector internal and external work activities are further developed with the development of IT ongoing [3] and it shows the banking system as the most affected area possible [4]

In other words, the IT industry is developing and growing more and more global competition makes a great contribution to ensure the stability of banks [5]. In general, IT technologies, their use in banking, such elements as software and communication tools are called "bank technologies". In the economic literature and scientific research, "banking technologies" are different views and explanations are given. For example:

According to Dubinin [6], banking technologies are in banks used various telecommunications, information technologies, computer networks, software products,

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internal procedures, risk management models and others.

The term "banking technology" refers to banks providing their customers with safe, reliable and offering better services at low prices and banking services means the use of modern information and communication technologies to achieve a competitive advantage in the market. banking technology, as well as customer demographic, psychographic and transactional data in uncovering patterns of customer behavior by sifting through their details includes the use of modern computer algorithms. This activity, also known as data collection, involves customer segmentation, customer scoring, target marketing, market basket analysis, as diverse as cross-selling, cross-selling, and customer retention modeling to banks to their business goals by solving marketing problems helps to achieve [7]. Also successful in data collection use helps banks significantly increase profits, that's it maintains a stable advantage over its competitors. Theoretical In terms of banking technology, not individual discipline, but financial risks management, information and communication technologies, computer and marketing a combination of several directions that differ from each other, such as knowledge It is formed as a result and its constituent elements are as follows can be expressed as:

1. Information technologies;
2. Communication technologies;
3. Computer knowledge;
4. Finance and risk management;
5. Marketing knowledge

Banking technology from a functional point of view in the researches of R. Vadlamani posited that it has the following three important dimensions:

1. Operation through various delivery channels and payment systems from the appropriate technical means for operation and customer service. The use of related software is one of the banking technologies is a measure.

2. Classification (categorization) of clients and analysis of the market of banking services from modern computer programs for making and solving problems is used. This dimension is for banks to manage the data warehouse and from it allows effective use.

3. Quantification, measurement, mitigation and management is the third important dimension of banking technologies. This measure and manage credit risk, market risk and operational risk covers the process. In our opinion, banking technologies mean implementation of banking activities and a collection of the latest support approaches, methods, tools understood.

RESEARCH METHODOLOGY.

In this study, statistical tables and graphs, analytical comparison, logical and comparative analysis, methods of grouping and foreign and related to the subject the research works of local scientists were widely used.

ANALYSIS AND RESULTS

It should be noted that above about banking technology the concept did not exist before in some sources, that is, today's science and technology it is believed to have been founded during its development.

However, history and scientific studies show that banking technologies although the bank has a simple appearance (form) since its inception existed. This is the stage of technological development and banks. The hierarchy of development is as follows in harmony with the periods of development can be interpreted (Figure 1)

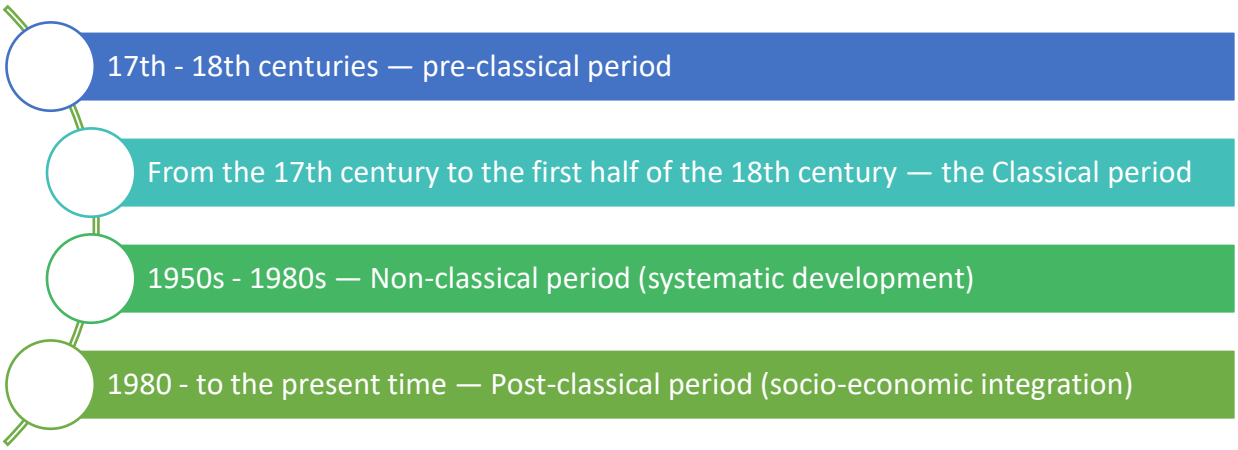

Figure 1. Interdependence of development periods of technology and banking

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[8,9,10,11,12,13]

The Pre-Classical Period. Simple forms of basic banking transactions began to form. Including credit, deposit operations, depositors' calculations between.

Classical period. Banks are only engaged in banking operations It is characterized by the emergence of enterprises and is limited to this transactions formed bank technologies. Also in this period regional and national banking systems were formed, issuing banks appeared, banknotes, transaction accounting systems and document circulation combined.

Non-classical period (period of systematic development). To bank and customer relations started to pay attention. It is also included in banking activities technologies to create a convenient customer service infrastructure, to improve the quality of services, offer new services required by the client aimed at doing. The purpose of introducing new banking technologies is demand to gain a competitive advantage thanks to technological services provided, was to expand the customer base and increase profitability.

Non-classical period (period of socio-economic integration). In this period involves the bank's permanent involvement in the client's life. Banking services first to the complex of financial relations of the client, and then to his economic integrates with all areas of activity. In general, banking technologies of the current era are the client's the maximum level of services as a means of achieving their goals aimed at ensuring availability, reliability and convenience, which is his serves his interests and takes into account his motives. By the bank The introduced technology is a complex bank as a partner of the client aimed at meeting the needs of users of services. It should be noted that in banking and finance in general the historical processes of technological development can be expressed as follows.

That is, the history of technological innovation in finance as a means of payment
started with the appearance of checks (1945). Later, Bank of America produced the first credit card (1958) and financial ATMs in 1967 helped to process transactions, then as a means of operation debit card issued. With the development of the internet in the 1990s "Internet banking" system was launched. In 2000, "Mobile payments" and "Crowdfunding" (fintech) financial technologies were introduced. This shows that "fintech" is a rapidly developing area, and therefore financial it is necessary to review previous studies to reflect the evolution of services [14] (Figure 2).

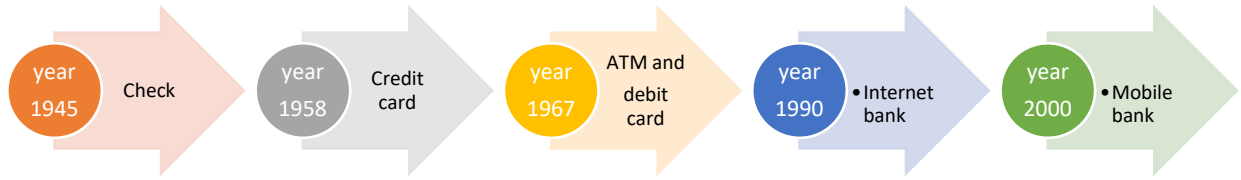

Figure 2. The evolution of financial technology.
Source: Compiled by the author based on a summary of scientific sources.

In recent times, computers have improved to such an extent that it banks can only dream of potential and banking giving great opportunities to its customers. Bringing new technologies to banks The coming changes have a great impact on managers, employees and customers of banks not only showing, but banking products and services than ever before enables more convenient and efficient delivery and thus new competition creates the foundations [15].

Banking technologies for individual transactions and banking as a whole to create a customer service system, to carry out operations a set of tools (including technical tools), for example, plastic cards, including interactive customer service or anything else. Bank automation tools and information systems in the field of technologies, work with modern payment systems, carry out cross-industry interactions increase, management technologies and security system, telecommunications and many other things are

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involved, without which a bank cannot be imagined today.

Banking today is about doing business without banking technology imagining solving any problems and managing processes It won't, because of the pace of decision-making over the past few years requirements have changed dramatically, used in the process of banking operations computer software has improved and data volumes have increased.

The concept of "traditional bank" and the science of the same name are now called "bank technologies" and is becoming a science about them. Because today the bank not theoretical, but practical ways of providing services and their implementation technical means of improvement are in the first place.

That is why banking technologies have an important place in the modern communication world holds They are a set of information and telecommunication technologies. Bank technologies include special computer programs, internal including procedures and various models related to risk management takes. Financial stability of banks with a balanced monetary policy is provided. Ensuring loyalty of account holders and customer base modern banking technologies are being introduced for expansion. So the bank technologies increase material stability, effective impact with customers' methods of analysis of banks' activities that help transfer describes the collection.

In the future, more technologies in the developing and developed world its introduction and use are monitored. Development of technologies will greatly help in the development of the banking sector. Today in the banking system some of the old and new technologies in use are [16] (3-picture).

BANKING TECHNOLOGIES

Automated Teller Machine (ATM)	Video Teller Machine (VTM)
Mobile Banking	Secure Short Messaging Service (SSMS)
Internet Banking	Near Sound Data Transfer (NSDT)
SIM Application-toolkit	Telephone Banking or Interactive Voice Response (IVR)
RFID Technology	Wireless Application Protocol (WAP)
Contactless Payments using Near Field Technology (NFC)	Unstructured Supplementary Service Data (USSD
Mobile Money	Video Teller Machine (VTM)
	Secure Short Messaging Service (SSMS)

Figure 3. Banking technologies used in world banks today [17,18,19,20,21,22]

Automated Teller Machine (ATM). It is an automated teller machine that is a technology used all over the world. ATM to any customers help to be able to cash out when cash is needed gives The PIN code provided by the bank is used to identify the client. To use this service, the customer has a bank account number, must have a debit or credit card. Money is desired in the world can be obtained from the point.

Mobile Banking. Mobile banking is banking provided to customers the latest technologies used in the field. The client has a smart phone, tablet or must be a personal digital device. Windows, Android, IOS and other mobile a program compatible with the operating programs of the phones has been developed. The mobile application is downloaded directly to the mobile device. The client is mobile must have an active Internet connection on the Internet or Wi-Fi network, so that the mobile bank service can be used.

Internet Banking. Customer account through the Internet on his bank account number access to balance inquiry, making payments, money transfers, international money create and update payments, standing order and direct debit payments and will be able to check the latest transactions. To the client website login through a personal computer or laptop and enter your credentials can be accessed from any point. Using the following services on the Internet possible; account balance inquiry, money transfer between accounts, permanent create and update orders and direct debit payments, money transfers, account overview, account history, loan repayment, prepaid including card top-up and password change.

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Video Teller Machine (VTM): a new and innovative service. Customer to customers through VTM for all banking transactions connects remotely to a service representative. All branches of VTM customers offers banking services.

Secure Short Messaging Service (SSMS): SSMS-banking customers' mobile
used to send and receive text messages to their phones. Banks take into account mobile phone numbers of customers go, customers inquire about their bank account numbers can pass. To use the SSMS banking service through the bank, the client owns must register his mobile number. Also happens in the bank account sends a message to customers about each transaction. Transaction is mobile it is done by sending SSMS to the number assigned to the bank service.

SIM Application-toolkit: This allows the client to interact as a standard SIM card with an interactive menu that gives shown. The interaction is between the client and the network, and the exchange is to the client it is done by entering information through an interactive menu and program. Mobile operators to their SIM cards for customers updates over the network or issuing completely new SIM cards possible SIM-based for mobile operators and financial institutions. The biggest advantage of implementing programs is that the application of these firms is in SIM and therefore gives the bank a competitive advantage.

Near Sound Data Transfer (NSDT): This is from any mobile phone Fast, secure and convenient mobile banking service contactless payment technology. NSDT from customer's SMS or USSD technologies but not everyone who wants to make payments to confirm the transaction uses a one-time audio password that is issued each time. NSDT platform allows for secure transactions. NSDT transactions of the customer's cellular connection and fees of dealers or operators through the receiving device. The customer registered the money enters through an agent and the money goes to the virtual wallet. NSDT of all transactions purpose of communication speed and data compression, security and cryptography, is to identify and correct errors and ultimately optimize the sound. Therefore NSDT runs efficient and perfect operations and even can also be used in very noisy environments.

RFID Technology. The bank card is provided with a chip for payment and payment is done by simply placing the card in front of the RFID reader and payment is made automatically.

Telephone Banking or Interactive Voice Response (IVR). Telephone bank is a client after calling the special number provided by the bank information that allows you to interact with the system technologies. Choose different options from the customer voice message system interacts with or can talk to for selection options. Customer with a pre-recorded voice on the designated number for the phone bank should choose the most appropriate option when prompted. Voice prompt system of the client the voice interpreter uses speech recognition. Customer to select an option
It should use simple words such as "yes", "no" or a number.

Wireless Application Protocol (WAP). It is used in mobile banking service technology, the customer accesses the bank's website using a browser on his mobile phone connected via the internet. The customer to their bank account details to be able to access it using a mobile phone that acts as a computer have Client access without the need to download any software will have the right.

Unstructured Supplementary Service Data (USSD). This is the menu and to the specified session have SMS service. This is the standard used by all phone models. Customer to continue as opposed to using sentences to answer must choose from a list of options in the menu. The main advantage of USSD: the client responds quickly by selecting appropriate options from the menu. USSD client, mobile allows to establish a connection between the communication network and the bank. from the USSD service To use the customer's SIM card, the commands are necessary for the service in advance is set with The client is represented by a bank or mobile operator Uses numbers reserved for USSD service. Customer USSD the request begins by dialing the service number, the mobile operator returns the menu. The client chooses one of the available options.

Contactless Payments using Near Field Technology (NFC). It is twofold radio wave communication, as well as the corresponding software smart mobile devices that control and are located in close proximity to each other is a form of mobile communication and wireless payment. NFC is a short range, high frequency technology, exchange of information between these devices at a distance of 10 cm allows. NFC is built on RFID technology. Between devices allowing wireless communication and data exchange. The device is active or passive are modes. Encryption is used to protect confidential data, antivirus and phone to protect the phone if it is lost or stolen lock must be used. NFC technology is mainly in Europe, America and Asia is famous. The purpose of NFC is to make transaction queues shorter and make it faster, carry fewer cards, because a mobile device for payment it is enough to carry it.

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Mobile Money. Mobile wallet, mobile payment and mobile money transfer is called Mobile money service is used all over the world, mainly banking in Africa for those with or without an account. Service with commercial banks provided by partner mobile operators. Mobile money accounts can also be linked to the customer's bank account. Mobile Money service is another way to open a bank account without any problems method. The money in the virtual "wallet" can be used to pay for anything, for example, buying mobile credit, paying bills, are shown products and services. In this case, PIN-code operations are carried out used for checking.

Based on analysis and research, banking technology is unique characteristics and factors affecting its improvement are as follows can be expressed (Figure 4).

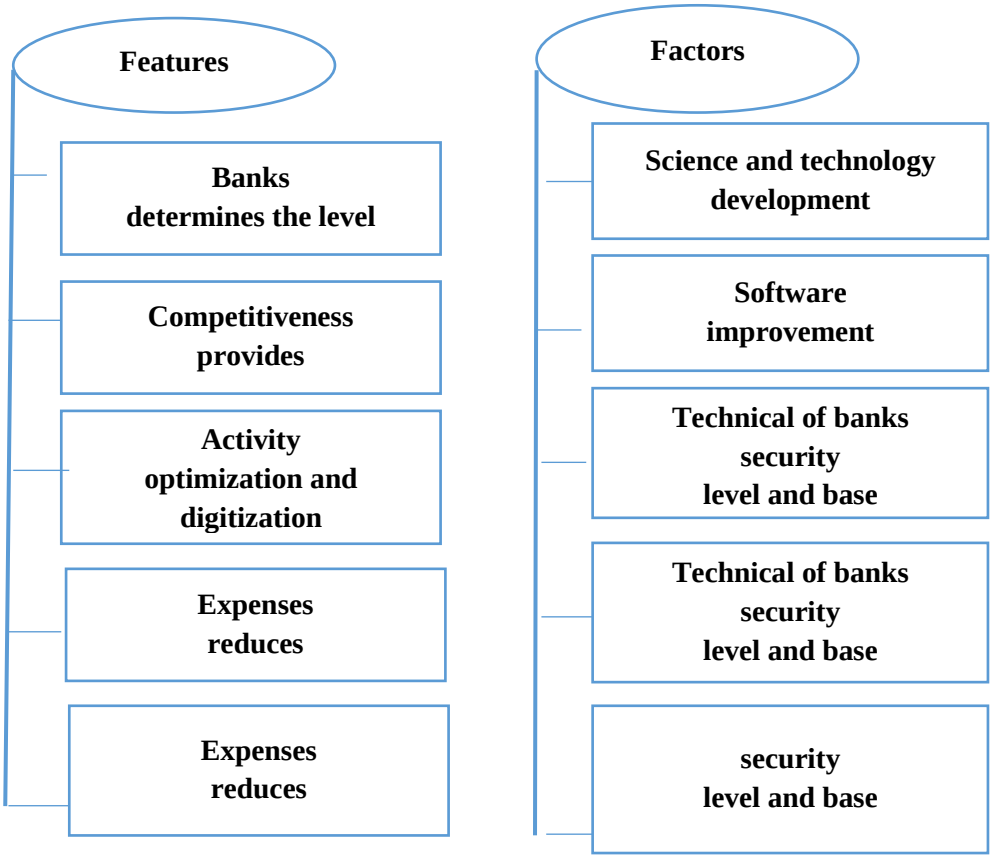

Figure 4. Specific features of banking technologies and its factors affecting improvement.
Source: Author development.

"IT formation of the "managers" group and organization of their effective use fit for purpose.

In addition, in the development of sustainable development strategies the following priorities should be taken into account:

- "IT operation" models to be ready for new competitive conditions update;
- costs through simplification and robotization of the activity system reduction;
- suggestions by studying and analyzing customer needs creation and use of technological opportunities for optimization;
- website and mobile applications with internet and different servers make it ready for continuous connection in any case and everywhere;
- serious attention to cyber-security, but that of the users must not take too much time and not cause inconvenience;
- great attention to continuous improvement of employees' abilities and skills focus and achieving it does not have a negative impact on work using models.

The digital banking system consists of several organizational elements These elements are the same organizationally for the development of activity also play

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a role as influencing factors at the same time (Figure 5).

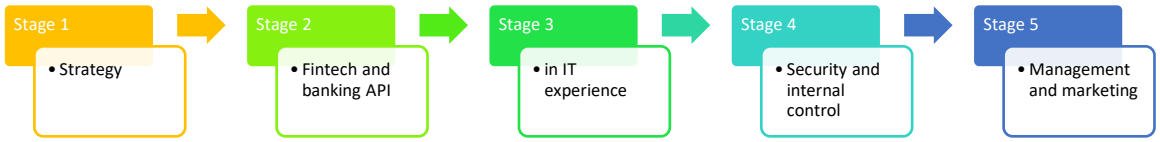

Figure 5. Organizational elements of digital banking system.
Source: Author development.

In general, the organization of currently operating banks can be divided into 3 groups:
1. Traditional banks;
2. Digital banks;
3. Mixed (hybrid) banks.

Banks do not operate in any direction of these groups, especially the bank that is used in digital and hybrid banking technologies include a number of common components or processes and this relationship can be expressed as follows (Figure6).

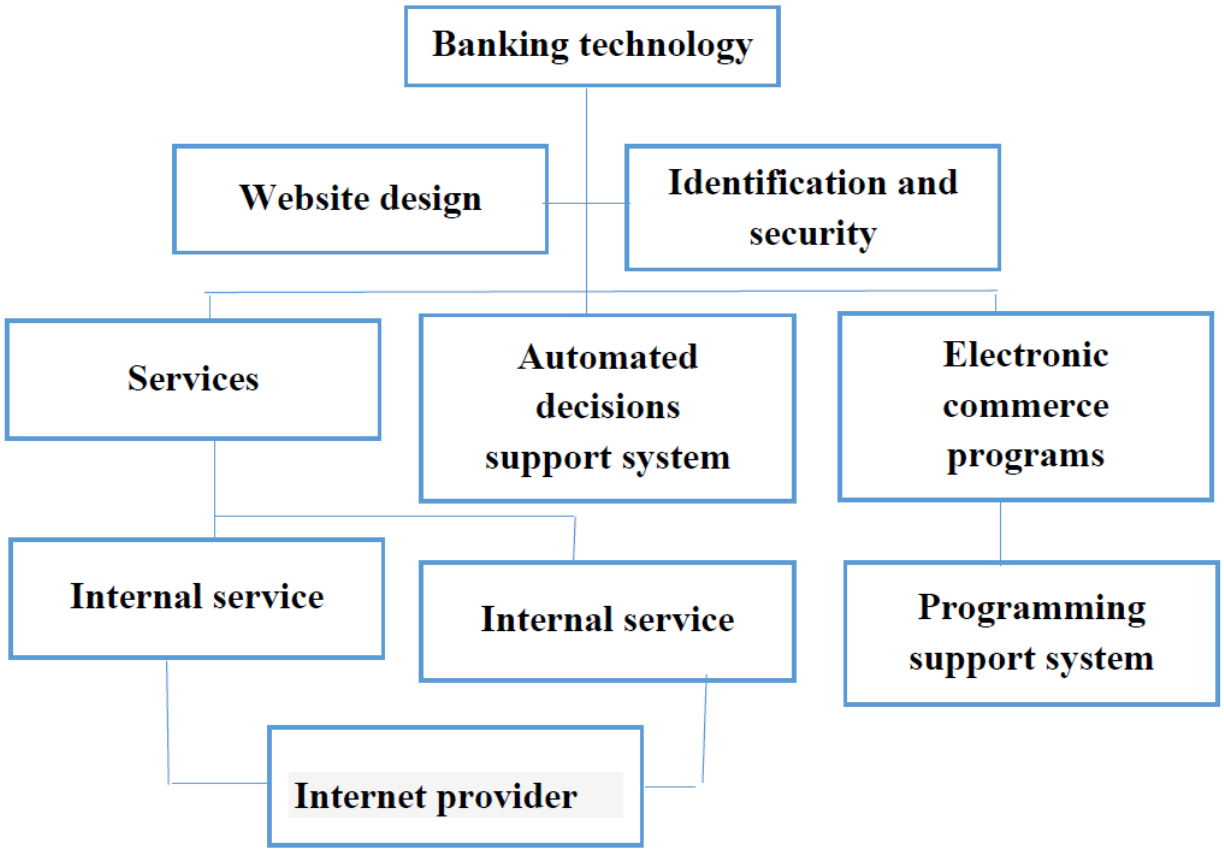

Figure 6. Banking technology components.

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Source: Author development

These components work together to provide digital banking services it works. Each component is the main factor in the systematic functioning of banking activities is important.

CONCLUSION

Based on the research, effective use of banking technologies and it is necessary to take into account the following in order to improve their efficiency will be compatible with:

- further increasing the popularity of banking services, provided digitally innovative digital in order to expand the quality and scope of services address of the central bank on the involvement of technologies in the banking system program development;
- according to the level of banks' use of innovative technologies The association carries out separate rating and promotion work by the bank increase;
- IT companies implementing bank software developing a rating of innovative projects being created by sof formation of competitive environment;
- identification of customers in the provision of bank digital services wide use of biometric technologies in practice;
- wide involvement of artificial intelligence and robot technologies in the banking system, further increase of transparency in banks and optimization of bank staffs achieve a reduction in bank costs through;
- a service with a single application for banking and non-banking services based on banking APIs Integrating platforms to achieve display, multicurrency to the market of banking services of foreign countries through the development of programs penetration etc. In conclusion, it can be said that modern digital information in the banking sector technologies and the use of their software is not only banking provides a competitive advantage in the market of services, but also administrative costs such as reducing, increasing labor productivity, reducing excessive time consumption there are also positive effects. Including analysis of problematic loans and a large number of problem loans based on the automation of work on them allows you to work with it easily and in a short time. For example, repayment terms of principal and interest of loans automatic sending of warning SMS messages, the deletion period has passed automatic and electronic preparation of court documents on problem loans such as sending.

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