
Methods of Assessment of Economical Risks on the Basis of Digital Technologies in the Economy

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Annotation: This article discusses the assessment, prevention and management of financial risks affecting the activities of foreign banks using digital technologies. At the same time, the methods of preventing financial risks using the most modern methods of digital technologies in the practice of international banks are studied.

Keywords: Remote banking services, digital technology, financial risks, artificial intelligence, blockchain.

Introduction

One of the most pressing tasks of a modern commercial bank today is to form a model of consistent development of its ability to provide competitive products and services that increase its reliability. In the context of high variability of the external environment, the complexity of competition, the rapid development of information technology and the globalization of financial relations, the development of banking business makes the formation of its competitive advantages and their effective management one of the priorities of commercial banks¹.

In accordance with the Decree of the President of the Republic of Uzbekistan dated March 23, 2018 No 3620, in order to increase the popularity of banking services, banks have set a number of tasks, including: promoting initiatives to develop modern and advanced banking services, introduction of new information technologies and other functions are defined.

In addition, the Resolution of the President of the Republic of Uzbekistan dated February 17, 2021 "On measures to create conditions for the accelerated introduction of artificial intelligence technologies" was adopted².

The list of pilot projects for the introduction of artificial intelligence technologies in 2021-2022 was approved, which will increase the effectiveness of monitoring the activities of commercial banks in the banking sector and simplify their compliance with regulatory requirements (SubTech and RegTech), as well as banking services. quality analysis, remote biometric identification of users (Face-ID), and applications for credit risk assessment.

Our country has set many tasks aimed at the introduction of artificial intelligence technologies, their widespread use, expanding the use of digital data, training qualified personnel in this field, in short, the development of the industry at the level of world standards.

¹<https://finance.uz/index.php/uz/fuz-menu-biznes-uz/5103-tijorat-banklari-raqobatbardoshligini-oshirishda-kayzen-boshqaruv-tizimini-qollash-imkoniyatlari>

² https://www.norma.uz/qonunchilikda_yangi/uzbekistonda_suniy_intellekt_tehnologiyalari_joriy_etiladi

It is the adoption of this decision that today in international banking practice the use of this nanotechnology in the banking sector is identified as the most important task in the strategy of development of digital technologies in banks of developed countries.

In particular, strategies for the development of artificial intelligence have been adopted in more than 30 countries, including the United States, Germany, Japan, France, Korea and Canada. The resolution of the President "On measures to create conditions for the accelerated introduction of artificial intelligence technologies" is also in line with the strategy "Digital Uzbekistan - 2030" and the rapid introduction of artificial intelligence technologies and their widespread use in the country, expanding the use of digital data. was accepted for training.

In carrying out the tasks assigned by the resolution, it is important to study in depth the new innovative banking technologies used in world banking today, to consider their introduction into our banking system.

Literature review

Many scholars have conducted research and provided their views on the theoretical aspects of the prevention, assessment and management of financial risks affecting its activities in the banking sector through the use of digital technologies, ie new innovative technologies. In particular, the role of digitalization, which is a key factor in the development of the world economy in modern conditions, is growing, as it is important to replace the competitiveness of some countries with innovative banking technologies as a means of creating digital financial systems³.

In the long run, the policy of continuous innovation and innovation in the world economy should be a key factor of stability and high competitiveness, which requires banks and other market participants to develop a model and strategy of their financial actions. Thus, as countries become more involved in digital banking, this type of banking activity is on the rise, and digitalization is now a key vector of global development.

Today, the most important direction of economic development of different countries is the transition to an industrial economy, which includes changing various forms and methods of high-tech services to consumers. It should be noted that the concept of digital economy has not yet been clearly defined in the scientific literature.

The emergence of the digital economy in the mid-twentieth century was the main reason for the "Internetization" of society. Therefore, the process of expanding access to data and the ability to perform certain operations can be the basis for the concept of the digital economy in the literal sense. As a digital economy, we understand the integration of industries related to the creation of new technologies and the development of robotics, which use digital platforms, new technologies, robotics, smart technologies, etc⁴.

Some scholars believe that once banks realize that they are hindering the realization of the potential provided by new digital technologies for business development, they are investing heavily in banking technologies that are suitable for their business models. They believe that this situation will not only serve to increase the source of income for banks, but also increase the risks affecting them⁵.

One of the biggest challenges researchers face with banking in the digital age is the rapid response to this market. The ever-evolving market in which banks operate requires them to be

³Катасонов В. Цифровая трансформация мировой экономики. URL: <http://russnov.ru/valentin-katasonov-cifrovaya-transformaciya-mirovoj-ekonomiki-11-02-2017/>

⁴Китай станет лидером цифрового рынка в 2018 году. URL: <https://investfuture.ru/articles/id/kitay-stanet-liderom-cifrovogo-rynka-v-2018-godu>

⁵<https://www.wowso.me/blog/technology-in-banking>

maximally flexible. They need to provide resources in the enterprise in a timely manner to solve business problems faster. Resources that are not provided in a timely manner can lead to different types of risks⁶.

At present, risk analysis and management is an important part of strategic management of banks. Successful risk management necessitates their objective assessment. The Bank needs to be aware of the risks involved and the extent to which it is prepared for them. In the context of market relations, the problem of risk assessment affecting the activities of banks is becoming increasingly important⁷.

For example, blockchain may not be a priority for many industries today, but banks and financial institutions have great advantages in implementing them. Therefore, the financial services industry considers them as high-priority investments.

According to some scientists, if digital technologies penetrate the main directions of the whole industry, what will prevent banks, especially the retail sector, from adapting to this trend? Risks related to cybersecurity and data privacy are among the main problems associated with the digital transformation of banking, the next problems being explained by the high cost and complexity of technology migration and the lack of qualified professionals.

Banks should not ignore these problems, in a modern management system, banks will need to turn to IT departments to take advantage of revenue growth opportunities. As with any structural change, the digital evolution of the banking system also requires a firm and comprehensive strategy. To build this system, banks and financial institutions need to focus on the following key elements:

- redefining the procurement path;
- creating a reliable partner ecosystem;
- investing in promising technologies and preventing risks.

In order to minimize banking risks through digitalization in the banking sector and increase the positive impact of innovative products on the activities of credit institutions, it is recommended to gradually introduce digital technologies, master the relevant industries, increase the pace of product improvement. In addition, the development of data security technologies is important.

Numerous studies have analyzed the growing competition between banks where IT is widely used in all modern banks. When talking about the bank of the future, we often demonstrate the type of virtual organization that is always able to be close to the customer and meet all his needs for financial services, as well as quickly and efficiently. The bank of the future is impossible without high technology. We already see that information technology has a very strong impact on all aspects of banking life. Some experts say that banks are becoming IT companies with a banking license. In our country, as in the rest of the world, technology is becoming a decisive factor in attracting customers.

The above research concludes that while digital technologies entering the banking sector today are used in all their operations to increase revenue, service quality, customer banking, competitive advantage, the second important aspect is to increase the risks posed by them. determines the need for attention.

⁶<https://novainfo.ru/article/13346>

⁷ Елесина К. Д. Новый взгляд на оценку финансового риска компании [Электронный ресурс] // Экономика и менеджмент инновационных технологий: научно-практический журнал. 2016. № 6. URL: <http://ekonomika.snauka.ru/2016/06/11455>

Analysis and results

The share of the digital economy in the narrow sense is about 5% of world GDP, in the literal sense the share of the digital economy is 22% of world GDP. The most "digital" economy in the world today is the US economy. In the U.S. economy, a third of GDP (33%) is affected by digital technology, and a large portion of the U.S. financial sector (60%) is shifted to digital technology, making the U.S. financial sector the most digital in the world. In 2018, the expected revenue of the digital market in China (V2S) is 765 billion. The U.S. dollar has put the country at the forefront of the world market. In 2018, digital market revenue in the U.S. will reach \$ 698 billion. USD and 5 European countries (Germany, Great Britain, France, Italy, Spain) and 434 bln. Was equal to the U.S. dollar.

Almost 50-60 percent of these digital technologies have been used in the banking sector. Today, the banking practice of developed foreign countries shows that innovations in the activities of commercial banks are changing day by day. The widespread use of online services in banking is considered to be the norm. Of course, online services include Internet banking, Mobile banking, SMS banking, TV banking, ATM banking and many others. Many of these services have long been used in the activities of our local banks.

Japanese banks are the most advanced in this regard, and today they offer more than 300 types of banking services.

Banks in the United States, the United Kingdom and Germany also provide more than 120 services. The most successful commercial banks in the CIS provide up to 80 types of banking services. Revenues from banking services have become one of the main sources of resource base formation.⁸

The level of digitalization of the Russian banking sector is currently quite high and in practice it is trying not to lag behind the most developed countries in the world. According to the analysis, 86% of Russian banks are already implementing a digital transformation program, the level of digitization of the domestic market lags behind this figure by 23%, and it is 63%.

The average amount of investments that banks send to digitalization programs over three to five years is 55 billion rubles a year. According to a survey conducted in 2019, banking operations are the most popular online service: 61% of respondents often conduct banking operations through digital channels, while the majority of respondents using this service are between the ages of 18 and 24 (77%).

Over the past 4 years, the activity of the population in the use of digital channels in the banking sector has increased. Thus, while in 2015 the share of customers using remote access to bank accounts was 19.6%, in 2018 this figure increased 2.3 times and amounted to 45.13%. In 2019, the share of the population using the banking program will exceed 50%, while in 2020 this figure is projected to increase by 75%.

Prevention of financial risks in the banking sector through the use of digital technologies has also increased the possibility of direct solutions. At present, the retail service of banks is facing various challenges. Fixed low interest rates are likely to rise, but this situation is having a serious impact on banks' earnings flows in Europe and the United States. Innovations are changing the payment platform and the number of aspirants to moltex startups and banks is increasing, leading to increased competitive pressure and more complex customer demands.

For any retail bank to survive this transformation period, it must modernize its tactics and use

⁸ <https://finance.uz/index.php/uz/fuz-menu-biznes-uz/5103-tijorat-banklari-raqobatbardoshligini-oshirishda-kayzen-boshqaruv-tizimini-qollash-imkoniyatlari>

new technologies. It is not enough to just replace old systems; embarking on a journey of digital transformation means bottom-up disruptions in the banking business model, culture, and customer relationships.

Adoption of digital technologies offers banks tremendous opportunities to increase efficiency, simplify processes, and improve the customer experience through innovation and other benefits. Some of the largest banking institutions in the world have begun to develop corporate software to take advantage of these values.

Last year, Lloyds Banking Group announced a three-year, € 3.35 billion digitalization plan that includes a complete technological restructuring of the bank and an organizational restructuring with thousands of employees. Another leading bank, HSBC, has pledged \$ 17 billion to invest in digital initiatives by 2020 to improve digital offerings for corporate customers⁹.

Based on the data obtained, the share of banks in the simplification of customer travel was 57%, while the forecast was to be 61%. Similarly, the volume of work done on other indicators was less than forecast.

Despite the clear advantages of digitalization, the banking sector has traditionally resisted change, as evidenced by recent PwC analytical data. The head of consulting found in the Financial Services Technologies 2020 report that 81% of bank executives are concerned about the pace of technological change - more than any other industry. However, at the same time, they understand that digitalization is the most creative force in banking today, and they need to change business models to accept this.

Fig 1.

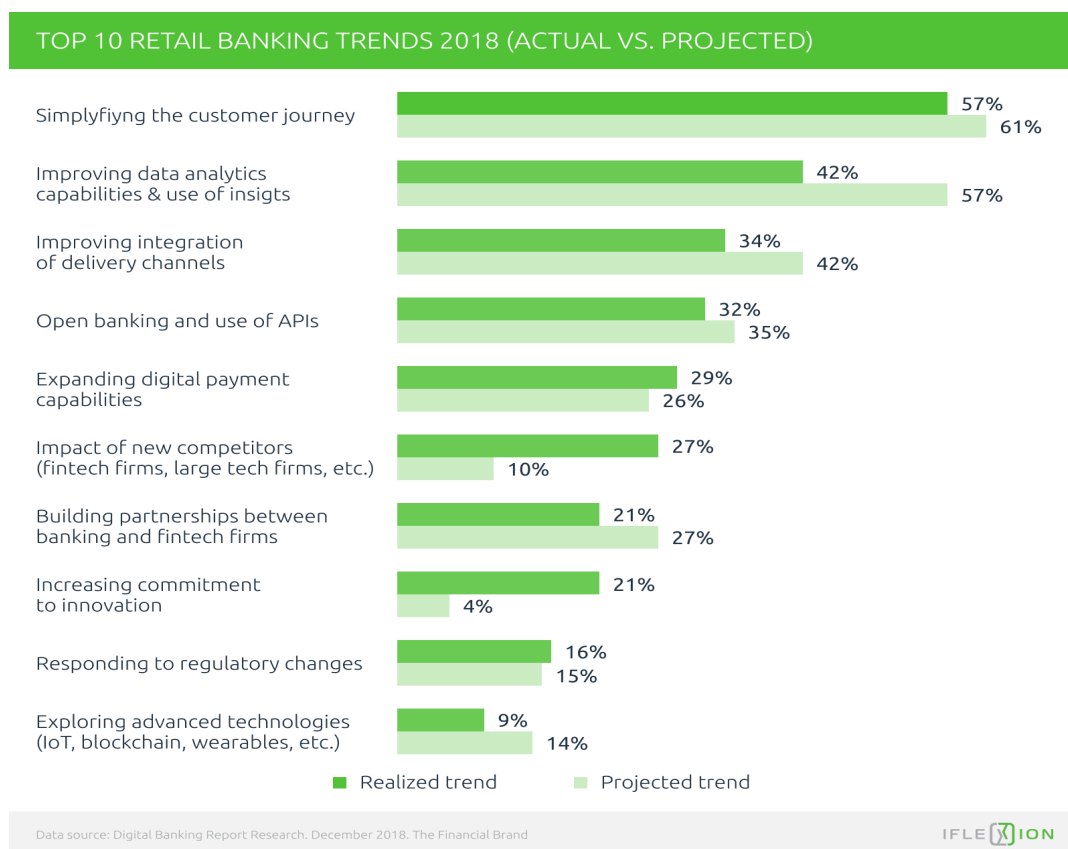


Figure 1. Top-10 trend of implemented and forecasted retail banking services¹⁰.

⁹ <https://www.happiestminds.com/whitepapers/digital-transformation-in-banking.pdf>

¹⁰ <https://www.fintechmagazine.com/top10/top-10-digital-banks/bnp-paribas>

The following banks are currently among the most digitalized: BNP Paribas (France) is the eighth largest bank in the world in terms of assets. The company's business development plan for 2017-2020 is aimed at significantly increasing investment in technology to \$ 3.2 billion. "Our customers are increasingly wanting to make transactions online, not face-to-face," he said.

JP Morgan Chase (USA) has the largest budget among the world's leading financial institutions. According to Research and Markets, the company spent \$ 10.8 billion on technology spending in 2018, of which \$ 5 billion went to moltext investments. As part of the digital transformation roadmap, JP Morgan Chase's mobile communications are regularly updated to reflect consumers' demand for personalization and ease of use; the firm often works with financial technology executives to stay at the forefront of technological change; and it is engaged in research, investment and technology development in areas such as blockchain, artificial intelligence, big data, cloud and robotics.

Spanish banking giant Santander announced in April this year that it would invest 20 billion euros in technology over the next four years, significantly increasing its share in the transformation effort. Through its investment strategy, Santander is expanding its customer-oriented digital offerings in many areas, including: the introduction of an international open market payment service called Pago FX; expanding Getnet, a Brazilian subsidiary, to provide a global trading services platform; and a platform that facilitates international trade for SMEs¹¹.

In April 2018, HSBC invested \$ 2.3 billion in global digital capabilities between 2015 and 2017, according to the South China Morning Post. HSBC has also allocated \$ 200 million to invest in moltext capabilities. In 2019, the investment results were clear to both retail and corporate customers.

HSBC has added SWIFT's Global Payment Innovation (GPI) service to HSBCnet's payment tracking feature, allowing customers to access their accounts using biometric security options such as fingerprints and facial identifiers, and launching an app called MyDeal, which increases data collection from capital market transactions.

Changes in the digital banking system include the integration of data, advanced analysis and digital technologies in all areas of the financial institution, changes in working methods, priorities and the provision of services. The digital transformation requires not only technological innovation, but also cultural change that resists old processes, encourages innovation, and re-imagines all aspects of risk and reward.

For any new information technology introduced in the world banking practice, banks spend a lot of money to ensure their security. Because any system that is created can lead to a loss of customer confidence under certain external influences. Therefore, ensuring the safety of any new technologies involved by banks is a priority.

In 2019, Russia became the leader in banking virus attacks. This is confirmed by data released by Kaspersky Lab on April 16, 2020. According to the statistics collected, more than 30% of users worldwide who have been exposed to bank Trojan attacks have lived in Russia. Germany ranks second in the distribution of such malware (7% of the total), followed by China in the top three (just over 3%).

In 2019, about 774,000 users of Kaspersky Lab were attacked by bank Trojans. While more than 35 percent of them belong to the corporate sector, in 2018 the figure was 24.1 percent.

The financial sector accounted for 44.7% of attacks globally, up from 51.4% in 2018. In 2019, the share of attacks on payment systems and online stores was 17% and 7.5%,

¹¹ <https://www.fintechmagazine.com/top10/top-10-digital-banks/banco-santander>

respectively, which is approximately equal to 2018. Apple said the share of financial phishing attacks faced by computer owners has dropped slightly to 54%.

According to Kaspersky Lab, in 2019 the number of users of Android devices attacked by banking viruses decreased from 1.8 million to 675 thousand a year earlier. Most often, these users have been attacked in Russia, South Africa and Australia.

Fighting targeted attacks has become the most pressing issue in the last few years. In the event of a successful attack, the losses can be measured in tens or even hundreds of millions of rubles, so banks are actively investing in modern means of detecting attacks in the early stages.

Almost all solutions lead to an increase in operational costs for information security, as cyber attack detection tools require further operational analysis by experts. This is also due to the growing interest and investment of banks in the creation and development of cybersecurity centers Security Operations Centers (SOCs), which meet the operational efficiency requirements of information security departments of banks.

According to the Russian state Sberbank, the losses from cyber attacks in the country amounted to about 650 billion rubles, and every year, the number of incidents continues to grow. Inspections by the Central Bank of the Russian Federation show that no bank in Russia fully meets its requirements in the field of information security. In 2018, the Central Bank announced a standard that normalizes the interaction of banks with the Center for monitoring and responding to computer attacks in the field of credit and finance.

Studies show that only 25% of banks in Russia use digital innovations in conjunction with cybersecurity tools. 44% of banks are limited to infrastructure protection¹².

Varonis analysts analyzed 4 billion files from 56 financial institutions (banks, insurance, investments) around the world based on a random selection of the results of a cyber-risk audit (Data Risk Assessment).

It turns out that the average employee of a financial institution has 13 percent of all information stored in the company. This means that even employees of small organizations have unlimited freedom to view, copy, move, modify and delete data for more than half a million files, including almost 20% of all files containing confidential information about employees and customers.

However, as the size of the company increases, the number of files available for all files will double. The largest financial institutions have more than 20 million files for any employee.

Based on the data in the report, on average, financial institutions have about 20,000 folders for all employees. It takes 6-8 hours in each folder to find global access and delete it manually, i.e. manual access level correction takes 15 years. This creates an opportunity to increase the risk.

Participating in initiatives such as fast payments and digital citizen profiles, as well as the creation of partner ecosystems based on them, requires new approaches from banks to cybersecurity. The use of encryption, blockchain, machine learning and analytics is expected to improve information security measures in the coming years.

As a result, more than 50% of security alerts are processed automatically and in real time using artificial intelligence. If we look a little further into the future, behavioral biometrics and quantum information encryption technologies will be used to ensure cybersecurity.

As noted above, the digital transformation increases the quality and speed of interaction between consumers of financial services and financial institutions, but at the same time poses

¹² <https://www.tadviser.ru/index.php>

additional risks.

According to some researchers, the main security risks in the field of credit and finance include:

- undermining confidence in modern financial technologies, leading to financial losses for consumers of financial services;
- occurrence of financial losses that may have a decisive impact on the financial condition of individual financial institutions;
- disrupting the operational reliability and continuity of financial services, damaging their reputation and leading to increased social tensions;
- leading to the development of a systemic crisis when information security-related incidents occur as a result of cyber attacks on organizations that are important to the financial market.

When talking about banks' IT security issues, local experts often mention tasks such as data protection, anti-fraud and targeted attacks. The goal of an organization's digital transformation process can be to improve the customer experience, reduce costs, simplify operations, increase flexibility, or increase profitability, or any combination of these goals.

In any case, the transformation of digital banking undermines the business models that have been the foundation of the organization for decades. That's why it's so hard to do a digital banking conversion - it's nothing more than delivering the same product in a new product.

Conclusion

Based on the above analysis, the following conclusions were drawn:

- Increases the ability to prevent, assess and manage risks affecting the banking sector through the application of digital technologies.
- In order to minimize banking risks through digitalization in the banking sector and increase the positive impact of innovative products on the activities of credit institutions, it is recommended to gradually introduce digital technologies, master the relevant industries, increase the pace of product improvement.
- Fast payments and the creation of profiles of digital citizens require new approaches from banks to ensure cyber security. It is recommended to use encryption, blockchain, machine learning and analytics to improve information security measures in the coming years.
- In order to prevent financial risks affecting banking activities, banks today need to create "bank stacks" that allow customers and third-party service users to become a connected platform to provide flexible and personalized experiences. To do this, the bank can use API platforms. The API Banking platform is designed to work through an API located between the bank's internal execution and an interface provided by the bank itself or a third party. This allows banks to introduce completely new business models and experiment with new technologies such as job use (e.g., high-wage delivery) and low-cost blockchain. APIs also help banks manage the future of their systems.

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