

# *Trends in the financial technologies development during the economy digitalization*

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**Abstract** — The goal of research is to consider the main trends in the financial technologies development and to analyze the reasons for their active penetration into the financial services sector. The evolution of financial technologies development is considered and it is concluded that there is a significant expansion of their scope. The factors affecting the financial technologies development are named. The world practice of regulating the financial technologies sphere is analyzed. It is primarily aimed at supporting the development of educational projects in this area, as well as stimulating the establishment and functioning of technology companies. The problems that constraint to the financial technologies expansion in the Russian Federation are identified, and recommendations for their solution are given.

**Keywords** — *financial technologies, digital economy, digitalization, financial services.*

## I. INTRODUCTION

The technological innovation expansion increasingly covers various areas of activity and changes the face of the modern state every year. The use of financial technology has an impact on the development of the manufacturing sector, the social sphere and the well-being of the population.

The use of financial technology is a hallmark of the global financial system at the current stage of its development. Central and local authorities, organizations (primarily financial and credit ones), and citizens are interested in their expansion, since digitalization makes it possible to increase the efficiency of resolving emerging issues, accelerate the promotion and availability of services, and increase financial literacy.

Digitalization leads to the transformation of public life, since the basis of this process is the active introduction of financial technologies, products and services (fintech) into financial relations. New financial technologies can change the vector of development of the economy and the state as a whole. The legal environment formation for their use will reduce the risks of the financial sector and the economy as a whole, and a transparent tax regime for operations with them will help to increase tax revenues to the budget.

Thus, the goal of research is to consider the main trends in the financial technologies development and to analyze the reasons for their active penetration into the financial services sector.

## II. METHODS

The research was conducted using a systematic approach through the generalization and systematization of theoretical ideas on financial technologies development presented in the studies of Karpov D.P., Maslennikov V.V., Pertseva S.Yu., Solomonova Sh.Z., Katyayani J. And Varalakshmi C., Iman N., Haberly D., MacDonald-Korth D.

Analysis of statistical data was performed using materials from surveys of the Economic Commission for Europe, researches by international companies McKinsey & Company, Ernst & Young EY, Global Findex.

## III. DISCUSSIONS

The era of artificial intelligence and financial sector digitalization introduces various digital tools in banking products and services [1]. In modern studies on the financial system digitalization, fintech is considered as:

- Internet banking, mobile banking, ATMs, cash registers, immediate payment service, online trading in stock markets, online money transfers, electronic wallets, collective lending, blockchain technology [1].
- a dynamically developing segment at the financial services and technologies sectors intersection, in which technology startups and new market participants apply innovative approaches to traditionally provided financial products and services [2, P. 48];
- innovations in financial services [3, P. 111];
- application of technologies in the financial industry [3, P. 111];
- set of startups, technology companies, financial institutions and infrastructure players [4, P. 6];
- modernization of traditional areas of financial and other services through technologies into innovative products and services for end users [5];
- a dynamically developing segment at the financial services and technology sectors intersection [6, P. 50];

- new high technologies (information, communication, identification technologies) that allow managing cash flows without the assistance [7, P. 41];
- the financial industry that uses technology to improve financial performance [8, P. 109];
- technologies and platforms that make services and products in the financial industry more accessible and efficient to more people [9].

Thus, modern approaches to the study of the “financial technology” definition consider them as innovative technologies and solutions used in the process of traditional financial transactions.

Prerequisites for the financial technology development are:

- the expansion of innovative technological solutions and the effort of banks to establish partnerships with technology companies [10];
- mass transfer of bank customers to remote service channels;
- increasing consumer demands for speed, quality and personalization of financial services;
- banks' loss of a monopoly on the provision of traditional (payment and other) services, as well as the strengthening the role of non-financial organizations in the financial market [5].

Digitalization of financial services is an evolutionary process of the financial system development, in which several stages can be distinguished:

- the first stage – the fifties of the last century, is associated with the emergence and active distribution of bank cards;
- the second stage – the sixties of the last century, was characterized by the beginning of the ATMs active introduction, which made it possible to use banking services outside the bank offices;
- the third stage – the seventies of the last century, was marked by the creation of electronic trading platforms that contribute to the automation of operations in the securities market and the simplification of financial transactions;
- the fourth stage – the eighties of the last century, associated with the creation of special electronic means of processing banking information;
- the fifth stage – the nineties of the last century, was characterized by the emergence of a special ecosystem, combining innovative solutions and technologies in the field of financial services and products;
- the sixth stage – the two thousandth, meant the massive expansion of Internet technologies, robotics, the emergence of Internet things (the introduction of embedded technologies in physical objects in order to interact with each other and the external environment).

The evolution of digitalization development stages indicates a significant expansion of its scope, which leads to the emergence of qualitatively new requirements for the economic system, its institutions and society as a whole [2, P. 48].

According to a research conducted by experts from Ernst & Young, in 2016 the global volume of electronic payments amounted to about \$9 trillion. Russia accounted for about 1% of the global market, while the annual growth of the Russian market is 20% with a global figure of 12%. In 2016, the volume of the Russian market of innovative financial technologies in the segment of payments and transfers amounted to about \$87 billion. This segment will continue to grow by an average of 31% per year and will reach \$14.9 trillion by 2035. The level of financial technologies penetration in Russia in the segment of payments and transfers will be 96.3% by 2035 [11].

According to Global Findex research conducted by the World Bank in 2017, 62% of the world's adult population had an account in a financial institution. In Russia, the number of people with an account in a commercial bank exceeded the global average and amounted to 67% of the adult population [12].

It should be noted that about 2 billion people in the world do not have access to banking services. Therefore, the development of digital financial services, which are an alternative to expanding branch networks of credit organizations, reduces bank costs and creates convenient channels to access financial services for consumers, regardless of their location.

The most popular are financial technologies in the area of money transfers, payments and lending. These operations are especially demanded by the population of those countries in which the availability of financial services is limited due to the lack of sufficient financial infrastructure, the establishment of which requires considerable time and investment. The increasing availability of Internet resources every year contributes to the expansion of mobile technologies that can provide quick and convenient user access to financial services.

Demand for financial technologies is also formed by those consumers of traditional banking services who are not satisfied with their quality, rapidity and cost.

So, according to a survey of five thousand bank customers in six European countries, conducted by the Sopra Banking Software technology company, 78% of respondents find it important to introduce innovations in banking services, 58% would like to go to a bank offering the most advanced technologies, and 46% are ready use the services of non-traditional banks.

Thus, consumers who are dissatisfied with the current level of traditional financial services, form a demand for digital financial services, encourage banks to invest in the financial technologies development that meet the needs of customers, and to develop partnerships with fintech services developers.

The use of financial technology allows to expand the geographic coverage of financial services users through

the remote service channels development, reduce the cost of financial services, accelerate the launch of new financial products on the market, improve the financial accessibility of people with limited mobility, ensure transparency of cash flows, and increase the opportunities for information, consultation and customer support.

A research conducted by specialists of the Digital McKinsey global expert group confirms that as a result of end-to-end digitalization of key processes in a traditional bank, the cost of services is reduced by 40-60% [10]. At the same time, bank customers receive benefits in the form of time reduce required to receive a service, a decrease in the number of documents issued. For banks, the advantages of digitalization include the customer base expansion.

These undeniable advantages indicate the need for further development of financial technology.

The potential for using financial technologies around the world tends to increase, as evidenced by their forecast parameters for 2020, according to which:

- - the proportion of bank customers who use the mobile banking service will reach 35-50%;
- more than a half of financial institutions plan to invest in digital technologies to develop their business [11].
- more than 80% of financial institutions plan to expand partnerships with companies - developers of financial technologies [5].

The financial technologies development is influenced by the following factors:

- the increasing expansion of Internet resources, expanding the range of potential users of financial business and services;
- technological advancement and changing consumer preferences that stimulate the technological transformation of financial products;
- population dissatisfaction with traditional banking services;
- insufficient level of financial services accessibility.

All this contributes to comprehensive changes, which are the basis for the financial technologies implementation.

The success of financial technology development largely depends on state regulation of this area. In this regard, it seems interesting to review the world experience in regulating and implementing fintech support measures.

For example, in the UK, government support measures for the financial technologies development are aimed at human capacity building and developing digital-only banks. Since 2009, there has been a government program aimed at stimulating the study of natural science subjects (STEM - Science, technology, engineering mathematics) in schools and an open official database has been established with access to information on the environment, transport, and health care. Online training programs of digital technology application in business are actively used.

California and New York are financial technology development centers of the United States. New York is one of the active centers of asset management based on the financial technology use [13].

In California, the expansion of financial technology is facilitated by the established relationship between educational institutions and the business community, and the California Fintech Network has an extensive network of business contacts in the financial technology.

A ten-year tax exemption of newly establishing and expanding organizations based on educational institutions contributes to the financial technologies development stimulation in New York. To support innovative business, the Startupbootcamp accelerator and the FinTech Studios electronic platform help to promote financial technologies.

In Singapore, at the initiative of the Monetary Authority of Singapore, an innovative laboratory was created, which is a mechanism for pilot implementation of new financial technologies and services. Modeling of the innovative financial services application is performed to test hypotheses on positive effects of its implementation at the laboratory site. In addition, the laboratory provides professional advice on all issues related to the use of new financial technologies.

In Hong Kong, in 2015, a special group working on stimulation of the financial technologies development (FinTech Steering Group) was established, consisting of government, business community and research institutes representatives. In addition, Beijing, Shenzhen, Shanghai stand out as promising "capitals" of China's financial technology. So, in Shanghai, a platform for contacts and communication of representatives of business and scientific environment in the "Chinafintech" has been created [16].

Thus, as foreign experience shows, the financial technologies implementation is supported through the development of educational projects in this area, as well as the creation of comfortable conditions for startups and small businesses.

#### IV. CONCLUSIONS

The digital technologies introduction in the economy and social sphere is one of the national development goals of the Russian Federation [14]. The Russian Federation is consistently ranked in the top 50 of all major international digital development ratings [15]. The financial technologies development is performed in the context of the Digital Economy of the Russian Federation national program. Subject to the provisions of the national program, the Bank of Russia has developed and is implementing the Main directions of financial technologies development for 2018-2020, among which are:

- 1) Regulatory environment of financial technologies (development of standards for digital services);
- 2) Development of financial technologies in the financial market (biometric identification, robotics, Big Data and Smart Data);
- 3) Establishment and development of financial infrastructure (financial marketplace, quick payment system);

- 4) Establishment of a regulatory platform ("regulatory sandbox");
- 5) Ensuring security and sustainability in the financial technologies application;
- 6) Personnel training for financial technology.

According to a research conducted by the Ernst & Young consulting company, Russia ranks third in the world in terms of financial technologies penetration, they are used by approximately 82% of Russians. China and India were the leaders in that regard, in which 87% of residents use financial technology. The penetration rate of financial technologies in Russian megacities is 43%, with an average rate of services penetration in the world of 33%. At the same time, the penetration rate in China is 69%, 52% in India, and 42% in the UK [17].

In the field of state regulation of financial technologies, it is important to adhere to a balanced approach, ensuring, on the one hand, the creation of an enabling environment for the development and dissemination of innovative solutions, and on the other hand, the control and minimization of risks arising from the use of financial technologies, especially for the population.

Government regulation of the financial technologies development should be performed in three directions:

- support for new technological solutions and their pilot use at the regulatory site;
- government programs and initiatives aimed at reducing barriers in the industry, developing competition and supporting the activities of fintech companies in the domestic market;
- tax incentives for technology companies developing fintech solutions.

Despite the dynamic expansion of financial technologies in the Russian Federation, their development is constrained by such problems as:

- low level of financial literacy of the population;
- uneven development of the infrastructure allowing the use of financial technologies, its concentration in megacities and its almost complete absence outside them;
- low level of public confidence in financial technology;
- the increase of cyber threats, requiring prompt and timely detection and adoption of appropriate measures to prevent them and minimize possible consequences;
- insufficiently operational improvement of regulatory environment in the field of financial technologies;
- lack of specialists in innovative financial and information technologies.

The implementation of the following measures will contribute to the solution of these problems in our country:

- continued implementation of financial literacy programs for various categories of the population;

- development of training programs in financial technologies for representatives of financial organizations, students of educational institutions of higher and secondary vocational education, students in schools with the aim of involving these population categories in new technological solutions;
- completion of industry standards and rules system that establish requirements for ensuring technological stability, uninterrupted operation and security of the use of financial technologies.

The prospects for our further research are in the search for ways to implement the measures listed above that will provide a comprehensive solution to the problems that constraint to the financial technologies expansion.

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