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Formation and development of FinTech in Ukraine

Abstract

The *purpose* of the paper is to analyze the theoretical situation and current state of the domestic FinTech market, as well as conducting a SWOT analysis of the domestic FinTech market and determining its strengths and weaknesses, opportunities and threats. *Methodology*. The theoretical and methodological basis of the study are modern theories of market economy. During the study the following methods were used: inductive, deductive, analysis and synthesis, historical and logical, graphic. *Results*. Scientific approaches to understanding the essence of the term FinTech were assessed. The multifaceted and versatile content of the term "FinTech" caused various differences and peculiarities in the definition of this category in scientific sources. Scientists interpret FinTech as innovative technologies and business models, as technologies, industries, services, etc. However, each of the presented definitions traces their main feature, which is that FinTech really cannot work without digital technology. The origin of the term FinTech, which is a relatively new industry not only in Ukraine but also all over the world, was investigated. It has been established that the term emerged in the economic literature in the early 1990s, when the Internet began to develop. The growing popularity of FinTech began in 2008, when the global financial crisis and its consequences forced financial companies to cut costs. It is established that the development of financial technology in Ukraine is especially noticeable in the last five years. The article analyzes: the complex of factors that led to the rapid development of FinTech, the sources of FinTech companies' financing in Ukraine, the distribution of FinTech companies by field of activity in Ukraine and the number of employees, the markets in which Ukrainian FinTech companies operate, the main reasons that hinder its development in Ukraine. *Practical implications*. As a result of the research, a SWOT-analysis of the domestic FinTech market was carried out and its strengths, weaknesses, opportunities and threats that can be used by various FinTech industry actors to develop the FinTech market in Ukraine and improve FinTech products were identified.

Keywords

Financial technologies,
 financial ecosystem,
 FinTech, FinTech-system,
 FinTech companies

JEL: G10, G18, G20

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1 Introduction

At the present stage, an important direction of development of financial services is strengthening their digitalization and active dissemination of FinTech innovations. More and more users of financial services are giving preference to digital channels of obtaining them, and the current challenges only strengthen the role of FinTech innovation as a determinant of the national economy.

FinTech is modernizing traditional financial services and forcing innovation to compete with new monetary mechanisms – crowdfunding and crowdfunding (mechanisms of crowdfunding and investing as a means to obtain investment), artificial intelligence tools (for electronic payment risk management, solvency assessment,

cybersecurity), online bookkeeping, unbanking, e-commerce, etc.

Despite the rather active discussion of the issues and problems of FinTech implementation in Ukraine and in the world, the general interpretation of this concept, its types, peculiarities of functioning of FinTech-companies in the market taking into account the existing risks and problems, as well as the determination of development prospects, is insufficient in scientific sources.

2 Literature review

Sound principles of FinTech innovation research are set out in the works of the following foreign scientists: W. Haxar, M. Weber, M. Capidani, T. Lambert, J. Barberis, K. Pustchi, M. Schmitt,

L. Hornuf and others. The issues of FinTech innovation research are also reflected in the works of Ukrainian scientists, in particular: O. Shevchenko, N. Podolchak, P. Rubanova, I. Dyakonova, A. Mazaraki, J. Shevchuk, G. Pochenchuk, I. Tyutyun, O. Stoyko, M. Yatsenko, S. Vyazovy and others. However, the issues of covering the development of the theoretical foundations of FinTech, developing their classification, the development of the domestic FinTech industry, identifying problems, obstacles and areas of development remain superficial or little-studied.

3 The origin of the term FinTech

Financial technology (FinTech) is a relatively new industry not only in Ukraine but also worldwide. In the economic literature, it is believed that the term "financial technology" emerged in the early 1990s, when the Internet began to develop. FinTech began to grow in popularity in 2008, when the global financial crisis and its consequences forced financial companies to cut costs. As a result, startups and new business models began to appear, capable of satisfying the demands of demanding clients (Shevchenko, Rudych, 2020).

The multifaceted and varied content load of using the term "FinTech" has led to various differences and peculiarities in the definition of this category in scientific sources.

So Kovalenko V.V. notes that the essence of FinTech should be outlined by the relationship of two main components: innovation, which is based on technologies of the traditional banking sector, and new models of financial services (Kovalenko, 2018).

Shevchenko O.M., Rudych L.V. interpret FinTech as a synthesis of digital technologies and innovations in the financial sphere, used to provide, expand and distribute financial services by technology companies (Shevchenko, Rudych, 2020).

Dyakonova I. and Pedych A., consider FinTech as a multi-vector, unique and comprehensive

form of interaction of new technologies on the financial industry, characterized by quantitative and qualitative development through startups and improving the efficiency of services (Dyakonova, Pedich, 2017).

Gimpel H., Rau D. And Röglinger M. note that FinTech characterizes the usage of digital technologies such as the Internet, mobile computing, and data analytics to enable, innovate, or disrupt financial service (Gimpel, Rau, Röglinger, 2018).

Thus, the data presented show that scholars interpret FinTech as innovative technologies and business models as industry, services. However, each of the presented definitions shows their main feature, which is that FinTech really cannot work without digital technologies. As the backbone of financial services, they drive innovation in the financial sector.

Broadly speaking, the term "financial technology" can be applied to any innovation in the way we do business, from the invention of digital money to double-entry bookkeeping. Since the internet revolution and the mobile internet/smartphone revolution, however, financial technology has evolved rapidly, and fintech, which originally referred to computer technology used in the back office of banks or trading firms, now describes a wide range of technological interventions in personal and commercial finance (Kagan, 2020).

Therefore, the author believes that FinTech is a technology used by financial services to help companies manage financial assets through specific software, including new programs, applications and business models. FinTech as a complex ecosystem is illustrated more clearly in Figure 1.

Today, FinTech is viewed as an ecosystem that brings together all financial market participants, including FinTech startups, regulators, banks, international payment systems, bankers' and financiers' associations, incubators, gas pedals, and suppliers. Thus, FinTech is a complex system that brings together the sectors of new technologies and

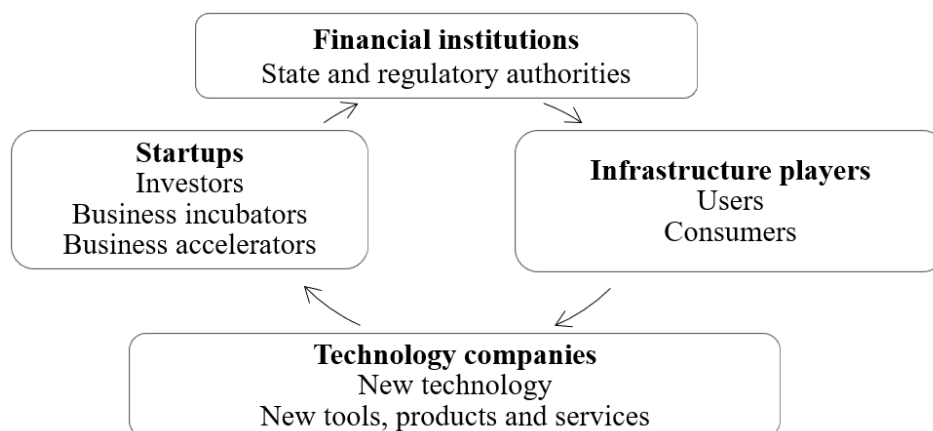


FIGURE 1 FinTech as a complex ecosystem

Source: (Pochenchuk, 2018)

financial services, startups and related infrastructure (Shevchenko, Rudych, 2020).

The rapid development of innovation in financial services, especially after the global financial crisis of 2008, has led to the formation of a new technology sector – FinTech, as a response to the need of banks to adapt to a new business environment, increased requirements for bank capital and new risk management standards (Investments in FinTech rose to a record level in the first half of 2021).

FinTech has been growing rapidly over the past decade. For example, according to the KPMG Pulse of FinTech study, international investments in FinTech amounted to \$52.3 billion, which is more than twice as much as in 2020 (\$22.5 billion) (Shevchuk, 2018), although FinTech development began back in the XIX century.

To summarize the analysis of the essence of FinTech, scientists highlight the following key characteristics: 1) compared with conventional financial innovations, FinTech innovations result not only in innovative financial products and technologies (processes), but also in new business models of financial intermediaries and market participants – FinTech-companies; 2) FinTech refers to radical innovations ("disruptive technology") that significantly alter individual financial services and the financial services market as a whole; 3) the obligatory underlying concept underlying FinTech innovations is information technology, often also innovative (Rubanov, 2020).

4. The main trends in the development of the FinTech market in Ukraine

The development of financial technologies in Ukraine has been especially noticeable in the last five years. As a rule, the existence of any process or phenomenon is based on a set of factors. The main of them, which caused the rapid development of

FinTech in the world and in Ukraine, are presented in Figure 2.

The development of the domestic FinTech-business was due to a series of crises between 2008 and 2017, when the number of operating commercial banks in our country decreased from 175 to 88 units. Against this background, consumers' access to banking products and services decreased, the number of structural subdivisions of banks decreased, and mistrust in traditional financial institutions increased. At the same time there are favorable processes for the introduction of financial innovations due to the penetration of mobile Internet in all areas of life, the spread of smartphones, the development of social networks and mobile applications, the use of artificial intelligence in business processes and communication with consumers (robots, chatbots), etc. (Yatsenko, Bondarenko, 2019).

This contributed to the emergence of new entities in the domestic financial market, which are not commercial banks, but perform their "traditional" functions related to payments and money transfers (non-bank payment systems that transfer funds: "iPay.ua"). "Portmone.com", "GlobalMoney", "City24", "Ukrkart", etc.); lending (microfinance organizations that provide online loans: Moneyveo, Global Credit, CreditKasa, etc.; P2P and P2B lending services, in particular, "Finhub", "MoCash", "FinStream", etc.), currency sales (cryptocurrency sales services: online exchanges "Exmo", "Kuna", "BTC Trade UA"; terminals of the companies "Tyme", "IBox"; online exchangers "Bitcoin", "Ethereum", "Litecoin"; specialized payment terminals (cryptocurrencies)). Called fintech companies, these organizations use highly innovative technologies and offer existing financial products on more attractive terms and at lower prices to consumers, or develop new payment tools and technical solutions (Stoyko, 2020).

The domestic FinTech market is part of the global FinTech system. It should be noted that there are

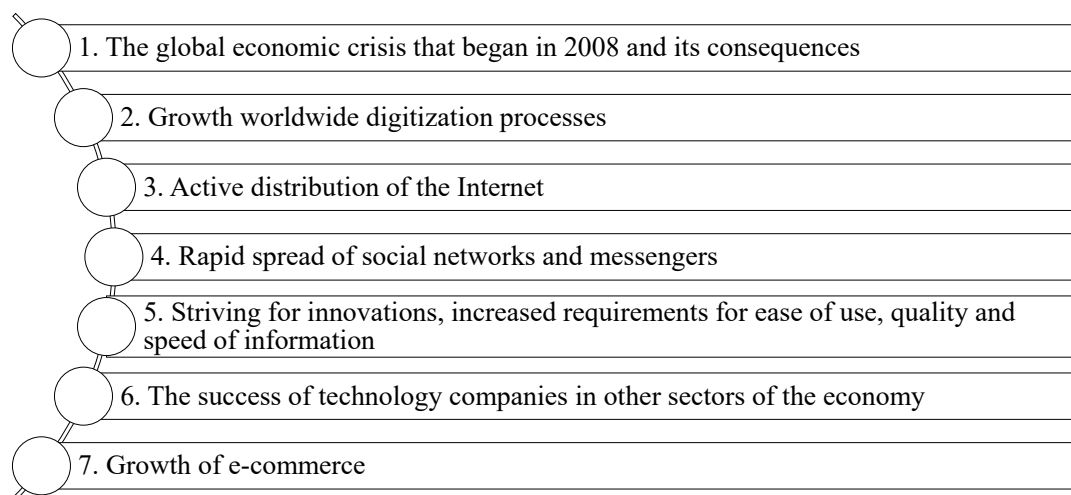


FIGURE 2 The main factors that contributed to the development of FinTech
Source: (Mazaraki, Volosovich, 2018; Kalashnikov, Samokhina, 2018)

currently more than 10,000 officially registered FinTech companies in the world. The FinTech industry is growing rapidly in South America. During 2016–2020, funding for startups in this industry increased by 64% in the region. Every year the FinTech industry becomes more and more popular and becomes a mass trend, so in 2015 the FinTech adoption rate was only 15%, and at the end of 2019 it will be 64%. 96% of people in the world know and use at least one FinTech service when making online payments or transferring money online.

According to the report by McKinsey & Co, only in May 2020 the level of digital security in European countries rose to 20%, and the use of cash decreased almost by 2 times. The FinTech revolution is spreading rapidly, changing the structure of the market in developing countries, including Ukraine (Shevchenko, 2021).

An indicator of the high level of development of the FinTech industry is its investment climate (Figure 3). According to a study by IDC FutureScape: Worldwide Financial Services 2021 Predictions, in 2020 the amount of venture capital investment in FinTech industry was – 42, 14 billion, which is 3% less than in 2019. It is estimated that in the fourth quarter of 2020, 522 deals were made in the FinTech industry, which is 11% less than last year (FinTech market. Finance, Information, Technology 2020).

According to the data presented in the figure, it can be analyzed that global investment in FinTech in 2020 – 105.3 billion dollars. This is a significant figure in the history of investing in this industry. Global investment in 2019 exceeds total investment in 2020 by \$62.7 billion (37%). The results of the study show rapid growth in global investment since 2017. In 2017, total investment was \$59.2 billion and in 2018 it was \$145.9 billion, the highest FinTech investment in 2019 is \$168 billion (Pulse of Fintech H2'20, 2020).

As for the Ukrainian FinTech market, it is undeveloped, so the peculiarities of its development have some differences from the world market. It should be noted that it is characterized by a number of indicators which create prerequisites for its further dynamic development (Shevchenko, 2021).

The main indicator of the development of the domestic FinTech market is Internet penetration.

According to the Kiev International Institute of Sociology, in 2008, only 24% of the adult population of Ukraine had access to the Internet. In 2021, 30 million people (67% of the population) will use the Internet, which is 33% more than in 2019 (Hrytsyk, (2021). Intensification of processes in the Internet space is associated with an increase in the number of smartphone owners, which contributes to the growing popularity of various payment methods (contactless payments, electronic wallets, online payments, etc.) (Shevchenko, 2021).

According to the information presented in the Ukrainian FinTech Directory 2020, the lion's share of FinTech companies operates from the founders' savings. Figure 4 shows the sources of funding for FinTech companies in Ukraine in 2020.

Own funds remain the main source of funding. Despite the growing importance of private investors, angel investments, and venture capital funds, founder savings account for the lion's share. However, it should be noted that the development of grant opportunities, foundations, and acceleration funds, which were active during 2019–2020, have significantly changed the response statistics. Thus, the Ukrainian Startup Fund began financing the best Ukrainian innovative companies at the pre-seed and seed stages, which stimulates the development of not only the FinTech industry, but also other areas of the market (Catalog of FinTech companies of Ukraine 2020, 2021).

Despite stagnation in other areas through COVID-19, FinTech maintained its position. During 2019, the list was replenished by 10 fintech companies, and in 2020 – by 2 companies, with a global trend to reduce the number of representatives of the fintech sector due to the pandemic. As of December 2020, there were about 150 companies in Ukraine, 30 of which were non-public. If in 2019 the market developed more due to positive expectations, then in 2020 there was a significant number of changes, which have taken place in FinTech companies (Catalog of FinTech companies of Ukraine 2020, 2021):

A new law on financial monitoring was adopted, which relaxed the conditions for client identification and verification, namely allowed remote identification and verification by using BankID NBU, qualified electronic signature (QES),

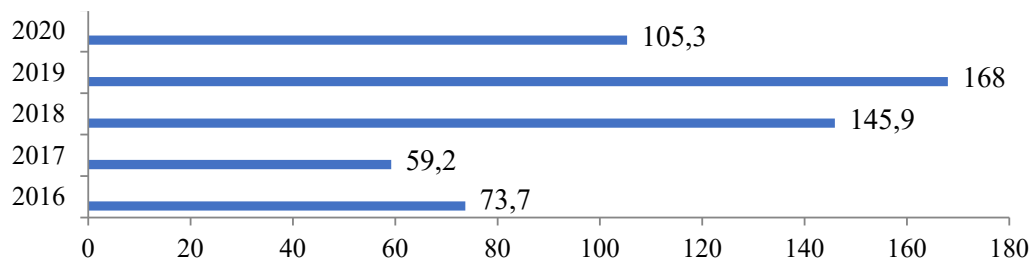


FIGURE 3 Total investments in FinTech companies for 2016–2020, billion dollars
Source: formed by the author according to (Pulse of Fintech H2'20, 2020)

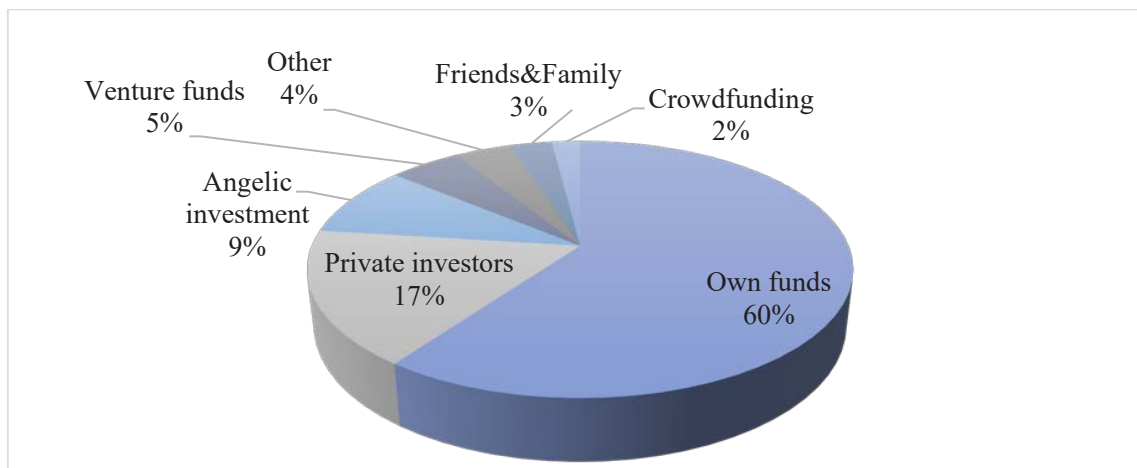


FIGURE 4 Sources of funding for FinTech companies in Ukraine in 2020
 Source: formed by the author according to (Catalog of FinTech companies of Ukraine 2020, 2021)

video broadcast session and verification with the “Action” program.

- FinTech strategy of the NBU. The program is designed for five years and is designed to create a holistic and competitive FinTech ecosystem.
- Banking and non-banking financial institutions are now under the supervision of one regulator – the NBU, which allows to establish equal conditions for the work of all market players.
- Bill 37 3637 on virtual assets has been developed, which is designed to legalize and regulate the process of cryptocurrency circulation in Ukraine, which may be the impetus for revival of startups in the cryptosphere (Catalog of FinTech companies of Ukraine 2020, 2021).

Despite its underdevelopment, the national financial technology market is highly segmented. Figure 5 presents the distribution of FinTech

companies by areas of activity in Ukraine in 2020.

Analysis of Figure 5 shows that the most popular area of focus for FinTech companies in 2020 was the implementation of innovative technology and infrastructure – 45 companies, an increase of 14 percent over last year (Shevchenko, 2021).

In second place are payments and money transfers – 44 companies, which is 14% more than last year. Manifestations of the digital transformation of these services were electronic money, mobile applications, new types of cards, the ability to transfer money from card to card, etc. In third place are mobile wallets (22 companies). As for other companies, digital and non-banking, business lending, personal lending, cybersecurity, they occupy an equal number – 8-10 companies. Significant growth (43%) was shown by a relatively new for the

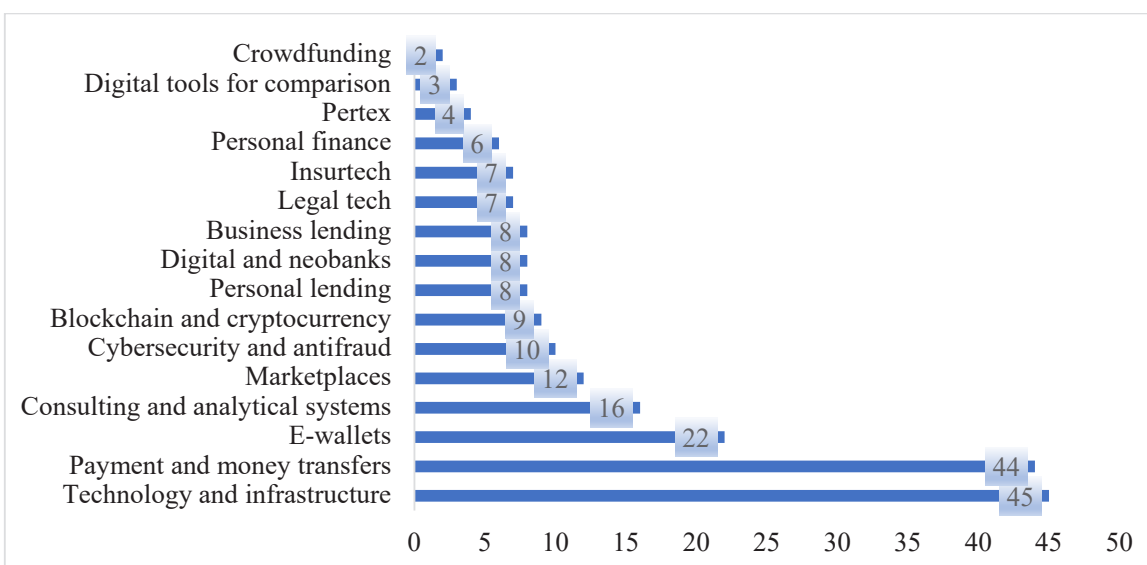


FIGURE 5 Distribution of FinTech companies by areas of activity in Ukraine in 2020, number of companies

Source: formed by the author according to data (Catalog of FinTech companies of Ukraine 2020, 2021)

domestic market FinTech LegalTech (technology in legal activities). This is due to the general need for digitalization of legal services and their transfer to the online mode (Shevchenko, 2021).

Thus, the domestic FinTech market is characterized by the fact that the number of payment services and money transfer platforms is growing steadily and as of 2019–2020 has increased by 14%. And also the sphere of technological infrastructure – by 20%. The vast majority of these companies are 89. The number of private and consumer lending companies has increased by a third. This indicates that the demand for credit in the country is growing significantly – both among the general population and in the corporate segment (Catalog of FinTech companies of Ukraine 2020, 2021).

The peculiarity of the domestic FinTech-industry is the concentration of technological competences directly in the banking system, which is associated with a poorly developed segment of independent FinTech-projects compared with other foreign markets. The effective development of the national FinTech market largely depends on the cooperation and partnership of banks with FinTech companies that are working intensively on the development of financial technologies. According to statistics, 79% of banks have systems that are difficult to integrate, and only 6% of banks have achieved the desired ROI from collaboration with finTech (Tyutyun, 2020).

Now 5,300 specialists work in the FinTech company’s market. The number of companies with a staff of 6 to 10 people increased – 17.2%. While FinTech companies with 11-25 employees became 19.7%. In total, the market employs more than 5,300 people. Despite the fact that it is only 2.9% of the number of IT employees, the total number of specialists working in FinTech has increased by 25% in 2 years (Figure 6). Consequently, it is possible to talk about the scaling of companies and the growing demand for skilled workers. (Catalog of FinTech companies of Ukraine 2020, 2021).

The number of companies exporting their services abroad increased by 10%. Only 47.5% of the companies

are present only in the domestic market, while 84.4% of them indicated that they plan to enter international markets in the next 2-3 years.

Europe and the U.S. remain the most attractive markets for Ukrainian FinTech companies (Figure 7). These markets already have 27.9% and 17.2% of companies, respectively. The third place is occupied by the CIS, the least popular are the countries of Asia and Africa.

Most FinTech solutions are aimed at solving business problems. The companies do not focus on a particular segment, but try to develop their product in such a way that it is suitable for both large businesses and SMBs. 70.4% of FinTech companies focused on the business segment 25.1% of companies receive income from transaction fees 16.6% of users of FinTech services – the mass segment (Catalog of FinTech companies of Ukraine 2020, 2021).

The FinTech market is characterized by its volatility. At the same time, the sensitivity of FinTech consumers' interest to changes in the market is quite high. At the same time, consumers' low loyalty to specific FinTech services results in their tendency to quickly abandon certain FinTech products when new ones appear.

The analysis of FinTech market functioning in Ukraine allows to conclude that the current state of the domestic market, in comparison with the world practice, is at an early stage of formation. Among the main reasons hindering its development in Ukraine are the following: imperfect state regulation of financial technologies; unfavorable investment climate in the country (lack of interest of foreign and Ukrainian investors in investing in domestic startups); insufficient and uneven development of the necessary infrastructure (telecommunications and the Internet), quality and cost of Internet and cell phone services; lack of specialists in the field of new financial and information technology; low level of patent activity, almost complete absence of breakthrough IT technologies, including in the field of FinTech; underdeveloped system of venture capital investment; concentration of technological

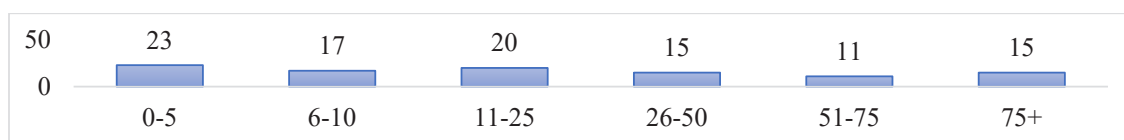


FIGURE 6 Distribution of FinTech companies by number of employees, 2020, %
Source: built by the author according to (Catalog of FinTech companies of Ukraine 2020, 2021)



FIGURE 7 Markets in which Ukrainian FinTech companies operate, 2020
Source: built by the author according to (Catalog of FinTech companies of Ukraine 2020, 2021)

TABLE 1 SWOT-analysis Fintech

Strengths	Weaknesses
<ul style="list-style-type: none"> - Large number of customers using financial services via mobile devices - Advantages over traditional financial institutions - Cheaper (or free) financial services - Shorter customer service hours - Improved technological and financial infrastructure - Simplification of compliance with reporting rules - Improving the competitive advantage of traditional financial intermediaries 	<ul style="list-style-type: none"> - Unattractiveness of the Ukrainian FinTech market for investors - Imperfection of state regulation in the field of FinTech - Low level of financial literacy of the population - Insufficient development of telecommunications and the Internet - Insufficient confidentiality of customers' data - Possible negative impact of decentralized digital currency on monetary
Opportunities	Threats
<ul style="list-style-type: none"> - Introduction of mass FinTech startups - Development of new innovative FinTech products - Advanced training of IT specialists - High export potential of FinTech solutions - Raising public awareness in the field of FinTech - Improving the cybersecurity of FinTech companies - Opportunity for the Ukrainian FinTech market to enter the international arena – Promoting the development of a competitive environment in the financial services market - Application of new methods of protection against fraud of employees and customers - Active development of payment and related solutions against the background of the growth of e-commerce 	<ul style="list-style-type: none"> - Outflow of qualified personnel from Ukraine in order to find conditions for the implementation of FinTech startups - Violation of financial stability - Increased use of electricity, which will worsen the environmental situation - Reducing the market share of traditional financial intermediaries - Violation of financial stability - Inadequate risk-taking by consumers - Job cuts dueto implementation of FinTech - Increased financial volatility - Increased social risks: the creation of new automated services leads to a reduction in staff who previously performed these functions - Potential environmental risks due to rising electricity consumption and associated increases in greenhouse gas emissions

Source: formed by the author on the basis of the own research and scientific sources (Mazaraki, Volosovich, 2018; Podolchak, Lukashevskaya, 2020; Strategy for the development of FinTech in Ukraine until 2025)

competencies directly in the banking system; insufficiently high technological and financial literacy of the population in general, the decline in real disposable income, orientation towards savings and conservative savings (Dudinets, 2018; Vyazo, Pasichnyk, 2019).

Scientific research and our own developments allowed to conduct SWOT-analysis of the domestic FinTech market and in this matrix (Table 1) to determine its strengths and weaknesses, to identify opportunities and threats.

5 Conclusions

The origin of the term FinTech, which is a relatively new industry not only in Ukraine but also worldwide, has been studied. It has been established that the term emerged in the economic literature in the early 1990s, when the Internet began to develop. FinTech began to grow in popularity in 2008, when the global financial crisis and its consequences forced financial companies to cut costs.

Despite the fact that the FinTech industry in Ukraine has recently started to develop, the interest in it is growing rapidly. The rapid spread of digital

technologies, smartphones, mobile Internet, social networks and various applications in society determines the demand for innovative financial technologies. Outdated hardware, lack of clear legislation and conservatism of financial institutions require new technologies for traditional financial services.

The functioning of the FinTech market in Ukraine in comparison with the world practice has a number of features: the activity of banks in the promotion of technological financial services; most Ukrainian FinTech are in the early stages of development; the undeveloped formal and informal system of venture capital investment; the volatility of the FinTech market; decreasing interest of fintech companies in blockchain technology; strongly segmented distribution of fintech companies by field of activity and focused mainly on two areas – payment services and implementation of innovative technologies and infrastructure; fintech companies are mainly financed by the savings of their founders.

Research and our own developments allowed us to conduct a SWOT-analysis of the domestic FinTech market and identify its strengths and weaknesses, identify opportunities and threats.

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