Features of FinTech development in modern conditions

The features of formation and development of the FinTech market in the conditions of digitalization of the financial market are revealed in the work. It is proven that one of the trends of the global financial services market is the active introduction of FinTech innovation.

A study of the definition of FinTech, identified four approaches to identify the essence of the concept: institutional, sectoral, functional, operational. It is justified that FinTech envisages the interconnection of two components - innovations based on the technologies of the traditional financial banking sector and new business models of providing financial services.

The classification approaches to systematization of FinTech services are studied: for market support and for industry innovations.

The principles underlying the implementation of financial technology systems are outlined.

The potential advantages and disadvantages of FinTech innovation for the economy are considered.

An analysis of the global FinTech market has been performed, showing a significant increase in global investment in the industry over the past years. The Ukrainian FinTech market is following global trends and showing dynamic growth. FinTech's domestic market is represented by such areas as: payments and money transfers, mobile wallets, digital banks and neo-banks, blockchain and cryptocurrency, technologies and infrastructure, consulting and analytical systems, personal and consumer lending, business lending, insourtech, cyber security financial management, digital comparison tools, legal technology.

It is motivated that investment and knowledge are needed to create and develop FinTech startups. Today, investing is one of the key problems for the development of Ukrainian FinTech companies. The sources of financing of Ukrainian FinTech companies are analyzed and their features are described.

There is no established system support for FinTech companies in Ukraine today.

It is proved that the state support of the domestic FinTech-industry and consolidation of efforts of all its participants in the directions defined in the work will contribute to the development of innovative-investment entrepreneurship.

Keywords: FinTech, financial technology, financial services, mobile payments, blockchain, FinTech startup, FinTech accelerator, innovation.

Tab. 2. Fig. 1. Lit. 17.
Особливості розвитку FinTech в сучасних умовах

У роботі розкрито особливості становлення та розвитку ринку FinTech в умовах цифровізації фінансового ринку. Доведено, що однією із тенденцій глобального ринку фінансових послуг, є активне впровадження FinTech-інновацій.

Дослідження дефініції FinTech, виявило чотири підходи до виявлення сутності поняття: інституційний, галузевий, функціональний, операційний. Обґрунтовано, що FinTech передбачає взаємозв'язок двох складових – інновацій, що базуються на технологіях традиційного фінансово-банківського сектору і нових бізнес-моделей надання фінансових послуг.

Вибачено класифікаційні підходи до систематизації FinTech-послуг: для підтримки ринку і за галузевими інноваціями.

Охарактеризовано принципи, на яких базується реалізація фінансових технологічних систем.

Розглянуто потенційні переваги і недоліки FinTech-інновацій для економіки.

Здійснено аналіз світового ринку FinTech, який показує значне збільшення глобальних інвестицій у цю галузь, протягом останніх років. Український ринок FinTech слідує глобальним тенденціям та показує динамічне зростання. Вітчизняний ринок FinTech представлені такими напрямами, як: платежі, грошові перекази, мобільні гаманці, цифрові банки і необанки, блокчейн і криптовалюта, технології і інфраструктура, консультування і аналітичні системи, особисте та споживче кредитування, кредитування бізнесу, іншуртех, кібербезпека, регтех, персональний фінансовий менеджмент, цифрові інструменти порівняння, юридичні технології.


В Україні сьогодні немає створеної системної підтримки FinTech-компаній.

Доведено, що державна підтримка вітчизняної FinTech-галузі та консольдація зусиль усіх учасників за означеними у роботі напрямами сприятиме розвитку інноваційного-інвестиційного підприємництва.


Табл.: 2. Рис.: 1. Літ.: 17.

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Особенности развития FinTech в современных условиях
В работе раскрыты особенности становления и развития сектора FinTech в условиях цифровизации рынка. Доказано, что одной из тенденций глобального рынка финансовых услуг, является активное внедрение FinTech-инноваций.


Изучено классификационные подходы к систематизации FinTech-услуг: для поддержки рынка и по отраслевым инновациями.

Охарактеризованы принципы, на которых базируется реализация финансовых технологических систем. Рассмотрены потенциальные преимущества и недостатки FinTech-инноваций для экономики.

Осуществлен анализ мирового рынка FinTech, который показывает значительное увеличение глобальных инвестиций в эту отрасль, в течение последних лет. Украинский рынок FinTech следует глобальным тенденциям и показывает динамичный рост. Отечественный рынок FinTech представлены таким направлениям, как: платежи и денежные переводы, мобильные кошельки, цифровые банки и необанки, блокчейн и криптовалют, технологии и инфраструктура, услуги и аналитические системы, личное и потребительское кредитование, кредитование бизнеса, иншуртех, кибербезопасность, регтех, персональный финансовый менеджмент, цифровые инструменты сравнения, юридические технологии.


Доказано, что государственная поддержка отечественной FinTech-отрасли и консолидация усилий всех ее участников по указанным в работе направлениям будет способствовать развитию инновационно-инвестиционного предпринимательства.


Табл. 2. Рис. 1. Лит. 17.

Problem statement. Effective growth of the state's economy is impossible without the development of the financial sector. The financial and banking sector, like many other components of the modern economy, is changing in the face of new requirements. The process of digitalization of the financial market of the sector is
objective and inevitable. On the background of world globalization processes, strengthening and intensification of competition, the unifying component of economies and the corresponding policies of European states have created the preconditions for powerful integration processes at all levels of the economic system, transforming it into an open economic space [1].

Appearance of new technologies, ubiquity of Internet (including mobile Internet), smart phones, various mobile devices and applications, development of social networks, growth of money transfers, in particular from labor migrants, searching for new directions of activity of business, conducting business new digital financial services, and with them new financial business models, including FinTech. Today, the FinTech industry has become one of the world's leading trends, and national regulators and businesses are seeing a significant development potential for both: the financial market and the economy as a whole.

The most actively developing such services of FinTech, as: payments, lending, banking technology, mobile financial services, financial and account management, money transfers, robot-consultants, insurance technologies, crowdfunding, P2P lending, blockchain and cryptocurrencies.

**Analysis of recent research and publications.** In recent years, research into the problems of the formation and functioning of the FinTech sector has received considerable attention, among foreign and domestic scientists and practitioners. Scientists such as Ya. Barberis, D. Dranove, M. Miller, H. Minski, J. Munch, G. Perot, L. Hornuff, M. Fleury, M. Schmitt and many others have made significant contributions to FinTech research. Regulatory issues regarding FinTech developments have been reflected in the Basel Committee on Banking Supervision documents [2].

The content of financial technologies, their classification, principles and trends of development, in particular in certain segments of the market, are considered in the works of domestic scientists. The essence, role and importance in the economy of FinTech-services are covered in the works of A.Yu. Semenoga, Ya.M. Kryvych, S.V. Tsyryluk [3].


However, questions about the peculiarities of formation and development prospects of the domestic FinTech market require further elaboration.

**Goals setting.** The purpose of the study is to highlight the current trends in the development of the FinTech industry in Ukraine in the context of transformation.

**Presentation of the main material of the research.** One of the trends in the development of the global financial system is the global expansion of FinTech and the digitization of financial services.

Innovations in the financial sector have a long history, from the development of dual accountancy to the creation of modern central banks and payment systems, as well as the later introduction of complex markets for assets and retail financial products. FinTech originated in the financial services market. However now, its
Instruments are being successfully applied in other areas of both the financial system and government. At the same time, FinTech is extremely transformed under the influence of changing social needs, resulting in ambiguity in understanding the essence of FinTech [4].

FinTech (Financial technology) is a powerful trend and new vision in the financial services industry. The word FinTech is commonly referred to as startups that introduce modern technology into the financial sector and make financial services more effective and less costly [5].

In the study of A. Mazaraki, S. Volosovich [4], to determine the definition of FinTech, there are four approaches:
- an institutional approach that defines FinTech as an economic industry consisting of companies that use technology to improve the efficiency of financial systems [6];
- industry approach, considers FinTech as technologies used in the financial industry to optimize costs, increase in value added in their products, speed of passage of various processes, safety [7];
- functional approach that reveals FinTech as a financial service that incorporates innovative technologies to meet future needs [8];
- operating approach, characterizes FinTech as technological projects in the field of financial services [9].

The Basel Committee, in its advisory document «Effective Practice: Implications of FinTech Developments for Banks and Banking Authorities» [2] of October 10, 2017, characterizes FinTech as technologically supported financial innovations that can lead to the emergence of new business models, programs, processes, or products that have a significant impact on the financial markets and financial services institutions.

Thus, the essence of FinTech involves the interconnection of two components - innovations based on the technologies of the traditional financial banking sector and new business models of financial services.

Despite different approaches to defining the concept of FinTech, experts agree with the opinion that a new segment of financial markets is emerging. It should be noted, that FinTech is not a new concept. Its evolution passed three stages:
- FinTech 1.0 (1866-1967). It was characterized by the advent of telegraph and modern transport. Formation of infrastructure for financial globalization in the world.
- FinTech 2.0 (1967-2008). Characterized by the introduction of payment cards, ATMs and banking terminals. From 1967 to 1987, financial services went from the analog era to the digital.
- FinTech 3.0 (2008 – till present). Unlike the previous stages, a characteristic feature is the appearance of companies providing financial services (mainly banking) through the Internet and mobile applications. Considering the crisis of consumer confidence in classic financial institutions caused by the global financial crisis and the bankruptcy of large banks, FinTech companies are gaining widespread expansion in the monetary-credit market [3].

The Basel Committee on Banking Supervision identifies the following FinTech market support services:
- Portal and data aggregators.
- Ecosystem (infrastructure, open source, APIs).
- Data usage (bid data analysis, machine learning, predictive modeling).
- Distributed accounting technology (blockchain, smart contracts).
- Security (identification and authentication of the consumer).
- Cloud programming.
- Internet of Things / Mobile Technology.
- Artificial intelligence (bots, automation in finance, algorithms).

According to industry innovation, The Basel Committee on Banking Supervision proposes the following classification of FinTech services:

1. Credit, deposit and capital raising services: crowdfunding, lending market, neo-bank, alternative credit scoring.
2. Payment, clearing and settlement services:
   a) Wholesale: money transfer network, foreign exchange wholesale, digital currency exchange platforms.
   b) Retail: mobile wallet, P2P payments, cryptocurrency.
3. Asset management services: high-frequency trading, social commerce, e-commerce, robot-consultants [2].

According to A.Yu. Semenog, Ya.M. Kryvych, S.V. Tsyrulyk, the classification developed by the Basel Committee on Banking Supervision at the Bank for International Settlements is the most successful because it distributes FinTech services to sectors that directly related to basic banking services. This classification identifies market support services that reflect the enabling technologies that support these innovative products. It should also be noted that market support services are linked to innovations and new technologies that are not specific to the financial sector but play an important role in the development of FinTech [3].

The realization of such technological systems is based on principles that allow FinTech members to provide services:
- standardization (tokenization of contract elements);
- accessibility;
- scalability;
- transaction processing speed;
- openness;
- information security and security;
- technologies of distributed registers;
- the use of cloud technology and Big Data.

According to A.Yu. Semenog, Ya. M. Kryvych, S.V. Tsyrulyk technological innovations in the sphere of financial services are positive for economic growth and should contribute to ensuring financial stability (Table 1).

<table>
<thead>
<tr>
<th>The benefits of FinTech innovation for the economy</th>
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<tr>
<td>Potential benefits</td>
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<td>Decentralization and diversification (observed due to increased)</td>
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competition and improved service quality)  
2. The robo-consultancy service introduces new players to the asset management sector and can therefore increase diversification depending on the variety of models used.  
3. Theoretically, the use of distributed registry technology could reduce concentration in the regulatory process.

<table>
<thead>
<tr>
<th>Efficiency (achieved through modern technology platforms)</th>
</tr>
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| 1. Robo-consulting services and technologies that simplify back office functions can strengthen the business models of operating financial institutions.  
2. Machine learning and artificial intelligence can help improve decision-making processes by improving the models that financial institutions and investors use.  
3. The use of credit and investment assessment algorithms enables platforms to operate at relatively low cost.  
4. FinTech lending platforms can reduce customer search, transaction costs and lead to better capital allocation.  
5. Distributed registry technology can reduce risks by reducing settlement times. |

<table>
<thead>
<tr>
<th>Transparency</th>
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| 1. Increasing and better utilization of data can reduce information asymmetry in the financial services market.  
2. Improved data can create smart contracts that more specifically target the specific risks users want to manage.  
3. FinTech lending and crowdfunding can integrate the household and business markets (facilitating the emergence of small and medium-sized enterprises without the involvement of banks). |

<table>
<thead>
<tr>
<th>Access to and convenience of financial services</th>
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| 1. Neobank enables consumers to quickly and efficiently obtain credit and make purchases.  
2. Digital identity and TRP-based applications can support improved quality and accessibility of financial services for end users.  
3. Robo-consulting services expand access to household capital management.  
4. There is potential for developing a payment ecosystem to increase access to wholesale payment systems for non-banking organizations. |

**Source:** Based on data [3].

At the same time for today, there are some risks and disadvantages in FinTech-sphere (Table 2).

<table>
<thead>
<tr>
<th>Disadvantages of FinTech-innovation</th>
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<tr>
<td>Disadvantages</td>
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<tr>
<td>Fuzzy regulation</td>
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<td>Spontaneous decisions</td>
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<tr>
<td>Technological risks</td>
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about you. As a result, your personal information may be misused or you may be a victim of a cybercrime.

«Not for Everyone»

While on the one hand, access to FinTech seems simple and straightforward, there are many categories of citizens who, for various reasons, cannot use gadgets or computers to conduct online transactions.

Source: Based on data [10].

FinTech's infrastructure is constantly growing and becoming more complex. The CB Insights report [11] indicates that 2018 showed a significant increase in global investment in FinTech (Figure 1).

![FinTech World Market Dynamics in 2014-2018](image)

**Fig. 1 - FinTech World Market Dynamics in 2014-2018**

Source: Based on data [11].

FinTech's investment in 2018 reached $39.57 billion, showing a 2.2-fold increase compared to 2017 and a 4.7-fold increase compared to 2014. The largest share of the global FinTech market with investment volume in 2018 is $1.89 billion occupies the United States, the leading countries are the United Kingdom and China. In 2018, the strongest growth in investments in the FinTech sphere was observed in Southeast Asian countries, where foreign investors were financing local start-ups.

Due to the rapid implementation of the latest solutions, which in many cases do not require state licensing of their activities, FinTech companies are notable competition to the classic big banks in the retail financial services markets.
In Ukraine, following the global trends, FinTech is actively developing, as evidenced by the FinTech Companies Catalog of Ukraine 2019 [12], prepared by the Ukrainian Association of FinTech and Innovation Companies, with the support of the National Bank of Ukraine and Visa company.

According to the Directory of FinTech Companies of Ukraine 2019 [12], today 63% of the population of Ukraine regularly uses the Internet, with 45% of adults having smartphones, with about 36,000 technical specialists graduate from the higher education institutions, Ukraine ranks 4th in the world in contactless payments, 79.4% of payment terminals support contactless payment, all of which shows that Ukraine has considerable potential for the development of digital technologies, including FinTech.

The number of FinTech companies in Ukraine is increasing: in 2018, 21 new startups have appeared in the Ukrainian market. In total, over 100 FinTech campaigns operate in Ukraine today, with more than half established in 2015-2018 [13].

FinTech's domestic market is represented by the following products and services:
- Payments and money transfers.
- Mobile wallets.
- Digital banks and neobanks.
- Blockchain and crypto currency.
- Technology and infrastructure.
- Consulting and analytical systems.
- Personal and consumer lending.
- Business lending.
- Insurance technologies (insurtech).
- Cybersecurity.
- Regulatory Technology (Regulatory Technology, RegTech).
- Personal financial management.
- Digital comparison tools.
- Legal technologies.

In 2017-2018, new trends have been added to traditional FinTech companies working in the field of payments and remittances, such as insurrection, personal financial management, regtech, etc.

Among the main reasons for the positive dynamics in the domestic sector FinTech are:
- world trends. Financial technologies remain a relevant topic in the world in recent years, which can not but affect the interest in FinTech in Ukraine;
- lack of global players. The imperfection of the legislation complicates the entry into the Ukrainian market of foreign companies, and the fall in purchasing power due to the economic crisis of 2014-2015 has temporarily made the Ukrainian market uninteresting. The absence of global players gives open-air for the development of local projects that would otherwise have to compete with powerful companies;
- clearing the banking system. This process was necessary to lay the foundations for a stable financial system, but it had a number of side effects. One of
them is the loss of employment by many banking professionals. At the same time, some of them got jobs in FinTech companies or founded their own, which became a catalyst for market development;

- increasing the willingness of traditional players to cooperate.

In 2018, the need for market development was supported at the state level and steps were taken towards the sector, including:

- regulators of the financial sector have included the development of FinTech as one of the projects in the Comprehensive Program for the Development of the Financial Sector of Ukraine until 2020 during its updating;
- The Cabinet of Ministers has identified financial technologies and cashless payments as one of the directions of the Concept of development of the digital economy and society of Ukraine for 2018-2020;
- In April 2019, the National Bank of Ukraine established the Expert Council on Communication with Innovative Companies. This will enable the National Bank to understand the needs and directions of development of innovative financial market, and to innovative companies - features of current regulation and legislative base [12].

Successful startup development and development requires a supportive environment, namely access to finance and knowledge. The Global Startup Ecosystem Ranking of a US research firm Compass is determined by five evaluation criteria:

1) investment efficiency (activity);
2) availability and amount of venture financing;
3) opportunities to enter national and international markets;
4) qualification and salary level of startup participants;
5) previous experience of participants in the development of startups.

In 2017, the top 20 ecosystems in the startup world were identified, with Silicon Valley, London, New York taking the top three places.

Creating an effective startup support ecosystem requires intensive long-term work. At this stage, Ukraine has only highly efficient personnel seeking employment in or leaving the country. In various places, private entrepreneurs, universities and organizations are trying to form elements of the ecosystem, but for their successful activity it is necessary to create a microclimate in the state for business development and attracting investment [13].

One of the main problems of formation and development of FinTech companies is investing.

About 63% of domestic FinTech companies (both startups and mature companies) operate without the involvement of third-party investors (Fig. 2). And for companies established since 2018, this figure is over 70%. Such figures are broadly in line with global trends, and some differences are explained by the small number of FinTech startups in Ukraine [12].
Outside investors of FinTech stratagems can be: ISO (a form of attracting investment in new technology projects and startups in the form of issuing and selling
to investors new cryptocurrencies), angel investments, venture funds, accelerators, private equity funds, private investors.

A business-angel is a private equity investor who invests a small (compared to venture capital) stake in a startup. Typically, a business-angel is a person who was, or still is, a private entrepreneur. It is driven not only by the opportunity to increase their investments, but also by their personal interest in the startup they are invested in. As a rule, such a person not only finances a startup and waits for it to start generating profits, but also provides the startup with technical and consulting assistance (especially if a business-angel chosen startup is working in the direction in which it succeeded).

The main disadvantage of working with business angels is its direct involvement in project management, which may not coincide with the vision of the startup, and the threat of termination of funding at any stage of project development [14].

Ideas financing is a venture investment. Its main and fundamental difference from traditional investments is that the funds can be provided under a promising idea without the guaranteed provision of available property or other assets of the entrepreneur. The only pledge is a specially conditioned share of shares in an existing or just created company. The venture investor is not trying to buy a majority stake. He expects that company executives, having a controlling stake, will retain incentives for the active development of their business [15].

Business accelerators are one of the sources of financial support for FinTech startups. Business accelerators are structures that offer programs to support innovative technology companies in the early stages of their lifecycle through the dynamic development of the project and its accelerated entry to the market by providing the necessary financial resources, financial investment and information and consulting resources.

Business accelerators are usually commercial entities, so they take a share in the share capital of the client companies as payment for their services. At the same time, they provide seed funding and search for investors for the next rounds of investing.

Business accelerators are considered an intermediate form of startup development between business incubators and venture capital funds. Although business accelerator programs can be implemented on the basis of existing business incubators and technoparks. [16].

The accelerator participant (startup) has the opportunity to: work with qualified specialists in various fields (mainly with technological, financial, legal specialists, business consultants); pass workshops, internships, lectures, workshops in related fields, acquiring the knowledge that will become necessary for future business development; to carry out their development in a favorable environment (accelerators provide office space, office equipment, access to the Internet); get information support (accelerators are brands that have connections and media exposure that allow projects to be promoted in the press right at the moment of their launch); attract an investor (investors are often interested in startups that are in accelerator programs because they are the most competitive, strong and promising startups) [17].
There is no systematic support for FinTech companies in Ukraine today, including FinTech accelerators, incubators and hubs, venture capital firms, although the positive dynamics of the domestic FinTech sector leads to investor interest, but most startups are trying to enter the market with a finished product.

FinTech accelerators, in their advisory, organizational, training, financial and economic functions, affect not only the start-up but also the FinTech sector as a whole, which contributes to the development of the financial, innovation and intellectual property markets.

One of the conditions for further development of the domestic innovation-investment enterprise, to which the FinTech industry is concerned, is its state support, which should include:

- creation of a system of preferential taxation of innovative entrepreneurship;
- creation of a system of state support of investments through a system of preferential lending;
- creation of a state guarantee system and investment insurance;
- creation of a regulatory framework for regulation of investment in innovation, including foreign investment;
- development and implementation of educational programs in the field of innovation management;
- improving the quality of the complex of measures in the field of intellectual property protection.

Successful realization of all the benefits of FinTech innovation requires consolidation of the efforts of all participants: representatives of the financial sector, IT sphere, business, investors, the state, and the public.

The governments of countries such as the United States, the United Kingdom, Germany, France, Switzerland, the Netherlands, Japan, China, Singapore, Hong Kong, Luxembourg, and Poland are creating the most favorable regime for the formation and development of the FinTech sector.

Creating a favorable investment climate, transparent licensing regime for financial services, harmonization of legislation, implementation of effective measures against money laundering, protection of personal data and cybersecurity of financial relations for all subjects of relations, will attract not only billions in investment, but also investment economic and technological development of the state.

The cooperation of FinTech-industry and banks has considerable potential for modernization of the financial sector, and the possibilities of such cooperation can be varied – from the usual use of services of FinTech-companies to a full-fledged technological partnership, investing in the implementation of new projects or buying already implemented solutions.

The introduction of FinTech is not possible without the promotion of financial services and increased financial literacy of citizens, so it is necessary to implement appropriate financial education programs through various information channels depending on the target audience (school and higher education, beginner entrepreneurs, low-income citizens etc).

**Conclusions.** The use of innovative and technological approaches to financial products and services has led to the formation of the FinTech sector. The
development of technologies such as artificial intelligence, big data, machine learning, robotization, allows financial technologies to transform traditional financial systems and to reach new markets.

In essence FinTech is characterized by the interconnection of two components - innovations based on traditional financial sector technologies and new financial services business models.

Following the global trends, FinTech's domestic industry has shown dynamic growth in recent years - both the number of transactions concluded and the volume of investments attracted in this market. FinTech's development is transforming financial products and services in several ways: banking, insurance, risk management, trade, regulatory activities, etc. In the domestic market FinTech-innovations are represented by such types as: payments and money transfers, mobile wallets, digital banks and neo-banks, blockchain and cryptocurrency, technologies and infrastructure, consulting and analytical systems, personal and consumer lending, business lending, insbertech regtech, personal financial management, digital comparison tools, legal technology.

For the development of the Ukrainian FinTech market, steps are needed, first of all, by the state, as the liberalization of legislation, both in the sphere of finance and in the sphere of investment, is required.

Undoubtedly, FinTech-innovations are transforming the financial services market, so appropriate state and business policies, taking into account digital trends, will increase the capitalization of the national economy.

References


Список використаних джерел


12. Каталог фінтех-компаній України 2019 URL: https://map.fintechua.org/.
15. Мороз П. Венчурне інвестування: про стартапи, блокчейн проекти та IT-сферу. URL: https://blog.liga.net/user/pmoroz/article/31422.

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