

## FINTECH MARKET IN UKRAINE: ANALYSIS AND FORECASTING

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**Introduction.** Today, digital technologies are becoming increasingly widespread and evolving, penetrating various areas of people's lives and activities. Thanks to them, the demand for products of the fintech market is also increasing, as financial technologies are an integral part of all types of financial services: savings, investments, credit, payments and transfers, insurance, etc. The development of the fintech market makes it possible to accumulate human and financial resources, increase investment flows, create new opportunities for customers and launch businesses based on new technological solutions.

The 2008 global financial crisis, the 2019 coronavirus disease (COVID-19) pandemic, and the Russian-Ukrainian war accelerated the development of the fintech market in Ukraine, as they contributed to the emergence of new instruments for providing financial services.

**Analysis of recent research and publications.** Various aspects of the development of the fintech market in Ukraine have been studied by a number of domestic scholars. In particular, Brus S. summarised the processes and possibilities of using innovative technologies for the financial services industry [1]. Burkovskaya A. and Khorenzhenko V. studied the key changes in the development of the fintech industry in Ukraine and the world during the crisis [2]. Krupka M., Demchyshak N. and Shchurevych O. analysed the peculiarities of the development of the fintech ecosystem in Ukraine and the mechanisms for optimising cooperation between stakeholders in the conditions of digitalisation of society [3]. Lavreniuk V. studied the influence and directions of fintech risk management in the banking sector [4]. Nagorny P. analysed the introduction of digital technologies in the country's banking system [5]. Petruk O., Burtsev Ya., Zaschipas S. and Popov O. revealed the theoretical foundations of fintech as a concept of functional economic sciences (finance, accounting, enterprise economics) [6]. Romashko O. and Krykhivska N. identified ways to improve the interaction of banks and fintech companies in Ukraine based on foreign experience [7]. Semenog A. suggested a structural and logical scheme of the fintech landscape [8]. Stoiko O. researched the current state of the domestic fintech business, identified the main trends and prospects for its development [9]. Totska O. and Vavdiuk N. analysed the activities of crowdfunding platforms in Ukraine and identified regional peculiarities on the example of the Big Idea platform [10].

Despite the large number of publications analysing the development of the domestic fintech market, in today's dynamic world there is a need to monitor changes in its indicators and to model its activities in a predictive manner.

**Objectives of the article.** The purpose of the study is to analyse the current state of development of the fintech market in Ukraine (dynamics of company creation, their distribution by spheres of activity, sources of financing, technologies used) and to build predictive trend models of the number of fintech companies created in 2023.

**The main material of the study.** In recent years, fintech companies introducing new innovative products have become widespread in Ukraine and the world. The development of the fintech market is due to the fact that in order to ensure the competitiveness of a business entity in any field, it is necessary to introduce new

technological products into its operations, which in turn will contribute to attracting new customers and increasing the organisation's revenues.

In general, there has been an active development of financial technologies in Ukraine in recent years. This was influenced by the following factors:

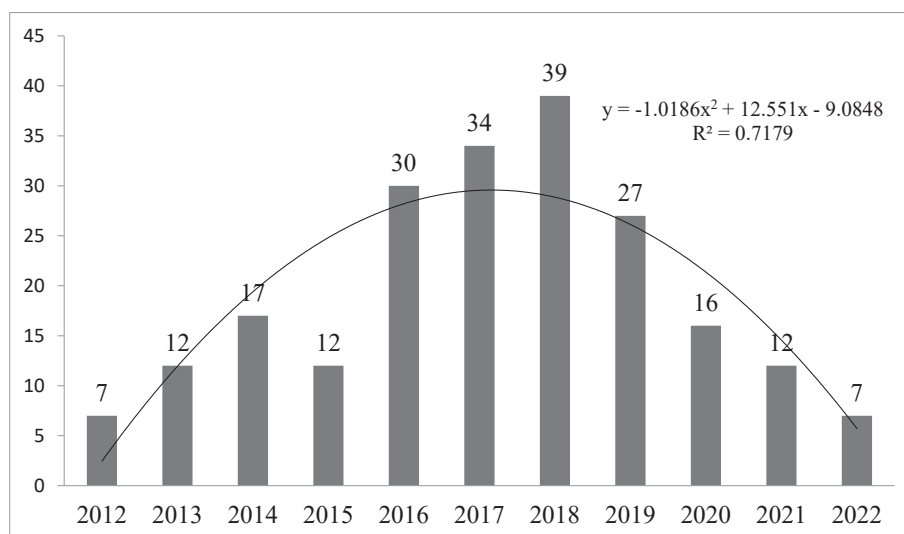
- The global economic crisis of 2008 and its aftermath;
- active growth in the number of Internet users;
- spread of social networks and messengers;
- development of competition in financial markets;
- organisations' commitment to innovation;
- coronavirus pandemic, etc. [11, p. 190].

These factors have led to the emergence of new digital products that greatly simplify the lives of the population. However, the outbreak of a full-scale war in Ukraine has brought certain difficulties to the development of fintech. The main problems include:

- Unstable operation of power grids and Internet connections;
- reduced investment attractiveness of companies for investors;
- decline in the purchasing power of the population [12, p. 30].

Despite the difficult times in the country, the fintech market continues to operate. Thus, in 2022, regulatory changes took place that opened up opportunities for further development, namely: the Law of Ukraine "On Virtual Assets" [13] was signed, the Laws of Ukraine "On Cloud Services" [14], "On Payment Services" [15] came into force, etc. The initiatives of public authorities, in particular the National Bank of Ukraine (hereinafter – the NBU) and the Ministry of Digital Transformation, are important factors influencing the fintech market [12, p. 17].

As of 2023, Ukraine's fintech market comprises 246 companies, of which 7 were founded in 2022. The dynamics of their emergence in 2012–2022 is shown in detail in Figure 1.



**Figure 1. Fintech companies by year of foundation**

*Source: formed on the basis of [12, p. 56]*

As can be seen, the largest number of companies was established in 2018. This may also be due to the fact that the EU-Ukraine Association Agreement came into full force on September 1, 2017. However, over the past four years, there has been a gradual decline in the creation of new companies in this area.

Currently, 15% of domestic fintech companies focus their activities on the Ukrainian market, 33% are already operating in foreign markets, and 52% are planning to enter the international arena, which will allow them to increase their potential audience and, accordingly, profits, gain a competitive advantage, gain international experience and attract foreign investment [12, p. 26–27].

It is worth noting that Ukrainian fintech companies are established in various fields of activity (see Table 1).

As shown, the most popular sector among fintech companies is technology and infrastructure. The trend towards an increase in its share may be due to the active development of online business. The second and third places are occupied by payments/money transfers and personal and consumer credit, although their share

Table 1

**Breakdown of fintech companies by industry  
(based on a questionnaire survey of 125 respondents), %**

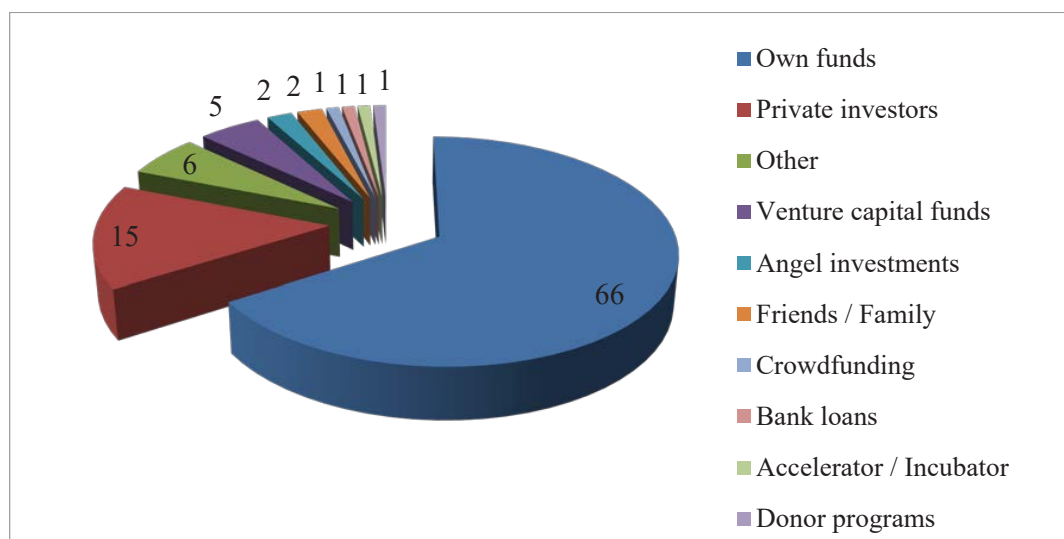
Field of activity	2021	2023
Technology and infrastructure	22	24
Payments / Money transfers	19	14
Personal and consumer lending	14	12
Legaltech	9	7
Insurtech	6	6
Personal finance / Wealth management	6	6
Consulting / Analytical systems	5	2
Cybersecurity / Anti-fraud	5	2
Digital / Neobanks	4	7
Blockchain / Cryptocurrency	3	5
Electronic wallets	2	2
Marketplace	2	5
Business lending	1	1
Regtech	1	7

*Source: formed on the basis of [12, p. 20]*

decreases by 5% and 2% respectively between 2021 and 2023. This divergence is explained by the start of a full-scale war, which has significantly affected companies in these sectors. It is worth noting that the regulatory area has grown significantly, with its share increasing from 1% in 2021 to 7% in 2023, as most companies try to find technologies that help them manage their obligations.

The sources of funding for fintech companies in 2023 are shown in Figure 2. The graph clearly shows that the vast majority of companies (66%) will finance their activities from their own resources. Much smaller shares (from 5 to 15%) come from sources such as private investors, venture capital funds and others. And very small shares (1-2%) are held by angel investors (investing money in a start-up), friends/family, crowdfunding, bank loans, accelerators/incubators, donor programmes. Thus, investment in fintech in Ukraine is currently quite low, but many companies plan to attract more investment in the future to expand and develop their business.

Domestic fintech companies use a variety of technologies in their operations (see Figure 3). As it can be seen, the most widespread technologies (with a share of 12-24%) are application programming interface (API), cloud services and chatbots, which bring significant business benefits due to their advantages. Blockchain and low-code platforms are the least popular technologies (with a 4% share) in fintech companies.



**Figure 2. Sources of financing for fintech companies in 2023, %**

*Source: formed on the basis of [12, p. 24]*

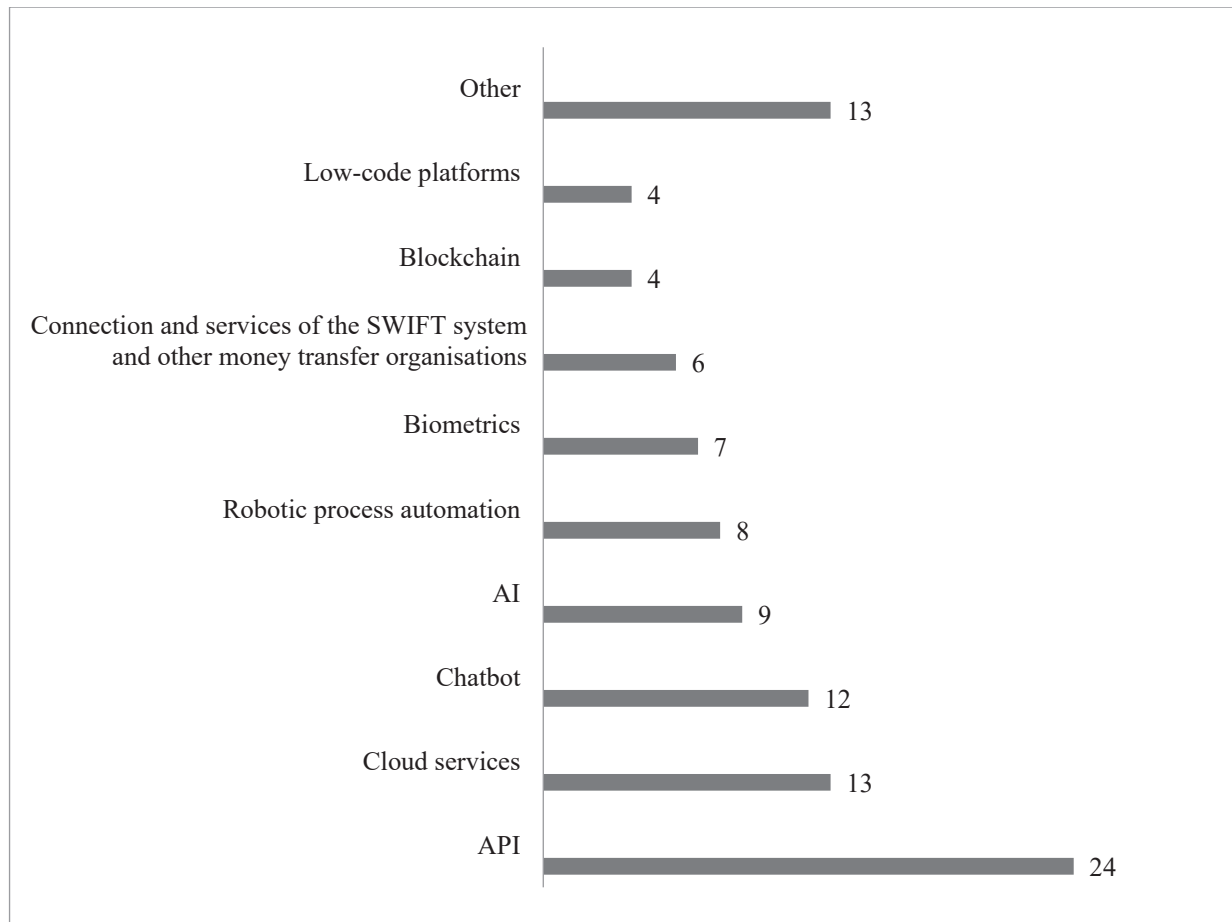


Figure 3. Technologies used by Ukrainian fintech companies, %

Source: formed on the basis of [12, p. 28]

To predict the number of fintech companies established in Ukraine in 2023, five trend models will be built on the basis of the data in Figure 1:

exponential  $y = a_1 e^{a_0 x}$ , (1)

linear  $y = a_1 x + a_0$ , (2)

logarithmic  $y = a_1 \ln(x) + a_0$ , (3)

polynomial  $y = a_2 x^2 + a_1 x + a_0$ , (4)

power  $y = a_1 x^{a_0}$ , (5)

where  $a_0, a_1, a_2$  – constants,  $x$  – time.

As a result, the following forecast models will be obtained:

exponential:  $y = 15.04 e^{0.0155x}$  ( $R^2 = 0.0072$ ), (6)

linear:  $y = 0.3273x + 17.4$  ( $R^2 = 0.0094$ ), (7)

logarithmic:  $y = 4.5987 \ln(x) + 12.047$  ( $R^2 = 0.0934$ ), (8)

polynomial:  $y = -1.0186x^2 + 12.551x - 9.0848$  ( $R^2 = 0.7179$ ), (9)

power:  $y = 10.844x^{0.264}$  ( $R^2 = 0.1063$ ), (10)

where  $R^2$  approximation reliability value (a number from 0 to 1), which is used to determine the degree of trend reliability and forecast accuracy (the closer to 1, the more reliable the forecast).

As can be seen, the polynomial model has the highest probability of verification, since the value of the approximation reliability is the highest (0.7179), although it is not high enough (does not exceed 0.9). The trend line is shown in Figure 1. According to it, the number of fintech companies established in 2023 will reach a negative value (-5). This result is due to a significant decline in the indicator over the past four years.

Consequently, despite the active development of the fintech market in Ukraine, there are still many factors that hold it back:

- Lack of a sustainable fintech ecosystem;
- limited number of digital financial market specialists;
- low level of financial awareness of the population;
- insignificant representation of global fintech brands in the Ukrainian market;
- export orientation of the innovation sector, etc. [16]

At the same time, the strengths of Ukrainian fintech development are highlighted:

- Growing demand for fintech products;
- significant percentage of small and medium-sized business entrepreneurs;
- good geographical location of Ukraine;
- proactive role of the NBU in the development of innovations;
- developed IT sector, etc [16].

One of the most successful financial innovations is the creation of Monobank in Ukraine in 2017. In the same year, it was recognised as the best fintech startup. Monobank does not have any physical branches [17], but has more than 6 million users. The bank's main advantages are low interest rates and a functional mobile application. However, it is worth noting that the lack of physical branches and the inability to open pension accounts are quite significant disadvantages of the bank.

It is worth noting that Ukraine has many useful ideas that lack funding for their implementation. Unfortunately, during the war, it is difficult to introduce new innovative products and provide sufficient funds for their operation. However, despite all the circumstances, the domestic fintech market is still functioning and developing.

**Conclusions.** The fintech market in Ukraine is still in its infancy, and its further development is possible only if a favourable legislative and regulatory environment is created, access to investment is ensured, and there is a sufficient number of qualified personnel. Although Ukraine is open to new technologies, the pandemic and the war have had a negative impact on its economic development, including the number of fintech companies established. However, the openness of Ukrainians to digitalisation is a key factor for the successful use of financial technology in Ukraine in the future.

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JEL C53, G10

**Olesia Totska**, Doctor of Economic Sciences, Professor at the Department of Management. **Bohdana Shevchuk**, Applicant of the Second (Master's) Degree, Lesya Ukrainka Volyn National University. **Fintech market in Ukraine: analysis and forecasting.**

The purpose of the study is to analyse the indicators of the development of the fintech market in Ukraine and to build a predictive trend model of the number of fintech companies created in 2023. The methods of analysis and extrapolation of trends were used to conduct the study. The factors influencing the active development of financial technologies in Ukraine are listed, as well as the main problems in the development of fintech. Indicators of the dynamics of creation of domestic fintech companies in 2012–2022 are given. The distribution of fintech companies by sector of activity has been analysed. The sources of financing of fintech companies in 2023 were studied. The range of technologies used by Ukrainian fintech companies was studied. Five trend models were created to forecast the number of fintech companies created in Ukraine in 2023.

**Key words:** fintech market, fintech companies, areas of activity, sources of funding, technologies, forecast trend models.

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JEL C53, G10

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Метою дослідження є проаналізувати показники розвитку фінтех-ринку в Україні та побудувати прогнозні трендові моделі кількості створених у 2023 р. фінтех-компаній. Для проведення дослідження використано методи аналізу та екстраполяції трендів. Перелічено фактори впливу на активний розвиток фінансових технологій в Україні, а також основні проблеми у розвитку фінтеху. Вказано на зміни регуляторного характеру в 2022 р., які відкрили можливості для подальшого розвитку фінтех-ринку України. Наведено показники динаміки створення вітчизняних фінтех-компаній упродовж 2012–2022 рр. Визначено, що пік реєстрації компаній припав на 2018 р. (39 організацій), після якого спостерігалось щорічне зниження показника. Проаналізовано розподіл фінтех-компаній за сферами діяльності. Отримано, що в 2023 р. найбільші частки (понад 10%) належали сферам технологій та інфраструктури, платежів / грошових переказів, особистого та споживчого кредитування. Відмічено, що значного розвитку набула регуляторна сфера, частка якої зросла з 1% у 2021 р. до 7% у 2023 р. Проаналізовано джерела фінансування фінтех-компаній у 2023 р. Визначено, що більшість ком-

паній здійснює свою діяльність за рахунок власних коштів (66%), приватних інвесторів (15%) і венчурних фондів (5%). Досліджено спектр технологій, використовуваних українськими фінтех-компаніями. Виявлено, що найпоширенішими технологіями є інтерфейс прикладного програмування API (24%), хмарні сервіси (13%) та чат-боти (12%). Для прогнозування кількості створених в Україні в 2023 р. фінтех-компаній побудовано п'ять трендових моделей: експоненційну вигляду  $y = 15,04e^{0,0155x}$ , лінійну вигляду  $y = 0,3273x + 17,4$ , логарифмічну вигляду  $y = 4,5987\ln(x) + 12,047$ , поліноміальну вигляду  $y = -1,0186x^2 + 12,551x - 9,0848$ , степеневу вигляду  $y = 10,844x^{0,264}$ . Отримано, що найбільшу імовірність справдження має поліноміальна модель, величина достовірності апроксимації якої становить 0,7179. Згідно неї кількість зареєстрованих у 2023 р. фінтех-компаній набуде від'ємного значення. Відзначено, що відкритість українців до діджиталізації є основним фактором успішного використання фінансових технологій в Україні в майбутньому.

**Ключові слова:** фінтех-ринок, фінтех-компанії, сфери діяльності, джерела фінансування, технології, прогнозні трендові моделі.