

DOI 10.32782/city-development.2024.2-6

UDC 334. 336

DEVELOPMENT OF THE STARTUP INDUSTRY IN UKRAINE: STATUS, CHALLENGES, PERSPECTIVES

Mariia Dykha

Doctor in Economics, Professor,
Professor of the Department of Economics, Analytics, Modeling
and Information Technologies in Business

Khmelnytskyi National University

ORCID: <https://orcid.org/0000-0003-4405-9429>

Valerii Dykha

Graduate Student

Khmelnytskyi National University

ORCID: <https://orcid.org/0009-0004-2398-3692>

Sergiy Gonta

Master's Student

Khmelnytskyi National University

ORCID: <https://orcid.org/0009-0008-3817-9524>

Summary. The article notes the importance of the development of the startup industry and the achievements of Ukrainian startups in various fields: from IT and blockchain to agricultural technologies and medicine. High rates of development of the IT sector of Ukraine were noted, with numerous successful examples of companies that attracted millions of dollars of investment. The authors substantiated the main components of startup design. The important characteristics of a startup business idea are described. The main aspects that must be taken into account in the process of searching and generating a business idea for a startup have been determined. It is justified that investors are looking not just for business ideas, but also for teams that can implement these ideas, adequately assess risks, and stably and harmoniously solve the tasks of a startup project. The range of factors of the external environment, the impact of which must be taken into account, is outlined. The characteristics of companies that demonstrated their technological solutions and attracted investments in 2022-2023 despite the difficult conditions of the war in Ukraine, security risks, global turbulence and venture financing problems are presented. The results of attracting investments by Ukrainian companies in the development of startups were analyzed, and the areas of activity in which the companies showed development results were highlighted. A number of measures that contribute to the development of the startup industry are described. It was noted that at the level of the state and local self-government bodies, competitions and grants for the implementation of start-up projects are announced, conditions are created for the presentation of start-up projects as part of international events, conferences, exhibitions. The prospects for the development of the domestic startup industry are substantiated. Despite the decrease in activity, the difficulties associated with the war, *Ukraine is a country of unique talents who are able to produce startup projects, present and scale them to the whole world.*

Keywords: startup project, innovative solutions, risks, business idea, team, investment, startup industry, acceleration measures.

Formulation of the problem. In today's world, startup projects offer innovation and scale technological development. Ukraine has always been known for its intellectual capital. In the mid-90s of the 20th century, many talented specialists left abroad in search of better opportunities. With the beginning of the 2000s, thanks to globaliza-

tion and the development of the IT industry, the situation began to change. Young people began to actively generate ideas, develop startups, many of which received international recognition. Today, Ukrainian startups are represented in various fields: from IT and blockchain to agricultural technologies and medicine. The IT sector remains the



most dynamic, with numerous successful examples of companies that have attracted millions of dollars in investment.

Ukraine's startup industry is a real Klondike for investors looking for innovative projects with great growth potential. One of the key advantages of startup design in Ukraine is the availability of educational programs and accelerators for startups. These programs help young entrepreneurs get the necessary knowledge, find partners and investors. Despite the challenges, Ukrainian startups continue to surprise the world with their creativity and dedication to their work. Thanks to the enthusiasm of young entrepreneurs and the support of the international community, the prospects for development look optimistic.

At the same time, Ukrainian startups often face the problem of attracting investments. And it's not because they have nothing to offer. On the contrary, many Ukrainian startups offer innovative solutions that can compete at the global level. The problem is that investors, especially international ones, see a number of risks associated with investing in Ukrainian projects. The above determines the need to substantiate the barriers and opportunities for the development of the startup industry, which also determines the relevance of the research topic.

Analysis of the latest scientific research and publications. The topic of startup projects is relatively new in scientific literature. However, certain issues regarding the development and implementation, risk management of startup projects are covered in the publications of domestic and foreign researchers. In particular, the authors of the publication [1] consider the startup as an economic category, obstacles to attracting funds for the development and implementation of innovative projects in the conditions of economic and political instability in Ukraine. In the publication [2], startups as a form of entrepreneurial activity are substantiated, as well as foreign experience in the development of startups is investigated. The monograph [3] analyzed the essence of the concept of "startup" and disclosed the theoretical aspects of managing the life cycle of startups; the role of startups in the economy of Ukraine and the countries of the world is considered.

It is worth paying attention to a number of studies in the cross-section of industries. In particular, the issue of marketing of startups and innovations in agrarian business is highlighted in the publication [4]. The coverage of the development of start-ups in the field of energy was reflected in the publication [5], as well as the main influencing factors and the risk assessment model of energy sector projects were studied in the publication [6].

It should be noted that conditions of uncertainty and risks, which are characteristic of startup projects, led to a number of publications on the justification of risk management issues. In particular, in the publication [7], the author considers the issue of risk management of startups taking into account the development trends of the modern economy and emphasizes that the risks of startups of innovative products can be unpredictable.

The authors of the publication [8] presented the results of a study of specific risks in four main dimensions (organization and human capital; technology and product; finance; marketing and implementation) of 23 startups operating in different sectors in Turkey. According to the results of the study [9], the authors focus on risk management tools and the cost of engineering for successful project implementation; draw attention to the need for a combination of risk management and cost engineering to ensure optimal value for money, leading to better project outcomes.

In the context of investing in start-up projects, venture investment funds play an important role. The publication [10] analyzed the state and trends of the development of venture activity in Ukraine, and proposed measures to stimulate the development of venture business in the field of implementation of innovative projects. Business angels can also play a significant role in financing startup projects. The publication [11] investigated the level of financial support for projects at their initial stages, noted their significant role in EU countries, the weak level of development of project financing by business angels in Ukraine, and measures to activate informal investment.

In view of the modern realities of challenges and threats, the issue of justification needs to be clarified barriers and opportunities for the development of the startup industry in Ukraine.

The purpose of the article. To analyze the state, problems and prospects of the development of the domestic startup industry in the conditions of war and global turbulence.

Presenting main material. Startups are innovative by nature. The start-up design process is initiated by formulating and validating a business idea that must meet market needs and be technically feasible. The key feature that characterizes a startup business idea is the uniqueness of the offer, which must be demanded by the circumstances of the time and place. It is also advisable to consider "borrowing" a business idea, which will be expressed in its implementation in a certain place, for a certain segment, where it has not yet been implemented. The second important characteristic of a business idea is the cost of its implementation. This issue is complex and multifaceted. The best business ideas without adequate

financing may not be implemented. There are also risks of incorrect budget planning or a general lack of understanding of the financial side of business. Not infrequently, specialists in a certain area, when generating business ideas, do not have a sufficient amount of funds for their implementation, and may not be sufficiently familiar with the world of finance and investing. Of course, in order to interest an investor in financing a startup project, first of all it is necessary to acquaint a potential partner with a business idea, the implementation of which will bring profits. However, investors are looking not only for business ideas, but also for teams that can implement these ideas, adequately assess risks, and solve the tasks of a startup project in a stable and coordinated manner. In addition, the market, technology and consumer needs are constantly changing. Investors are looking for teams that can quickly respond to these changes, that is, the team must be flexible and ready for challenges. Transparent reporting, the ability to build management reports, effective sales management are just a few aspects that can influence an investor's decision. Investors want to see where their money is going and how it is being used. Regular financial reporting that reflects the real state of accounts can increase trust in the project. If the team does not have an experienced specialist in a certain field, it is recommended to involve external consultants. Their experience can help you avoid common mistakes and increase your chances of success.

The team is an extremely important component of a startup project. In the "hands" of the team is both the generation of the idea and its justification, the development of the product and its implementation on its own or with the participation of involved investment resources. Stable and effective work of the startup project team is ensured by effective management of startup design processes, a clear role of each participant, and the prevention of conflicts. The coordinated work of the startup project team, which is focused on the result, will determine the confidence of investors.

Startups are often started by young enthusiasts who have many ideas, but do not always have the necessary experience to implement them. This may be due to a misunderstanding of the market, a wrong definition of the target audience, or poor marketing strategies.

The main aspects that must be taken into account in the process of searching and generating a startup business idea are as follows:

- a clear understanding of the goals of creating a startup project. Understanding a startup's place in the market and its target audience is key to the success of any business/startup. If the team

doesn't understand who their product is for or what needs it satisfies, it can lead to ineffective marketing, ineffective functions, and therefore wasted resources. It is wrong to focus only on originality, to search only for a new and extra original business idea. A business idea can be quite simple, but characterized by uniqueness and appropriate for implementation in a certain segment;

- analysis of the market (local, regional) and consideration of its features. Before approaching investors, the startup project team must have a clear understanding of their market and potential customers. This will not only help define your place in the market, but also show investors that the team is competent;

- it is impossible to predict everything, but the potential implementation of a business idea should include a strategic understanding of the prospects of the market. Without a strategic vision and development strategy, a startup can quickly lose its business focus, business mission, and the distraction of tasks and the dispersion of resources will ultimately lead to the failure of the startup project.

Note that technology start-up projects often face problems related to product development. This may be due to a lack of the necessary technical skills, problems with the stability of the product or its scalability. If the startup team cannot solve these problems in time, investors may consider the project too risky to invest. It is also worth noting that if the startup project involves the generation of a unique product or technology, it is important to take care of intellectual property protection. Patents, copyrights and other forms of protection can play a key role in providing competitive advantage.

Startup project developers' understanding of potential risks, the ability to manage them, gives them reason to make informed decisions. The publication [12] describes the manifestations / signs of risks in the process of development and implementation of startup projects, and also highlights the differences of startup projects in comparison with projects of traditional businesses, which cause differences in risk management.

The ability to reduce and eliminate the impact of negative factors is essentially overcoming barriers to the development and implementation of startup projects, and the ability to take advantage of all opportunities and favorable circumstances contributes to the rapid takeoff and success of a startup.

As a result of the research [13], the author team presented a model for predicting the success of startups, which will contribute to the adoption of better investment decisions. The proposed model combines the following characteristics: the period from the founding of the startup to the first financ-

ing, the field of activity, the type and amount of the first round of financing.

Issues of risk management, forecasting and other issues related to the internal environment of a startup project are in the "hands" of its team.

However, not all potential risks and threats can be predicted and even more so preemptively leveled by the startup project team. First of all, it concerns the risks associated with the influence of environmental factors. Changes in the parameters and characteristics of the external environment (political and legal environment, macroeconomic, socio-cultural, demographic, etc.) require an adequate reaction of the startup project team. It is clear that depending on the startup project (its purpose, scope of application, elasticity of demand for the product, etc.), the influence of the factors will be significant or not significant.

Despite the significant achievements of Ukraine on the path of democratization and reforms, the political and legal situation in the country remains unstable. Today, the Russian Federation's war against Ukraine necessitates changes to the legislation; such changes may directly or indirectly stimulate the intensification of the development and implementation of certain startup projects, as well as worsen the conditions of startup projects in certain spheres of activity or in certain territories.

Macroeconomic characteristics of the functioning of national economies are also basic elements that must be taken into account by the subjects of activity. This applies, for example, to business con-

ditions, the tax system, inflation, etc. For example, fluctuations in the hryvnia exchange rate can affect the startup's ability to fulfill its obligations to investors, especially if the investments were made in foreign currency.

Under the prism of the war, the demographic issue was also brought to the fore. Forced migration abroad changes the overall labor market and the loss of potential employees in the startup industry in Ukraine. The duration of the war creates risks of an increase in the share of people who will not return to Ukraine from among those who were forced to leave it due to the war.

Analyzing the development of startups, the volume of investments by Ukrainian companies, we note that the Ukrainian startup industry was in the top five in terms of growth rates in Central and Eastern Europe before the beginning of the full-scale invasion of the Russian Federation on the territory of Ukraine. According to the results of a study by the Dealroom company, the combined valuation of all startups in Ukraine from 2017 to 2022 increased more than nine times – up to 23.3 billion euros. In 2022, there was a decline in the attraction of investments by Ukrainian start-up projects. But, despite the full-scale war of the Russian Federation against Ukraine, many domestic projects managed to attract investments. In Table 1, we will present information about startup projects that have attracted the largest amount of investment from among those with teams/offices in Ukraine and Ukrainian compatriots.

Table 1 – Ukrainian startups that attracted more than 5 million dollars of investments in 2022

Startup company, characteristics	The volume of involved investments in 2022
<p>Near Protocol is a startup in the crypto industry. The company launched a blockchain platform that helps developers create decentralized services (dapps). NEAR claims that their product is faster, easier to use and cheaper than the competition. Founded in 2018 by: Ilya Polosukhin, Oleksandr Skidanov. Offices: Lisbon (Portugal), part of the team is located in Ukraine.</p>	<p>\$500 million was raised (in January – \$150 million from Three Arrows Capital, Dragonfly Capital, a16z, Mechanism Capital, etc.; in April – \$350 million from Tiger Global, Republic Capital, Hashed, FTX Ventures, Dragonfly Capital and other investors). Investments were directed to the expansion of regional offices and the launch of new projects in Web3.</p>
<p>Unstoppable Domains is a crypto startup. The team creates short NFT domains to which a user can bind the addresses of all their crypto wallets. Each wallet consists of 30+ random characters. It is very difficult to remember them, unlike a simple domain. The startup sells its "creations" from \$5/domain. The user owns it for life. Unstoppable Domains has already sold over 2.5 million domains. In 2018, it was founded by: Americans Brad Kam, Matthew Gould, Braden Pezeshki and Ukrainian Bohdan Gusev. Offices: San Francisco (USA), Kyiv. Number of employees: more than 150.</p>	<p>Raised \$65 million in July funding of funds: Pantera Capital, Mayfield, Gaingels, Alchemy Ventures, Redbeard Ventures, Spartan Group, OKX Blockdream Ventures, Polygon, CoinDCX, CoinGecko, We3 syndicate, Rainfall Capital, Broadhaven, El Ventures, Hardyaka, Sound Media Ventures, as well as previous investors Boost VC and Draper Associates. The startup became the second Ukrainian "unicorn" with an estimate of \$1 billion, which managed to achieve this "status" in wartime.</p>

Закінчення табл. 1

<p>AirSlate (formerly PDFfiller) is a no-code SaaS workflow automation service. The platform collects solutions for development, integration, automation of document flow from the cloud. AirSlate has about 87 million users and 700,000 customers worldwide. In particular, BillingTree, Ground Floor, Tutor Perini, Colliers, FirstData, GoFundme, etc. In 2008, it was founded by: Vadym Yasynovsky, Borys Shakhnovych. Offices: Kyiv, Boston (USA), Wroclaw (Poland), St. Petersburg (Russia). Number of employees: more than 900, most of them in the Kyiv office.</p>	<p>Raised \$51.5 million in June in a Series C round from G Squared UiPath Ventures. The company became a "unicorn": its valuation exceeded \$1.25 billion. A little later, AirSlate bought the document signing platform DocHub, which has almost 83 million users. The amount of the deal was not disclosed.</p>
<p>Preply is a platform for selecting tutors who help learn a foreign language. Preply has more than 49 000 teachers from 185 countries and about 50 languages to choose from. Since its launch, more than 16 million lessons have been subscribed to the platform. Founded in 2012 by: Serhii Lukyanov, Dmytro Voloshyn, Kyrylo Bigai. Offices: Kyiv, Barcelona (Spain), New York (USA). Number of employees: more than 400.</p>	<p>Raised \$50 million in July in Series C round from Owl Ventures, Diligent Capital, Hoxton Ventures, Educapital, Evli Growth Partners, Przemyslaw Gacek, Swisscom Ventures and Orbit Capital. The team directed the received funds to growth in the USA and Europe, polishing search technology based on artificial intelligence.</p>
<p>Spin Technology (formerly Spinbackup) is a cybersecurity startup. The team has developed unique antiviruses for third-party SaaS services. The software detects threats on various platforms: Google Workspace, Microsoft Office 365, Salesforce, etc. The platform includes four components: ransomware monitoring and response, application risk assessment, data leakage prevention, backup and recovery. Spin has over 1600 clients: Toyota, OFS, Utibrain, Autodoc, Miller and more. Founded in 2013 by: Dmytro Dontsov. Offices: Kyiv, Odesa, Los Angeles (USA), Palo Alto (USA). Number of employees: more than 80.</p>	<p>Raised \$16 million in August from Blueprint Equity, Santa Barbara Venture Partners and Blu Venture Investors. The company was valued at 55 million dollars. The funds received were used for further expansion, expansion of services, increase of marketing, sales and engineering teams.</p>
<p>Fintech Farm is a fintech company that develops platforms for launching neobanks in various countries around the world. Founded in 2020: Dmytro Dubilet, Oleksandr Vityaz, Mykola Bezkrorny. In 2021, Fintech Farm opened its first project – Leobank in Azerbaijan. It has planned expansion to the countries of Africa and Asia. Offices: Kyiv, Dnipro. Number of employees: more than 70.</p>	<p>Raised \$7.4 million in January from Flyer One Ventures, Solid, Jiji (part of the Genesis group), TA Ventures, u.ventures, AVentures Capital. Despite the war, the team in Vietnam launched Liobank, in Nigeria – Fibo. For expansion, Fintech Farm attracts a local bank partner, with which it shares the business 50-50.</p>
<p>Salto X is a crypto startup. The team is developing a Web3 alternative to stock options. So the product replaces traditional employee option programs with tokens using a smart contract. This allows you to reduce the costs of legal registration regardless of the jurisdiction and simplify the issuance of company shares for remote or contract employees. Founded in 2021 by: Ragnar and Eliza Sass, Christs Avots, Tatyana Tchaikovsky. Offices: Kyiv, Riga (Latvia), Tallinn (Estonia). Number of employees: about 20.</p>	<p>EUR 5.2 million was raised in July. Funds were invested by ByFounders, Blockwall, Box Group, 3Commas and a number of "angels". Investments went to scaling the product in different jurisdictions and expanding the team in Ukraine; Salto X office opened in autumn.</p>
<p>Utorg is a crypto exchange with simple functionality. The user enters the amount in fiat currency (hryvnias, dollars, euros), indicates the name of the crypto wallet – receives crypto for it. The commission is 6.5%. There are many such projects on the market. The developers believe that their product is chosen by customers because it is fast and easy to use. According to Utorg, this crypto exchange has already been used by millions of people from almost 200 countries. Forbes provides more "objective" statistics: from May 2021 to May 2022, the startup received \$20 million in revenue from 250 000 users. In 2020, they were founded by: Artem Barannyk, Daniel Stolberg, Yevhen Petrakov. Offices: Kyiv.</p>	<p>\$5 million was raised in September. American Dragonfly and Ukrainian Hypra and TA Ventures invested in Utorg. The involved investments went to the development of the decentralized application and promotion around the world: the team receives licenses for the digital asset exchange service provider in Great Britain, Canada, the UAE, Singapore, Thailand, etc.</p>

Source: compiled by the authors based on data [14]

We note that despite the rapid decline in the crypto industry in 2022 / "cryptozyme", 4 of the top 8 startup projects with the largest volumes of attracted investments this year are crypto startups.

The investment portal [15] displays information on the TOP-20 deals of venture financing of Ukrainian startups in 2023, noting that in 2022 the Ukrainian market received an unexpected 98 investments (angels, early stage, later stage and private equity), and for the first half of 2023 – 42. Regarding the agreements concluded in 2022, it is stated that most of the agreements of the first half of 2022 were agreed, and some were formalized even before the full-scale invasion. Despite the decrease in activity, investments in Ukrainian and foreign companies founded by Ukrainians are still attracted, and with them – investments by Ukrainian venture funds. The main investment rounds of Ukrainian startups for 2023 are shown in Table 2.

In addition to the investments attracted by startups, information about which is shown in Table 2, in 2023 the following startups attracted significant amounts of investments: \$1 million each – Fuelfinance (for the development of a product for financial planning in startups) and Zeely (a mobile application with artificial intelligence for

increase in small business sales); \$900000 was raised by the startup Workee (develops an online business management system for freelancers) and \$800000 was raised by the startup Awesomic (develops an algorithm that quickly connects companies with proven designers. The team planned to spend the raised funds on expanding the geography of its work and overcoming the impact of war); \$500000 each was raised by startup Aspichi (working on a VR platform for interactive streaming) and startup Prengi (developing a SaaS platform for real estate management); \$400000 – attracted startup Getpin (developing an online marketing tool); EUR 250000 – InputSoft (a SaaS platform for optimizing the use of human and technical resources and data analysis in airports); up to \$125000 – Swarmer (a startup specializing in software for managing drone swarm missions).

As we can see, the range of startups in terms of their activities is quite wide. Despite the difficult conditions of the war in Ukraine, security risks, global turbulence and problems of venture financing, Ukrainian startups demonstrate their technological solutions, attract investments and demonstrate promising development.

The presented information on investments raised for the development of Ukrainian startups

Table 2 – Attracting investments in the amount of more than 1 million dollars by Ukrainian startups in 2023

Startup company, characteristics	The amount of involved investments in 2023.
EdTech company Preply is an online language learning platform that connects teachers with students using a machine learning algorithm. In 2012, it was founded by: Ukrainians: Serhii Lukyanov, Dmytro Voloshyn and Kyrlyo Bigai.	\$70 million of equity and loan capital. The new round of financing was led by Horizon Capital, a company specializing in equity capital investments, and Reach Capital, Hoxton Ventures, etc. also participated in the round. Financing will increase the volume of the C series to \$120 million.
Fintech Farm is a platform for launching neobanks in partnership with traditional banks around the world. Founded in 2020: Ukrainians Dmytro Dubilet, Oleksandr Vityaz and Mykola Bezkrorny.	\$22 million was raised; in April, the British company Fintech Farm closed round B. The lead investor was the Nordstar fund, and the round itself is a combination of equity and convertible loan. According to AIN.UA, the company's valuation exceeds \$100 million.
DressX is a platform that sells digital clothing and works with other marketplaces and platforms. In 2020, it was founded by: Ukrainians Daria Shapovalova and Natalia Modenova.	\$15 million was raised; in March, American startup DressX closed a new investment round. The lead investor of the round is the Greenfield Capital fund from Berlin. Slow Ventures, Warner Music, The Artemis Fund, Red DAO also joined the list. The team used the funds received for the development of the platform, improvement of its application, marketing and implementation of new functions.
The Ukrainian online programming school GoIT has been operating on the market since 2014.	The parties do not disclose the exact amount and details of the agreement, but it may be a check of 10-15 million dollars for a minority share of 25%; in November, GoIT attracted investment from Growth Fund IV, a new Horizon Capital fund. GoIT plans to direct the investment to expand its presence in the markets of Poland, Romania, Colombia and Southeast Asia. New markets will also be tested: Turkey, Chile, Mexico and Vietnam.

Startup NewHomesMate (formerly Propertymate). The team is working on a platform that allows buyers of primary properties to find information about new buildings. The main customer market is in the USA. In 2018, it was founded by: Ukrainians Bohdan Hnatkovskiy and Sofia Vishnevskaya.	\$5.5 million of investments were attracted in May. American venture capital companies Gaingels, Asymmetry Ventures, the angel syndicate Unpopular Ventures, as well as Ukrainian Geek Ventures, Flyer One Ventures, SID Venture Partners, U. Ventures and early investor Pragmatech Ventures – the fund of iDeals co-founder Yevgen Sergeev participated in the round.
Haiqu is a startup that creates technologies to improve the efficiency of quantum computers. Founded in 2022: American Richard Givan and Ukrainian Mykola Maksymenko within the Canadian deep-tech accelerator Creative Destruction Lab.	\$4 million was raised; in June; the round was led by the American funds MaC Venture Capital and Toyota Ventures, with the participation of SOMA capital, Ukrainian u.ventures, SID Venture Partners, Roosh Ventures, as well as private investors. Investments were planned to be directed to product development and the development of a partner ecosystem for its launch on the market.
Instock is a startup working on a robotic service for warehouses. According to the founder, the system can reduce the cost of fulfilling orders by 10 times, as well as give e-commerce businesses more flexibility. Founded in 2022: Ukrainian Yehor Anchyshkin.	Raised \$3.2 million in December led by Amazon Industrial Innovation Fund. The investment increases Instock's initial funding to a total of \$6.2 million. The round was led by OneWay Ventures and Lux Capital, Commerce VC, u.ventures, Cybernetix Ventures and other investors working in the robotics and e-commerce ecosystem also participated in the financing.
C startup AiSDR is developing an AI-powered tool that creates personalized email campaigns and arranges meetings with potential customers. Founded in August 2023: Ukrainian brothers Yuriy and Oleg Zarembo.	\$3 million of investments were attracted: American – Y Combinator, Rebel Fund, Pioneer Fund, Bluepointe Ventures, Ukrainian – SID Venture Partners, Flyer One Ventures, British – SCM Advisors, managing partner of DST Global Rahul Mehta, Rippling COO Matt McInnis, investor Figma and Notion Terrence Rohan, as well as 408 Ventures managing partner Nick Bilogorsky.
GameTree startup. Its main focus is to create inclusive, non-toxic and friendly gaming communities on a global scale. Founded in 2019 by: Ukrainian Dana Sydorenko and American John Uke.	At the end of the year, \$1.7 million in seed funding was raised. Corazon Capital, Full Stack Ventures, Goodwater Capital, 32-Bit Ventures and Expert Dojo participated in the round, and the company also received a grant from Overwolf.
Deus Robotics. Deus Robotics solutions are based on AI-technology for the orientation and coordination of robots in space, which is quickly integrated into the processes of warehouse operators. In 2018, the startup was founded by: programmer Pavlo Pikulin, who invested \$1 million of his own funds and an additional \$500 000 in angel investments into the project.	At the end of February, \$1.5 million were raised from the Ukrainian venture fund SMRK. The valuation of the startup in this round was 15 million dollars. According to the startup's team, the market for logistics robots in the United States is worth \$7.5 billion and may grow 40 times by 2042. With the new round of funding, the startup plans to allocate more resources to working with customers and developing its R&D. The raised funds will be used to find new customers in the USA and Europe, as well as to expand the line of industrial robots.
Deskree startup. The platform is designed for nocode building of backend infrastructure, simplifying the creation of server infrastructure, eliminating the need for expensive DevOps specialists and cloud architects. Founded in 2021: Ukrainian Dmytro Grechko as an internal startup of his IT company Deskree Studio.	\$1.5 million in seed investments were raised in September from Forum Ventures, Hustle Fund, N49P, Flair Ventures, ZAKA VC, League of Innovators, AAI VC, as well as Ukrainian Flyer One Ventures and Vesna Capital.
Masthead Data is developing a service that allows businesses to track errors and anomalies in large volumes of data in real time, without accessing the client's data and without increasing their cloud computing costs. In 2021, it was founded by: Ukrainians Yuliya and Serhiy Tkachovy.	\$1.3 million was raised in June. Funds SMOK Ventures, DEPO Ventures, Monochrome, Alchemist Accelerator, as well as angel investors from Snowflake, former employees of Uber, Google, etc. participated in the preseed round.

Source: compiled by the authors based on data [15]

is evidence of productive work, results that are demonstrated to investors by the team.

It is important to note that competitions and grants for the implementation of start-up projects are announced at the level of the state and local self-government bodies. Development teams present their innovations at international exhibitions and conferences. Such measures help to find partners and scale.

In particular, 12 Ukrainian startup teams presented their developments related to the fields of ecology, medicine, education, security, agriculture, etc. at the International Exhibition CES 2023 in Las Vegas in 2023. Among the startup projects, we consider it appropriate to single out the following [16]:

- the project of the company Releaf PAPER & BAGS, which involves the world's first production of paper packaging from fallen leaves. The company produces truly eco-friendly paper bags and exports them, and its customers include brands such as L'oreal, Schneider Electric, Samsung, Weleda and Ariston Thermo;

- the Melt Water Club project is a technical solution for obtaining premium drinking water thanks to the innovative Freezing Process technology. The startup is engaged in the production of melt water by the freezing method and using modern developments. From 200 liters of pure (as is usually considered) artesian water, you can get 100 liters of melt, because the innovative technology does not leave any impurities or harmful substances;

- OptySun project – water purification and disinfection technology in any conditions. The device can work both indoors and outdoors. It requires only water of any quality and access to sunlight or a source of electricity. The principle of operation is based on a combination of several cleaning technologies – ozone, ultraviolet and physical (cleaning from large particles). The technology kills 99.9% of bacteria, does not require consumables and provides 5 daily portions of water every 30 minutes;

- Rekava project – creation of biodegradable products from reused coffee grounds. Rekava creates tableware that is fully compostable and decomposes in a maximum of 4.5 months, can become fertilizer or biofuel, and contains no plastic or chemicals. To get such dishes, you only need to drink coffee, and the company's representatives will collect the grounds, press them, add a food coating and turn them into a glass;

- i3 Engineering project – an innovative company in the field of manufacturing solutions for smart home and automation; also development for the house – a project of the G-MAK.ua company – an innovative device for home security, equipped with a number of unique technological solutions to disorient the intruder.

Also, thanks to the USAID Program "Competitive Economy of Ukraine" in cooperation with the Innovation Development Fund, Startup Grind Kyiv and Western NIS Enterprise Fund, with the assistance of the Ministry of Digital Transformation of Ukraine, the Embassy of Ukraine in the USA and Innovation Bridge Europe, 8 winning companies from more than 50 innovative companies that participated in the selection had the opportunity to present their developments in the USA at the international conference SXSM 2023 [17]. The organizers cover the cost of booths at SXSW for the winners and organize a networking event for them with entrepreneurs and investors of Ukraine & Friends. The following startups made it to the list of winners in 2023: Esports Charts ("Google analytics" for live streaming); deep3dstudio_(a photogrammetric studio that creates realistic 3D avatars); WE/AR (creative studio of AR/VR solutions for business); Mriya production (a production that creates virtual worlds based on a game engine); Zibra AI (a platform for creating realistic 3D content using AI); 3DLOOK (the developer of a virtual fitting room for online stores. The technology increases sales and customer loyalty and reduces the number of returns); Aspichi (audiovisual platform for teleportation. Using 360 video and virtual reality, the technology helps users travel through time and space); V-Art (a platform that helps brands license and monetize their digital assets thanks to the blockchain).

As part of another event, namely at the Startup Grind Global 2023 conference in Silicon Valley, 15 winners of Startup Grind Kyiv had the chance to present their startup projects to entrepreneurs and investors [18]. Among the 15 winners of the competition are various technological products, in particular, a platform for managing the activities of airports and airlines (INPUT SOFT); marketplace of medicines, laboratory tests and care products (Liki24); financial department for startups in the cloud (Fuelfinance); equipment with which the truck consumes up to 20% less fuel and emits 15% less CO₂ (FuelWell); a tool for analyzing the market, the scientific field and the competitive environment to improve R&D investments (Knowledge Engineering).

Challenges and threats of war determine not only security risks in Ukraine, but also cause consequences in various spheres throughout the global world. Today's realities dictate requests for start-up projects that are implemented to solve the tasks of war.

We express our hope that startup projects will be developed for the good, for the development of human civilization and a better future, for solving the tasks of ensuring sustainable development.

Ukraine in the difficult conditions of the war

produces start-up projects and has a high potential to create projects, present innovative ideas and announce them to the whole world.

Conclusions. Startup projects are innovative by nature. The key characteristics of a startup business idea are the uniqueness of the offer, which must be demanded by the circumstances of the time and place. It is also advisable to adapt existing and business ideas to new markets where they have not yet been implemented, which can open up new opportunities for growth. The second important property of a business idea is the cost of its implementation. An extremely important component of a startup project is a team in whose "hands" the generation of an idea, as well as its justification, product development and its implementation, either by own efforts or with the participation of involved investment resources. It is justified that investors are looking not only for business ideas, but also for teams that can bring these ideas to life. An important aspect when making a decision on financing a startup project is a team that is able to implement it, assess risks and respond to them, take into account changes in the parameters and characteristics of the external

environment. Transparent reporting, the ability to build management reports, and effective sales management have a positive effect on the trust of investors.

The main aspects that must be taken into account in the process of searching and generating a startup business idea include the following: a clear understanding of the goal of creating a startup project; market analysis and consideration of its features; the presence of a strategic vision, a strategic understanding of the prospects of the market.

The full-scale war of the Russian Federation against Ukraine caused a negative impact on the attraction of investments by Ukrainian startup projects, however, Ukrainian startup companies persevered, presented their developments and attracted investment resources despite internal security risks and global venture financing problems.

Ukraine is a country of unique talents who are able to produce startup projects and present them to the whole world. Technical and technological business ideas and their development, the spread of startups using artificial intelligence, which will be the subject of further research, are promising.

References:

1. Paliichuk, Ye.S., Fedorov, R.K. Paliychuk, E.S., Fedorov, R.K. The main obstacles to the development of startups in Ukraine. *Efficient economy*. 2021, No. 11. DOI: <https://doi.org/10.32702/2307-2105-2021.11.100>
2. Kasych, A.O., Dzhura, A.M. Startups as a form of entrepreneurial activity: concept, meaning, foreign experience. *Investments: practice and experience*. 2019, No. 2, pp. 24–31. DOI: <https://doi.org/10.32702/2306-6814.2019.2.24>
3. Khaustov, M.M. Startups: Creating and Scaling: A Monograph. Kharkiv: FOP Liburkina L.M., 2023. 224 p.
4. Dykha, M., Mohylova, A., Ustik, T., Bliumska-Danko, K., Morokhova, V., Li, Tchon. Marketing of Start-ups and Innovations in Agricultural Entrepreneurship. *Journal of Agriculture and Crops*. 2022, vol. 8, issue 1, pp. 27–34. DOI: <https://doi.org/10.32861/jac.81.27.34>
5. Khaustov, M.M. Development of startups in the field of energy: global experience and opportunities for Ukraine. *Problems of the economy*. 2022, No. 4, pp. 13–24. DOI: <https://doi.org/10.32983/2222-0712-2022-4-13-24>
6. LI, Jia-ming, Research On Risk Management Of Power Engineering Project Based On Fuzzy Comprehensive Evaluation Method. *Journal Atlantis press. Advances in Computer Science Research*. 2017, vol. 62, pp. 325–329.
7. Bielialov, T. Risk Management of Startups of Innovative Products. *Journal of Risk and Financial Management*. 2022, vol. 15 (202). Available at: <https://www.mdpi.com/1607200>
8. Karaarslan, M.H., Soyulu, N. Risk Factors in Start-Ups: An Evaluation. *Selçuk Üniversitesi Sosyal Bilimler Meslek Yüksekokulu Dergisi*. 2023, pp. 241–258. Available at: <https://dergipark.org.tr/tr/download/article-file/2493109>
9. Masengesho, E., Wei, J., Umubyeyi, N., Niyirora, R. A Review on the Role of Risk Management (RM) and Value Engineering (VE) Tools for Project Successful Delivery. *World Journal of Engineering and Technology*. 2021, vol. 9, № 1, pp. 109–127. Available at: <https://www.scirp.org/journal/paperinformation.aspx?paperid=107109>
10. Dykha, M.V., Polozova, V.M., Orlov, V.V. Venture industry in Ukraine: state, problems and ways to solve them. *Economy, management and administration*. 2022, No. 2 (100), pp. 54–61. Available at: <http://ema.ztu.edu.ua/issue/view/15658>; <https://elar.khmnu.edu.ua/handle/123456789/12652>
11. Pedchenko, N., Strilec, V., Kolisnyk, G.M., Dykha, M.V. and Frolov, S. Business angels as an alternative to financial support at the early stages of small businesses' life cycle. *Investment Management and Financial Innovations*. 2018, No. 15 (1), pp. 166–179. DOI: [http://dx.doi.org/10.21511/imfi.15\(1\).2018.15](http://dx.doi.org/10.21511/imfi.15(1).2018.15)
12. Dykha M., Dykha V., Pylypyak O., Poplavska O., Tanasiienko N. and Tanasiienko V. Risk Management Of The Startup Projects. *2023 IEEE 4th KhPI Week on Advanced Technology (KhPIWeek)*, Kharkiv, Ukraine, 2023, pp. 1–6, DOI: <https://doi.org/10.1109/KhPIWeek61412.2023.10311582>; Available at: <https://ieeexplore.ieee.org/document/10311582>

13. Piskunova, O., Ligonenko, L., Klochko, R., Frolova, T., & Bilyk, T. Applying machine learning approach to start-up success prediction. *Scientific Horizons*. 2021, No. 24 (11), pp. 72–84. Available at: <https://sciencehorizon.com.ua/en/journals/tom-24-11-2021/zastosuvannya-metodiv-mashinnogo-navchannya-dlya-prognozuvannya-uspikhu-startapu>
14. Top 8 Ukrainian startups of 2022: who managed to attract the largest amount of investments. *Mind*. Available at: <https://mind.ua/publications/20251229-top-8-ukrayinskih-startapiv-2022-go-komu-vdalosya-zaluchiti-najbilshij-obsyag-investicij>Стартап
15. TOP-20 deals of venture financing of Ukrainian startups in 2023. Investment portal InVenture. Available at: <https://inventure.com.ua/uk/analytics/articles/top-20-ugod-venchurnogo-finansuvannya-ukrayinskih-startapiv-2023-roku>
16. 12 startups from Ukraine at CES 2023. *blog.imena.ua*. Available at: <https://www.imena.ua/blog/12-startups-from-ukraine-at-ces-2023/>
17. 8 companies that will represent Ukraine at the international conference SXSW 2023. Ministry of Digital Transformation of Ukraine. Available at: <https://thedigital.gov.ua/news/8-kompaniy-yaki-predstavlyat-ukrainu-na-sxsw-2023>
18. 15 Ukrainian startups that will go to Startup Grind Global 2023. Available at: <https://ain.ua/2023/03/22/15-ukrayinskyh-startapiv-na-startup-grind-global-2023-2/>

РОЗВИТОК СТАРТАП-ІНДУСТРІЇ В УКРАЇНІ: СТАН, ВИКЛИКИ, ПЕРСПЕКТИВИ

Диха Марія Василівна

доктор економічних наук, професор,
професор кафедри економіки, аналітики, моделювання
та інформаційних технологій в бізнесі
Хмельницький національний університет
ORCID: <https://orcid.org/0000-0003-4405-9429>

Диха Валерій Валерійович

здобувач третього рівня вищої освіти
Хмельницький національний університет
ORCID: <https://orcid.org/0009-0004-2398-3692>

Гонта Сергій Анатолійович

здобувач другого рівня вищої освіти
Хмельницький національний університет
ORCID: <https://orcid.org/0009-0008-3817-9524>

Анотація. У статті відзначено важливість розвитку стартап-індустрії та наявні здобутки українських стартапів у різних сферах: від IT та блокчейну до агротехнологій та медицини. Відзначено високі темпи розвитку IT-сектору України з численними успішними прикладами компаній, які залучили мільйони доларів інвестицій. Авторами обґрунтовано основні складові проектування стартапів. Описано важливі характеристики бізнес-ідеї стартапа. Визначено основні аспекти, які необхідно враховувати у процесі пошуку, генерування бізнес-ідеї стартапа. Обґрунтовано, що інвестори шукають не просто бізнес-ідеї, але й команди, які можуть ці ідеї втілити в життя, адекватно оцінювати ризики, стабільно та злагоджено вирішувати завдання стартап-проекта. Окреслено спектр чинників зовнішнього середовища, вплив яких необхідно враховувати. Представлено характеристику компаній, які продемонстрували свої технологічні рішення, залучили інвестиції у 2022-2023 роках попри складні умови війни в Україні, безпекові ризики, глобальну турбулентність та проблеми венчурного фінансування. Проаналізовано результати залучення інвестицій українськими компаніями в розвиток стартапів, виокремлено сфери діяльності, у яких компанії показали результати розвитку. Описано низку заходів, які сприяють розвитку стартап-індустрії. Відзначено, що на рівні держави, органів місцевого самоврядування оголошуються конкурси, гранти для реалізації стартап-проектів, створюються умови для презентації стартап-проектів в рамках міжнародних заходів, конференцій, виставок. Обґрунтовано перспективність розвитку вітчизняної стартап-індустрії. Попри зниження активності, складнощі, пов'язані з війною, Україна є країною унікальних талантів, які здатні продукувати стартап-проекти, презентувати та масштабувати їх на весь світ.

Ключові слова: стартап-проект, інноваційні рішення, ризики, бізнес-ідея, команда, інвестиції, стартап-індустрія, заходи акселерації.

Стаття надійшла до редакції 12.07.2024