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ENHANCING REGIONAL DEVELOPMENT WITH STARTUP ECOSYSTEMS¹

In the aftermath of armed conflicts, the importance of rebuilding devastated economies and strengthening stability cannot be overemphasized. Security is a key component of the post-war environment. However, security without development leads to economic stagnation and civil society dissatisfaction, just as development without security threatens economic growth and can lead to complete economic collapse. Post-war reconstruction goes beyond mere physical reconstruction; it must include economic modernization, social cohesion, and the creation of effective governance structures.

Regional development on an innovative basis plays a significant role in stimulating economic growth in the wartime and postwar periods. The creation of innovative ecosystems that support the development of startups and small innovative enterprises contributes to the formation of a favorable business climate in the region and attracts investment. The development of new technologies and the use of innovative approaches can reduce the region's dependence on traditional industries and resources, making it more resilient to economic fluctuations and changes in the global market. The exchange of knowledge, experience, and resources between regions can enhance innovation potential and accelerate development, and the entrepreneurial network created within the innovation ecosystem can become a platform for the exchange of ideas and joint projects, strengthening interregional ties. In addition, innovations contribute to improving the quality of life of the population, expanding access to education, healthcare, and other social services.

Many countries have already achieved significant success in regional innovation development after armed conflicts. For example, South Korea, thanks to its emphasis on science, technology, and innovation, has demonstrated significant economic growth since the Korean War.

There are many bright examples of successful startup ecosystems in post-war regions. For example, the Iraqi city of Erbil has become a thriving startup hub, where initiatives such as the Five One Labs accelerator provide mentoring, training, and funding for entrepreneurs, fostering a vibrant entrepreneurial community [1]. Kigali in Rwanda is an innovation city,

a flagship project aimed at creating an ecosystem focused on high technology, innovation, and talent development to accelerate Rwanda's transition to a knowledge economy [2]. Sarajevo (Bosnia and Herzegovina) is one of the world's top 1,000 startup ecosystems. Sarajevo's startups are particularly prominent in the software and data sectors, as well as in the areas of medical technology, hardware, and the Internet of Things [3]. The island of Sri Lanka is a major trading center in the Indian Ocean and has one of the most liberal economies in South Asia. The startup ecosystem supports many international projects in various industries, including financial markets, manufacturing, transportation, telecommunications, retail, fashion, food and beverage, aviation, travel and hospitality, healthcare, and education. The ecosystem is developing advanced technologies and practices such as artificial intelligence, robotics, drones, blockchain, cybersecurity, intelligent automation, etc., technology services, technology products and knowledge, and other professional services. Sri Lanka's transformation into a global technology and Business Process Management center is the result of several compelling advantages that now also make the country a very interesting destination for international companies looking to find talent and opportunities in various technology sectors [4].

One of the mechanisms of innovative development that is gaining popularity around the world is the creation of startup ecosystems. These ecosystems serve as catalysts for economic growth, the creation of highly skilled jobs, and the development of entrepreneurial talent. Therefore, the role of startup ecosystems in the innovative modernization of regions, as well as the tools to facilitate and strategies for their successful development are relevant.

Several different approaches to research in the field of startups have been formed in Ukrainian economic science. Among the latest publications, it is worth highlighting the works of A. Kasich [5], O. Salikhova [6], T. Galakhova [7], N. Ivanchenko [8], M. Dyba [9], N. Sytnyk [10], and others. Most of these studies focus on analyzing the peculiarities of the organization and functioning of startups, their strategies and success factors. However, the external component of startups as part of the regional innovation ecosystem has not

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received enough attention. This leaves a gap in understanding how startups affect economic dynamics, innovation activity, and social well-being in the regions.

At present, research aimed at studying the role of startup ecosystems in the post-war economic recovery of Ukrainian regions is of particular importance [11-15]. The startup ecosystem includes a wide range of actors, such as entrepreneurs, investors, accelerators, universities, and government. Understanding the dynamics and interaction of these actors in the context of regional development is key to creating a favorable environment for startups and maximizing their contribution to regional economic revitalization.

In many countries, startups are playing a significant role in regional development after armed conflicts. A study of international experience reveals several key principles of successful startup ecosystems. First, it is the existence of favorable legal and tax regulations that facilitate investment and entrepreneurship development. Second, it is the availability of qualified personnel and access to educational and scientific resources. Finally, it is a well-developed startup support infrastructure, including accelerators, incubators, investment funds, etc.

The purpose of the study is to identify the features of startup ecosystems, their impact on regional development, and to identify factors of successful functioning of such ecosystems based on the analysis of foreign experience.

Ukraine must take global trends into account and compete in the global business environment. Studying the experience of foreign startup ecosystems allows us

to learn the best international practices, increase the competitiveness of territories and ensure their dynamic development.

Until relatively recently, the term "startup" was used as a definition of every newly created enterprise and was usually associated only with e-business. However, in recent years, many international business schools have developed an academic definition of what a startup is.

The most popular definition of a startup was given by the creator of the Lean Startup methodology, Eric Rice: "A startup is a human organization designed to create a new product or service under conditions of extreme uncertainty" [16, p. 24].

The famous American entrepreneur, founder of eight successful startups, Steve Blank, noted that a startup is "a temporary organization that is looking for a scalable, repeatable, profitable business model", while existing companies implement them [17, p. 14].

As defined by the European Startup Network, "A startup is an independent organization that is less than five years old and aims to create, improve and expand a scalable, innovative, technological product with high and rapid growth" [18].

Thus, startups play a different role in economic development, in particular, they are seen as engines of new technologies and challenges for existing economic structures (Fig. 1).

The decline in the number of startups is already being equated with the future non-viability of entire countries or individual regions, based on the following considerations.

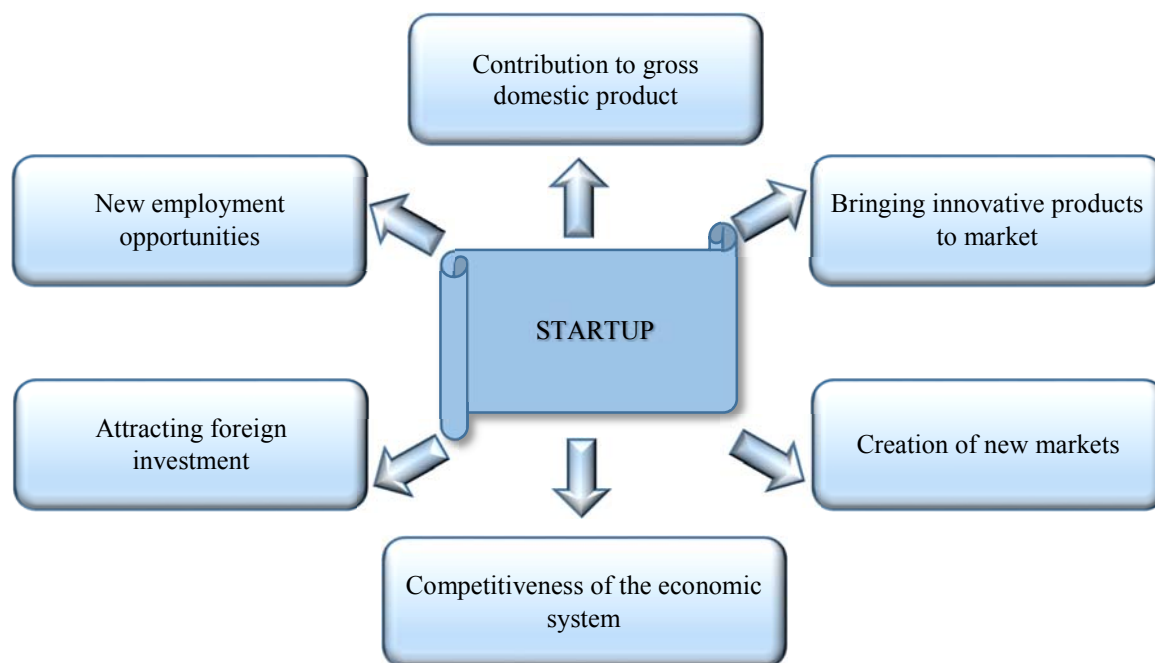


Fig. 1. The role of startups in economic development

1. Startups often represent major innovations and new technologies. They can develop and provide services that were not previously products and improve

existing solutions. A decline in the number of startups could mean that a region or country is losing its ability to innovate and develop new ideas.

2. Startups create jobs for young professionals and entrepreneurs. They help to increase employment and reduce unemployment. This, in turn, can increase consumption and GDP. A decline in the number of startups could lead to fewer opportunities for young people and professionals in the labor market.

3. Startups can be catalysts for economic growth. They attract investments from venture capitalists, angel investors, and other sources of funding, stimulate consumption, and generate tax revenues that can be used to finance city programs and infrastructure projects. This, in turn, can enhance the economic well-being of a country or region.

4. Startups are often a source of new ideas, digital innovations, and technological progress that determine the competitiveness of a country or region on the global stage. They can offer innovative products, services, and business models that compete with foreign companies and promote exports of goods and services. A decrease in the number of startups may reduce interest in the territory, which may affect the availability of capital for new projects.

5. Exports and international competitiveness: Successful startups can expand their operations on the global market and become competitive on the world stage.

In recent years, a growing number of startups have been driven by modernization and creativity and have great potential to change the global economy. They can be founded anywhere, and often the greatest opportunities are in countries with the greatest need: underdeveloped countries, countries in conflict, and countries where entrepreneurship is new, so a small startup idea can grow into a big innovative solution that can change the future of a developing country. Therefore, supporting and creating an enabling environment for startups, including access to finance, education, and infrastructure, plays a key role in facilitating their contribution to a country's GDP. Startups can contribute to the formation of an innovation ecosystem. In turn, a strong startup ecosystem provides access to the resources, mentorship, and funding needed for startups to thrive.

Article [19] is a good reminder of the famous American economist Michael Rothschild, who was one of the first to use the analogy of biological ecosystems in the economy. He equated the economy with biological ecosystems in the sense that both are systems in which there is interaction between participants, because in business, companies depend on customers, suppliers, competitors, and other business entities, and their success is determined by innovation. Startups play an important role in such an ecosystem by supplying other participants with innovative products.

James F. Moore introduced the concept of a "business ecosystem" in his article "Predators and Prey: The New Ecology of Competition" published in the Harvard Business Review in 1993, where he presented

ecosystems in twenty industries and competition [20]. The main ideas presented by James Moore in this article:

- Ecosystem as a biological analogy, where different species coexist and interact with each other to survive and thrive, so do companies in an ecosystem compete and collaborate to create and capture value.

- In an ecosystem, companies interact with each other through networked relationships: as competitors, partners, suppliers, users, and other participants.

- Shared value arises from the interaction between flows in the ecosystem that can join forces to offer products or services that were difficult or impossible for individual companies;

- Dynamism and evolution: ecosystems are dynamic and constantly evolving, new companies can enter the ecosystem and old ones can leave it, and this creates constant changes in the dynamics of ecosystems.

- In an ecosystem, companies understand each other and interact to ensure their own success, and interdependence can contribute to collective development and growth.

In general, J. Moore called for considering the business ecosystem as a system, not as a set of different companies. This concept of a business ecosystem has influenced the current understanding of how companies compete and collaborate in the digital age and helped to understand how interactions and collaborations between companies can enable innovation and idea creation in the more complex and dynamic realities of modern business.

J. Moore's definition of an ecosystem was later refined by Ron Adner, who emphasized the special role of certain conditions under which an ecosystem turns into an economic ecosystem [21]. Such conditions include economic relations, competition between organizations, and the presence of interest groups that are directly or indirectly interested in the development of the economic ecosystem, and any success of a project or innovation depends not only on the company that develops it, but also on how it enters the ecosystem and interacts with other participants.

R. Adner presented innovation ecosystems as networks of companies, suppliers, customers, and partners that cooperate to achieve innovation goals [22]. This includes both direct participants and all those who contribute to the development of innovation processes. He also proposed a number of tools and methods for analyzing and managing innovation ecosystems to enable a company to participate more effectively in innovation processes and cope with challenges. His work has led to an understanding of how companies can successfully interact in today's environment where innovation is becoming increasingly complex and interdependent.

The startup ecosystem can be seen as one of the subsystems of the innovation ecosystem. The innovation ecosystem includes a wide range of organizations, institutions, resources, and relationships that jointly contribute to the creation and development of

innovations [23; 24]. The startup ecosystem includes not only the startups themselves, but also all other elements that influence their activities and growth, such as investors, mentors, experts, as well as regulatory authorities and, as a result, entrepreneurship support programs. Innovation networks and their digital support also play an important role here [25; 26]. Together, they create an environment in which startups can operate successfully and make an additional contribution to the innovative development of the economy and society.

A startup ecosystem is a set of entities that form a system of relationships in the process of identifying, supporting, developing, and commercializing startups [12]. The ecosystem includes incubators, accelerators, venture capitalists, business angels, service providers, and educational institutions. The need for a startup ecosystem stems from the fact that most startups fail. According to statistics, only one in ten startups will be successful. This high failure rate is due to a number of factors, including the fact that most startups are founded by people with no prior business experience. This lack of experience can lead to a number of mistakes that can lead to the failure of a startup.

The following are the main arguments in favor of creating a startup ecosystem:

1) access to resources needed for growth and scaling.

2) community and collaboration, because when an entrepreneur or innovator is part of an ecosystem, he or she is surrounded by like-minded people who are passionate about startups and innovation.

3) access to experienced mentors who can support startups in the early stages, provide access to capital, and help attract the best talent by connecting them with experienced professionals.

Thus, a strong startup ecosystem can somewhat reduce certain risks associated with starting a new business.

StartupBlink is the world's most comprehensive map of startup ecosystems and a research center working to identify the dynamics of startup ecosystems around the world and accelerate their growth, containing tens of thousands of registered startups, coworking spaces, and accelerators, creating a reliable benchmark for innovation around the world [27]. According to the Global Startup Ecosystem Index 2023: Top Countries, the first 3 places are occupied by the United States, the United Kingdom, and Israel (Table 1). Ukraine ranks 49th. Each country has an overall score, which is the sum of three components that measure quantity, quality, and business environment.

Table 1

Global Startup Ecosystem Index 2023: Top Countries

Country rating	Country	Rating change (since 2022)	Total rating score
1	USA	-	198,080
2	United Kingdom	-	51,218
3	Israel	-	49,573
4	Canada	-	34,490
5	Sweden	-	27,074
6	Singapore	+1	26,571
7	Germany	-1	25,939
8	France	+1	22,916
9	Australia	-1	21,503
10	Netherlands	+1	21,423
...
48	Slovenia	-1	4,720
49	Ukraine	+1	4,634
50	Hungary	+1	4,438

Compiled according to [27].

In a regional analysis of StartupBlink rankings, the two dominant regions, North America, and Europe, saw their combined share drop from 72.4% in 2022 to 70.1% in 2023, while the two smallest regions, LATAM and MENA, increased their overall share of the top 1000 from 11.7% to 14% (Fig. 2).

Fig. 3 shows the number of cities in the ranking by region and their distribution in the top 1000 cities in 2023.

It should be noted that although North America is not the region with the largest number of cities in the top 1000 (Fig. 2), it dominates the top 100 cities, leading

both in terms of the number of cities ranked between 1-30, with 12 cities (40%), and in terms of the number of cities ranked between 31-100, with 27 cities (38.5%). For comparison, Europe, which leads the way in terms of the number of cities in the ranking (41%), has only 6 cities in the top 30 (20%) and 22 cities in the 31-100 range (31.4%). Similarly, North America clearly dominates the top charts of all 11 startup industries analyzed: Software & Data, Healthtech, Fintech, Social & Leisure, Ecommerce & Retail, Hardware & IoT, Marketing & Sales, Edtech, Foodtech, Energy & Environment, Transportation.

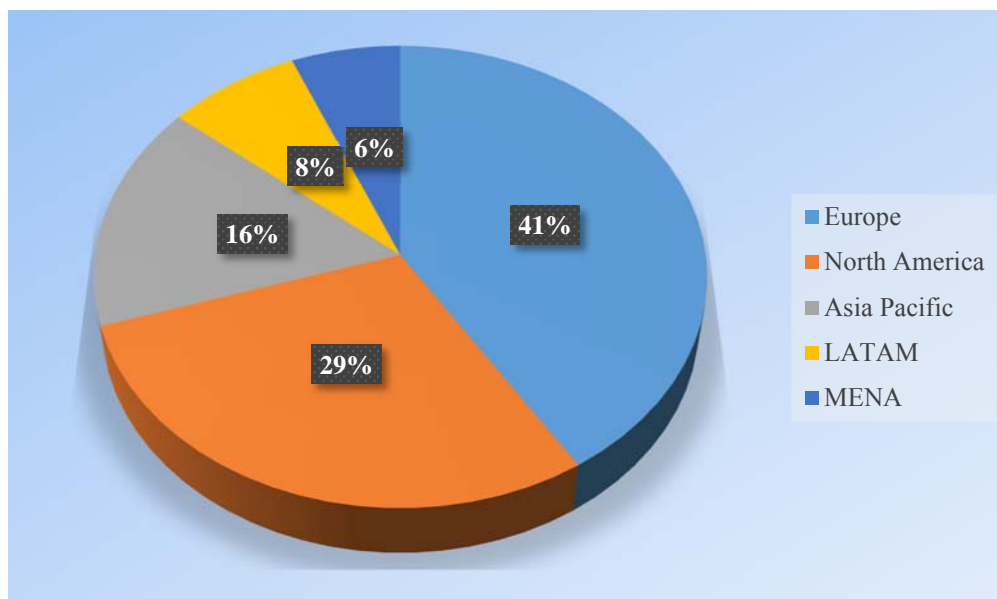


Fig. 2. Regional analysis by StartupBlink rating

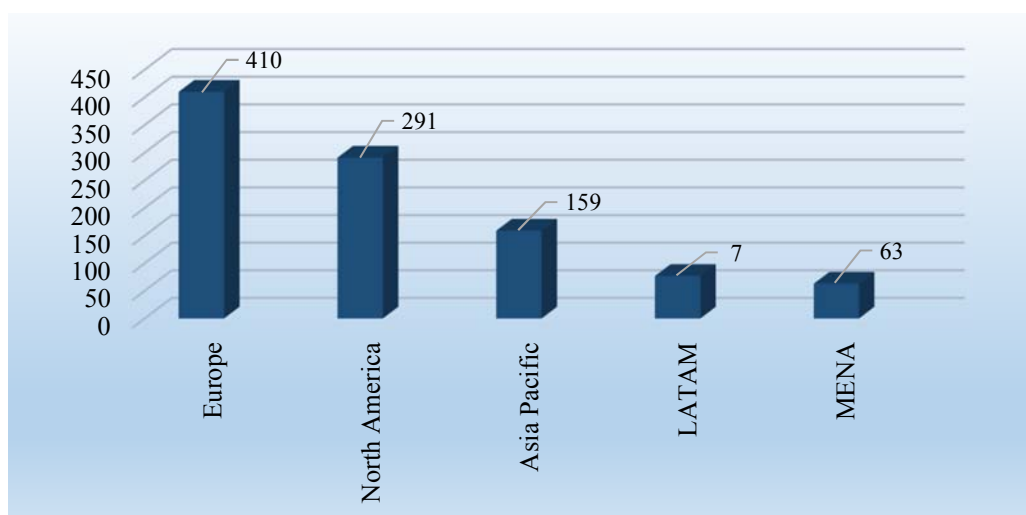


Fig. 3. Number of cities in the ranking by region and their distribution

Let's analyze in more detail the experience of two Scandinavian countries – Sweden and Finland – in developing startup ecosystems.

Sweden is consistently ranked 5th in the world, 2nd in Europe, and 1st in the European Union (EU), and Stockholm's ranking has increased by 4 positions, bringing the country into the global top 20 in 2022-2023 (Fig. 4).

The startup ecosystem in Sweden capitalizes on the country's unique advantages, such as high quality of life, gender equality, strong business climate and global competitiveness.

Historically, Swedish entrepreneurs have created high quality global startups such as Spotify, Minecraft, Klarna, and King. Few European ecosystems have such achievements, which demonstrates Sweden's ability to become a leader in technological innovation in Europe. With a population of just over 10 million people,

Sweden is a textbook example of how small countries can have a huge impact.

Ambitious entrepreneurial mindsets, high-speed internet connections, excellent English language skills, and public sector support make it easy for Swedish entrepreneurs to move forward globally. The support for the startup scene is reflected in the number of events, coworking spaces, and accelerators in Sweden, as well as the Nordic Demo Day, which brings together startups, investors, and corporations [28]. In addition, the Swedish innovation agency Vinnova stimulates the climate of entrepreneurship in the country [29].

The country has 19 cities in the global 1000, down from 21 in 2022. However, there are now 6 Swedish cities in the top 500, not 5 last year. Funding and the number of startup deals in Sweden have fallen during the COVID-19 pandemic, but the country has not lost its strong position in global and European rankings (Fig. 5).

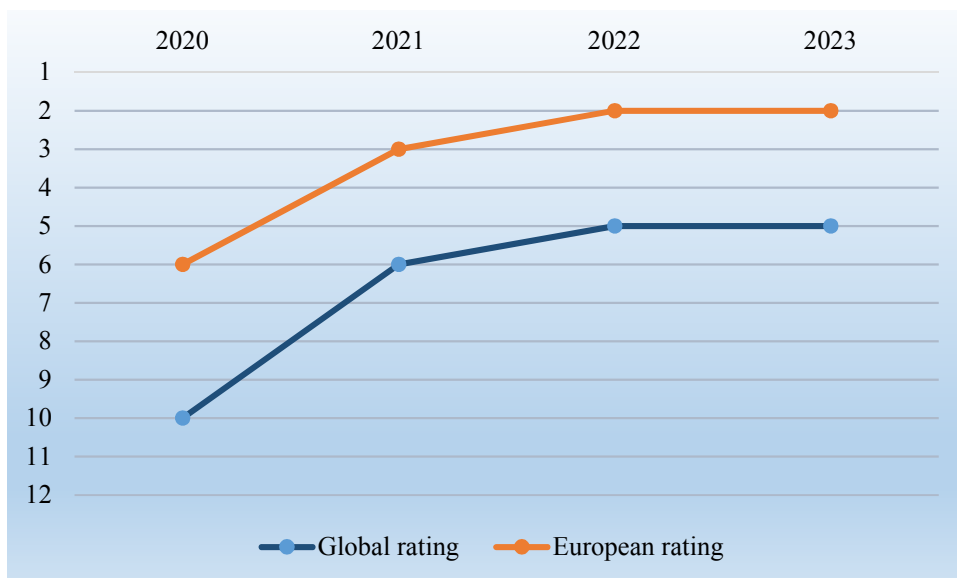


Fig. 4. Sweden's position in the world and Europe according to the Global Startup Ecosystem Index

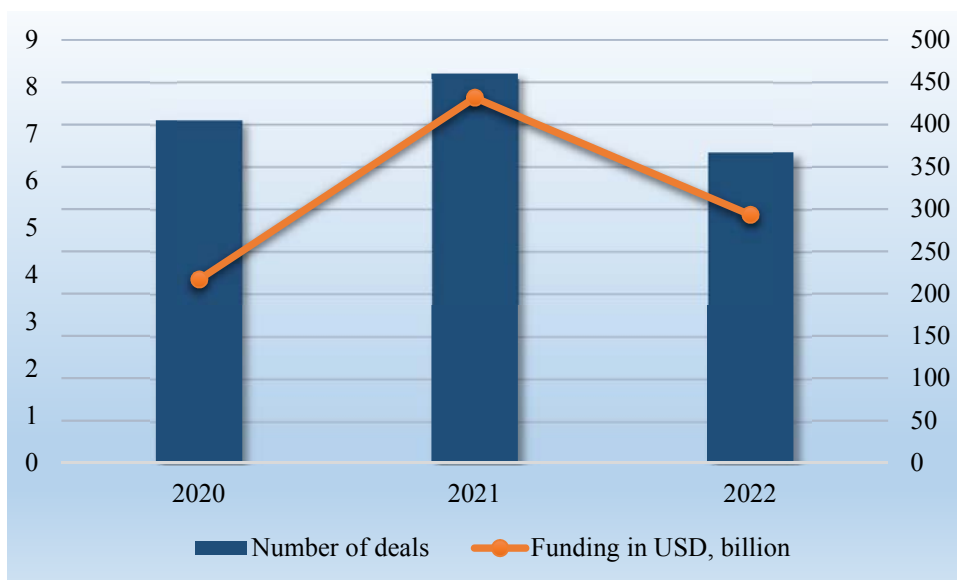


Fig. 5. Financing and number of deals with startups, Sweden

According to StartupBlink, Stockholm is the most powerful startup ecosystem in Sweden, with 728 startups [30], which is approximately 62% of all Swedish startups. In 2023, Stockholm's startup scene developed significantly and moved up 4 positions in the

Global Ecosystem Index to join the global top 20 ranking, registering the best momentum among this level and approaching the best European cities (3rd city in the EU), such as Berlin and Paris (Fig. 6).



Fig. 6. Ranking of the startup ecosystem in Stockholm, Sweden

The gap between Stockholm and other Swedish ecosystems continues to widen: the capital now has an overall score 7 times better than Malmö, Sweden's second-ranked ecosystem.

Stockholm's most popular industry is Fintech, where it ranks 9th in the world. Notable growth was registered for Stockholm in Hardware and IoT (11th) after moving up 19 positions and in Transportation (20th) after moving up 6 positions.

One of the challenges facing the growth of ecosystems is the high cost of living in Sweden, which makes it harder for startups to consider relocating if they do not receive investment at the initial stage. The country is taking steps to attract and support international talent to keep the Swedish startup ecosystem globally competitive. Initiatives such as the Swedish Residence Program for Self-Employment allow potential entrepreneurs to start a business in Sweden, as well as provide them with free access to higher education and a number of other benefits. In addition, Sweden remains a great place for entrepreneurs to test their ideas, expand them and go global.

Compared to Sweden, Finland is also famous for its innovative achievements and technological advantages. Both countries offer a developed infrastructure and actively support startups through government support programs. However, unlike Sweden, Finland may be a slightly better place for venture capital investment due to more limited access to capital. However, Finland's entrepreneurial culture is also strong, and the country is actively developing its startup ecosystems, providing a favorable environment for innovation and growth.

After two years of being ranked 14th in the world, Finland regained its ranking in 2020, moving up one place to 13th (Fig. 7). Finland also jumped up one position in the region, overtaking Estonia to rank 5th in the EU and 7th in Europe [27].

Finland boasts a thriving startup ecosystem, supported by key advantages such as world-class technology, a talented workforce, and excellent R&D capabilities. Finnish society is renowned for its stability and transparency, low bureaucracy and high openness to new technologies.

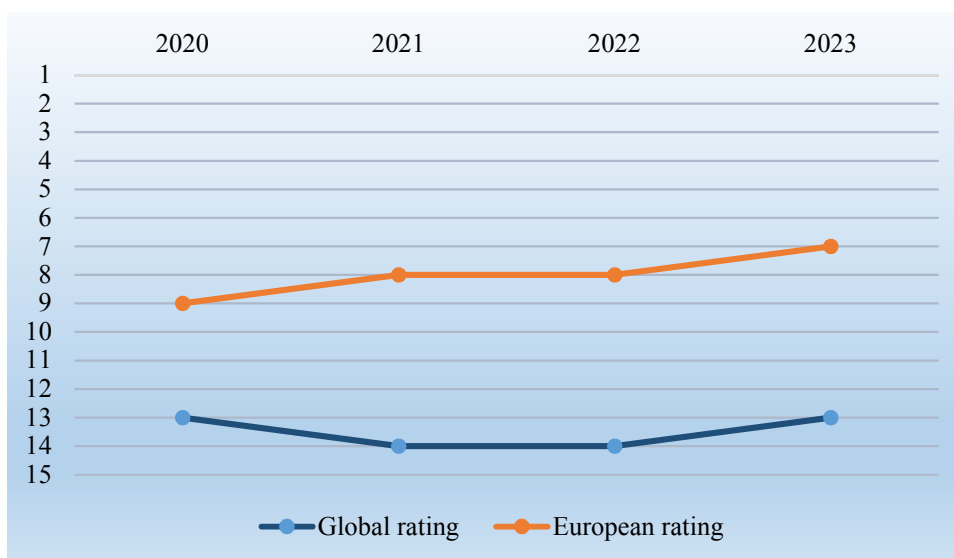


Fig. 7. Ranking of Finland in the world and Europe according to the Global Startup Ecosystem Index

Of course, the public sector plays a significant role, offering numerous incentives. In addition to low tax rates, the government offers financing and services for innovative companies in the early stages of development and supports universities in commercializing their ideas. For example, the Finnish startup permit allows international emerging entrepreneurs to set up a startup company in Finland. The permit is intended for founders of innovative startups from countries outside the European Union.

In general, Finland's business environment is attractive for foreign investment. Finland has a dynamic ecosystem of accelerators, angel investors and venture capitalists, which are strongly supported by the government.

Thanks to all of the above, Finland has a proven track record of success in many industries, despite its small market size. Historically, Finland has demonstrated its unique ability to create cutting-edge global solutions through years of dominance by Nokia in the early days of the mobile phone industry. Even after Nokia's decline, new Finnish innovations continue to emerge. The country has consolidated its share in video games and has more and more technological innovations aimed at developing this sector. The gaming industry has spawned some prominent startups, such as Supercell and Rovio (creators of the Angry Birds game) and has attracted a lot of talent to Helsinki. In addition, Finland offers opportunities for company development, especially in the areas of bioeconomy, clean and smart

technologies, health and wellness, ICT and digitalization, and travel and tourism. For example, in 2022, the food delivery startup Wolt was acquired by its American competitor DoorDash for €7 billion.

Today, Finland is overtaking Sweden in some positions in the rankings: in 2023, Finland will have two cities in the top five Scandinavian countries, while

Sweden, Denmark, and Norway will have only one each. Finland is ranked 12th in the world and 4th in the EU in terms of business indicators, which indicates a friendly business environment for startups. Finland's startup ecosystems had a good year overall, as 6 of the 8 cities ranked in the top 1000 cities in the world had positive momentum (Fig. 8).

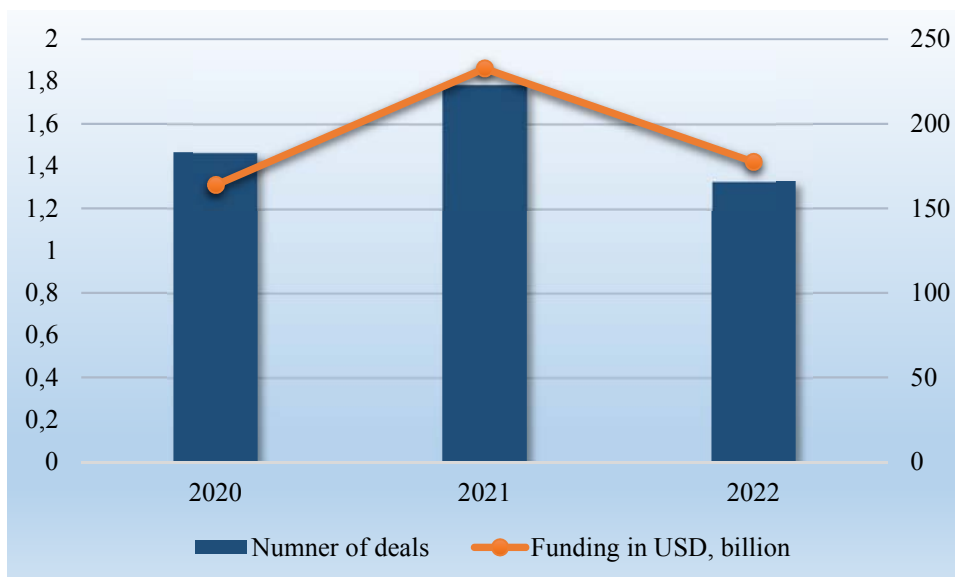


Fig. 8. Financing and number of deals with startups, Finland

Helsinki is one of the three cities with the largest jump in the TOP 50 (along with Munich and Guangzhou), moving up 5 positions in the Global Ecosystem Index and ranking 43rd in the global ranking (Fig. 9). According to StartupBlink, Helsinki's startup ecosystem has 483 startups [31]. This is about 71% of

startups and the strongest startup ecosystem in Finland. In Europe, Helsinki is currently ranked 8th (between Barcelona and Madrid), having pushed Dublin. In the Scandinavian countries, Helsinki retains the second place, ahead of Copenhagen and Oslo.



Fig. 9. Ranking of the startup ecosystem in Helsinki, Finland

Finland has 2 cities that made it into the top five, after Oulu gained 2 positions and is ranked 5th, overtaking Sweden's Malmö and Gothenburg, it entered the top 150 at 135th place after a huge jump of 60 positions. Oulu is now ranked 5th in Northern Europe. In the EU, Oulu has risen 21 places and is now ranked 26th with a very small gap to Budapest (25th). Thus, Finland now has two cities among the top 30 EU cities.

Finland is represented by Helsinki in the top 25 for Foodtech, where it ranks 15th, up 3 positions from 2022. Oulu ranks 52nd in the Healthtech ranking, a great achievement considering the city's global ranking.

In addition to its talented and successful entrepreneurs, Finland recognizes the importance of promoting its business environment through global events. Slush, one of the world's largest events for startups, attracts tens of thousands of participants, boosting the country's ranking.

With most of Finland's startups located in the capital, the city is becoming a major startup hub in Northern Europe, and organizations such as Helsinki Partners are working to attract and unite ecosystem stakeholders.

Table 2 shows the best ecosystem startups in Sweden and Finland.

Table 2

Famous startups and ecosystem champions in Stockholm and Helsinki

Stockholm, Sweden	Helsinki, Finland
<ul style="list-style-type: none"> – Polarium – offers lithium batteries for telecommunications. – Epidemic Sound is a music company that creates music for online creators. – Einride is a technology company that develops and provides solutions for the transportation of goods based on electric and autonomous vehicles. – Spotify is a digital music, podcast, and video service that provides access to millions of songs and other content from creators around the world. – SoundCloud is a social audio platform where people can create and share sounds. – Klarna is an e-commerce payment platform for merchants and customers. – Fidesmo – unites the world of contactless capabilities into a single secure platform for device manufacturers and service providers 	<ul style="list-style-type: none"> – RELEX Solutions provides an integrated retail and supply chain planning system. – ÖURA is a wellness app used to improve sleep. – Aiven is an information technology company that manages open data. – Supercell is a mobile game developer. – Nokia is a multinational communications corporation that manufactures mobile devices and network infrastructure. – Wolt is a food delivery company that specializes in real-time logistics optimization

Compiled according to [27].

Compared to the European countries in question before the outbreak of full-scale war in 2022, Ukraine ranked 34th in the StartupBlink ranking. At the same time, Kyiv was ranked 23rd out of the 25 best cities in the world for marketing and sales, software, and data. Many world-famous startups were born in the country, such as Grammarly, GitLab, People.ai, Ring, and Bitfury.

In 2022, Ukraine dropped 16 positions in the StartupBlink ranking. However, already in 2023 Ukraine improved its ranking. This became possible due to the implementation of a number of projects to support startups and innovations and the reform of some institutions. For example, the Innovation Development Fund (another name for the Fund), established in 2018. The Innovation Development Fund (also called the Ukrainian Startup Fund), established in 2018, was transferred to the Ministry of Digital Transformation in 2022 [32], which simplifies bureaucratic procedures and expands support for the country's startups. Projects and initiatives to support Ukrainian startups are also regularly implemented, both in collaboration with funds from other countries and directly by government agencies [33]. According to Pavlo Kartashov, Director of the Ukrainian Startup Fund, under martial law, this

institution focuses on supporting innovative projects aimed at the priority needs of the state. For example, a grant support program for dual-use projects was created to increase the country's defense capability and post-war reconstruction [34].

Despite the ongoing war, Ukrainian startups and the country's IT sector have demonstrated resilience, and entrepreneurs continue to run their businesses and remain committed to success even in these difficult circumstances. Some Ukrainian startups have relocated, but 95% of startups at least partially remain in Ukraine, and 55.7% continue to operate exclusively from Ukraine (according to a survey by TechUkraine in partnership with the Ukrainian Startup Fund, the Ministry of Digital Transformation of Ukraine, Emerging Europe, Tech Emerging Europe Advocates, Global Tech Advocates, and TA Ventures) [35]. The most popular destinations abroad are the European Union (38.6%) and the United States (10%). Nine out of ten startups confirm that they need financial support to continue operations and/or expand. Nevertheless, many startups said they plan to expand their operations in the short term.

Even in the crisis, there are many promising startups developing in Ukraine. Some of them are presented in Table 3.

Table 3

Examples of Ukrainian startups that received investments in Q1 2023

Name	Business area	Attracted investments, USD million
DressX	Virtual clothing store	15
Kolibrio	Automated auction system on the blockchain	2
Fuelfinance	Software for financial management and planning of startups	1
Deus Robotics	Warehouse robotization	1,5
GeekPay	Solutions for mitigating risks and tracking payments in digital currencies	N/A
Awesomic	Service for finding designers for business	0,8
Harmix	A service that automatically matches music to videos	0,5
Aspichi	Virtual reality solutions for surgery and prosthetics	0,5

Compiled according to [36].

Ukraine is developing military and technical solutions at a rapid pace [37]. Projects that used to take 1.5-2 years to implement are now being completed in 2-3 months. Compared to 2014, the military-technical solutions industry has grown three to seven times, depending on the region. The Ministry of Digital Transformation has identified military tech as a priority area for the coming years. The Ukrainian Startup Fund supports this area and provides grants for projects related to the development of military technology, cybersecurity, and defense. Dozens of advanced military-tech startups have emerged in Ukraine during the war, including:

– Griselda is a software system for collecting, organizing and analyzing intelligence from open and closed sources.

– ST1 is an autonomous drone for searching and marking explosive objects, which speeds up the demining process and saves the lives of sappers.

– Khyzhak (Predator) is an infantry tactical system that increases the effectiveness of machine gunners in modern mobile combat.

– Airlogix is a reconnaissance system designed for reconnaissance and artillery adjustment of the GOR UAV.

– Temerland – Scorpion-2 unmanned robotic platform that can be used in the defense and civilian sectors.

– FuelWell – equipment to reduce fuel consumption [38].

In April 2023, the Defense Tech cluster Bavel was launched – a single platform for cooperation between companies, the state, and the military, offering organizational and technical support for development, as well as access to accelerators and incubators [39]. An important advantage of Ukrainian military-tech startups is the fact that their developments are tested on a real battlefield and meet the needs of a state at war. This allows companies to adapt to the military environment faster and demonstrate the effectiveness of their innovations in practice.

Despite the war, the state has invested UAH 4.7 billion in the development of small and medium-sized businesses under the government grant program eRobota, launched by the Ministry of Economy together with the Ministry of Digital Transformation, the Ministry of Agrarian Policy, the State Employment Service, and the Oschadbank to support Ukrainians who want to become self-employed and promote entrepreneurship in difficult economic times [40; 41]. "These are investments not only in business revitalization – new companies have been opened, existing ones have increased production and are mastering other areas – but also more than 20,000 new jobs for Ukrainians in these companies", said Economy Minister Yulia Svyrydenko.

The eRobota grant program consists of six different programs:

– "Svoya Sprava" – grants for any microbusiness in the amount of up to UAH 250 thousand. The grant recipient must create at least one job;

– "Novyi Riven'" – grants of up to UAH 8 million for the expansion or creation of processing enterprises. The goal of the program is to increase the share of processed products, in particular in exports. The grant recipient is obliged to create up to 25 jobs;

– "Sviy Sad" – grants for the creation or development of horticulture, berry growing and viticulture – up to UAH 400 thousand per 1 hectare. Employment of 6-10 permanent and 125-425 seasonal workers, depending on the crop and planting area.

– "Svoya Teplytsia" – grants for the construction of new greenhouses – up to UAH 7 million for 2 hectares. The grant recipient must create at least 14 jobs;

– "IT startup" (under development);

– "Start v IT" – grants for training new skills in the field of information technology (under development).

One of the ways that Ukrainian startups can receive assistance is through separate funding programs from international companies. For example, the USAID Competitive Economy of Ukraine program has supported the participation of 348 Ukrainian businesses from the IT, creative industries, food and furniture sectors in 31 international trade missions in countries such as the United States, the United Kingdom, France, Spain, and Germany since the beginning of the full-scale war [42]. The grant program is being implemented in partnership with the Ministry of Economy of Ukraine, the Ministry of Digital Transformation of Ukraine, the Ukrainian Startup Fund, and the Office for Entrepreneurship and Export Development.

A study of the startup ecosystems of Finland and Sweden shows that there are additional opportunities for innovative development of Ukraine's territories during the war and post-war periods. These Scandinavian countries have successfully overcome difficult periods and implemented strategies that promote innovative growth and economic development. Considering the experience of Sweden and Finland, Ukraine can implement a number of measures to improve the preconditions for regional innovation development:

1) Lessons from the experience of Sweden and Finland point to the necessity of creating a startup support infrastructure, including accelerators, incubators, technology parks, and state support programs.

2) Ukraine should pay special attention to education and research to ensure access to qualified personnel and innovative technologies.

3) Reforms in legislation, taxation and legal protection of investments can make Ukraine more attractive to investors and entrepreneurs.

4) It is important to stimulate the development of startups in the regions, especially those affected by the war, which contributes to accelerated development and reduction of social and economic inequality.

5) Ukraine can use the experience of Sweden and Finland to develop partnerships and international

cooperation in the field of innovation and entrepreneurship.

The research has shown that despite Sweden and Finland's tremendous achievements in the field of startup development, most of these structures are located in the capitals of the countries. This suggests that although this practice is effective on a national scale, it does not have a qualitative impact on regional development.

On the other hand, it should be noted that the population of Sweden is about 3.5 times smaller than that of Ukraine, and Finland is about 7 times smaller. The same applies to the number of populated areas and large cities.

In the post-war period, Ukraine has a unique opportunity to intensify regional development by mobilizing the potential of professionals who have relocated from the occupied and frontline territories to other regions of the country. These professionals have valuable knowledge and experience that can be used to create new startups and innovative projects.

The process of forming a startup ecosystem around these professionals can give impetus to the development

of new businesses or the innovative transformation of traditional sectors of regional economies. However, in order for this initiative to bear maximum fruit, a set of appropriate regulatory, organizational, and infrastructural measures must be implemented to ensure favorable conditions for the work and development of such specialists.

The development of specialized support programs, a focus on education and research, and the creation of communication platforms and communities for professionals can stimulate innovation and entrepreneurship in the regions. This will help strengthen the technological and digital components of regional economies and their competitiveness, create new jobs and high value-added activities.

Thus, the use of the potential of specialist relocation is a promising and effective tool for stimulating regional development in post-war Ukraine. With the right approach and support from the authorities, it can become an important factor in the accelerated recovery and modernization of the Ukrainian economy on an innovative basis.

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Литвинський Р. В. Посилення регіонального розвитку за допомогою стартап-екосистем

Значну роль у стимулюванні економічного зростання у воєнний та післявоєнний періоди відіграє регіональний розвиток на інноваційних засадах. Створення інноваційних екосистем, що підтримують розвиток стартапів та малих інноваційних підприємств, забезпечує формування сприятливого бізнес-клімату у регіонах та залучення інвестицій, зменшує залежність регіонів від традиційних галузей, створює висококваліфіковані робочі місця і розвиває підприємницькі таланти.

Метою дослідження є визначення особливостей екосистем стартапів, їхнього впливу на регіональний розвиток та виявлення факторів успішного функціонування таких екосистем на основі аналізу зарубіжного досвіду.

У статті проаналізовано досвід формування й розвитку екосистем стартапів у Швеції та Фінляндії, виявлено їхні унікальні переваги, історичні досягнення та поточні тренди. У Швеції спостерігається високий рівень глобальної конкурентоспроможності, зокрема завдяки активній підтримці державного сектору та сприятливому бізнес-клімату. Фінляндія славиться своїм інноваційним потенціалом, стабільним бізнес-середовищем, привабливими умовами для стартапів та інвесторів. Результати дослідження свідчать про стійкий успіх і перспективи подальшого зростання обох екосистем у міжнародному масштабі.

У ході дослідження виявлено, що не зважаючи на величезні досягнення Швеції та Фінляндії в сфері розвитку стартапів, більшість таких структур розташовано в столицях країн. Зроблено висновок, що хоча подібна практика є результативною в національному масштабі, але не дає якісного впливу на розвиток регіонів.

В умовах повоєнного періоду в Україні існує унікальна можливість для активізації регіонального розвитку через мобілізацію потенціалу фахівців, які релокувались з окупованих та прифронтових територій в інші регіони країни. Процес формування екосистем стартапів навколо цих фахівців може дати поштовх розвитку нових видів бізнесу чи інноваційній трансформації традиційних секторів регіональних економік. Для успішної реалізації такого підходу необхідно впровадження комплексу відповідних заходів регуляторного, організаційного та інфраструктурного характеру.

Ключові слова: інноваційний розвиток, стартап, повоєнне відновлення, регіон.

Lytvynskyi R. Enhancing Regional Development with Startup Ecosystems

Regional development based on innovation plays a significant role in stimulating economic growth in the wartime and postwar periods. The creation of innovative ecosystems that support the development of startups and small innovative enterprises ensures the formation of a favorable business climate in the regions and attracts investment, reduces the dependence of regions on traditional industries, creates highly skilled jobs and develops entrepreneurial talent.

The purpose of the study is to determine the features of startup ecosystems, their impact on regional development, and to identify the factors of successful functioning of such ecosystems based on the analysis of foreign experience.

The article analyzes the experience of formation and development of startup ecosystems in Sweden and Finland, identifies their unique advantages, historical achievements, and current trends. Sweden has a high level of global competitiveness due to active support from the public sector and a favorable business climate. Finland is known for its innovative potential, stable business environment, and attractive conditions for startups and investors. The results of the study demonstrate the sustainable success and prospects for further growth of both ecosystems on an international scale.

The study found that despite Sweden and Finland's tremendous achievements in the field of startup development, most of these structures are in the capitals of the countries. It is concluded that although this practice is effective on a national scale, it does not have a qualitative impact on regional development.

In the post-war period, Ukraine has a unique opportunity to intensify regional development by mobilizing the potential of specialists who have relocated from the occupied and frontline territories to other regions of the country. The process of forming startup ecosystems around these professionals can give impetus to the development of new types of business or innovative transformation of traditional sectors of regional economies. To successfully implement this approach, a set of appropriate regulatory, organizational, and infrastructural measures must be implemented.

Keywords: innovative development, startup, post-war recovery, region.

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