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UKRAINIAN STARTUP ECOSYSTEMS: REGIONAL DEVELOPMENT AND EUROPEAN INTEGRATION

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Building innovation economy represents strategic priority for Ukraine's European integration amidst wartime challenges. Ukraine's startup ecosystem demonstrates potential valued at ˆ28 billion, ranking among Central-Eastern Europe's top three, yet regional disparities constrain development. Russian invasion created challenges but revealed exceptional technological resilience. This study analyzes current state and regional characteristics of Ukraine's startup ecosystem, identifies disparities and competitive advantages, develops recommendations for optimization within European innovation space integration framework. Research employs mixed-methods approach integrating quantitative analysis with qualitative assessment through SWOT analysis, comparative evaluation, expert assessments using nine parameters: human capital, education, financing, infrastructure, mentorship, culture, regulation, markets, networks. Data sources include international reports (StartupBlink, Dealroom, Civitta), investment analytics, statistics covering 2020−2024. Findings reveal regional concentration with Kyiv hosting 40% of startups. Investment recovery: 2024 investments reached $462 million (120% growth). Sectoral distribution: IT/software (35%), artificial intelligence (15%), fintech (12%). Defense technology emerges with 820+ projects attracting $59 million in 2024. Study provides first systematic regional analysis during wartime transformation, introducing four-component optimization model for European integration. Scientific novelty: crisis-resilient assessment methodology for innovation continuity under extreme conditions. Findings offer strategic roadmap for institutions and stakeholders to enhance competitiveness and accelerate European integration providing framework for post-war reconstruction.

Keywords: startup ecosystem, regional development, European integration, SWOT analysis, wartime resilience, innovation infrastructure.

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Research relevance

Building an innovation economy is a priority direction for Ukraine's development in the context of European integration and strengthening global competitiveness [1]. Startups play a key role in this process, ensuring job creation, attracting investments, and developing high-tech economic sectors [2].

Ukraine's startup ecosystem has demonstrated positive development dynamics, valued at €28 billion and ranking among the top three largest players in Central and Eastern Europe [14]. In 2024, investments in Ukrainian startups reached $462 million, representing 120% growth compared to 2023 and the highest indicator since the full-scale invasion [11].

However, development is characterized by significant regional disparities, with most innovation projects concentrated in several large cities. Ukraine has approximately 2,600 active startups (three times more than in 2020), with Ukrainian cities such as Kyiv, Lviv, Odesa, Kharkiv, and Dnipro included in

global startup city rankings [11]. These circumstances highlight the need for comprehensive research on regional features of startup ecosystem development and practical recommendations for optimization in the context of European innovation space integration.

Research Objective

The purpose of this article is to analyze the current state and regional features of Ukraine's startup ecosystem development, as well as to develop practical recommendations for its optimization in the context of integration into the European innovation space.

Literature Review

The theoretical foundations of startup ecosystem formation have been extensively studied by leading scholars. Daniel Isenberg [2] made a fundamental contribution to the entrepreneurial ecosystem concept, defining it as "a set of individual elements, such as leadership, culture, capital markets, and open customers, that combine into a complex system" and identified six main domains: policy, finance, culture, support, human capital, and markets.

Subsequent theoretical development is reflected in works by Stam and Spigel [5], who proposed a process approach to understanding entrepreneurial ecosystems, emphasizing their nature as complex systems of interconnected elements requiring comprehensive process-oriented analysis. Spigel and Harrison [4] further developed theoretical foundations for analyzing entrepreneurship ecosystems through a process-oriented lens.

Research on Ukraine's startup ecosystem remains limited in academic literature. Kokhan M. O. and Mazur A. V. [6] provided the most comprehensive regional analysis, studying startup ecosystem development determinants in Lviv and establishing a methodological framework for evaluating startup potential and innovation activity within European integration context.

Empirical data sources include international analytical reports from StartupBlink [12], which annually publishes global startup ecosystem rankings including Ukraine and Ukrainian cities; Dealroom [14], providing startup industry valuations for Central and Eastern Europe; and Civitta Ukraine [10] in partnership with u.ventures, which published "Scaling Up: Accelerating Ukraine's Tech Sector" analyzing Ukraine's technology sector state.

Current investment data is provided by industry reports from AVentures Capital [13], TechUkraine [11], and AIN.UA. Defense technology sector developments are highlighted in Atlantic Council [9] and Wired [15] publications.

Analysis of available sources indicates insufficient attention to regional aspects of Ukraine's startup ecosystem development and European innovation space integration issues, determining this study's relevance and research gap it addresses.

Presentation the main material

Theoretical Foundations of Startup Ecosystem Formation and Development. A startup ecosystem can be defined as a set of interconnected entities (entrepreneurs, startups, investors, mentors, educational institutions, research organizations, large companies, government bodies) that interact within a certain geographical region and create conditions for innovative entrepreneurship development [5].

Daniel Isenberg, one of the founders of the entrepreneurial ecosystem concept, defines it as "a set of individual elements, such as leadership, culture, capital markets, and open customers, that combine into a complex system" [2]. He identifies six main ecosystem domains: policy, finance, culture, support, human capital, and markets.

Based on the analysis of scientific sources and startup ecosystem functioning practices, key elements of the startup ecosystem can be identified: human capital and talents, education and science, financing, infrastructure, mentorship and support, culture and community, policy and regulation, markets and customer access, networks and connections (Fig. 1).

Expert assessment reflects the relative level of development of each element of Ukraine's startup ecosystem.

Analysis of Current State of Ukraine's Startup Ecosystem. Ukraine's startup ecosystem (Fig. 2) has undergone significant development over recent years, demonstrating resilience and adaptability even under challenging conditions. The cumulative valuation of all Ukrainian startups from 2017 to 2022 grew more than ninefold to €23.3 billion [14].

Ukraine has over 1,500 active startups, hundreds of service providers and software development studios. About 600 more startups were founded by Ukrainians abroad. Ukraine's IT industry, which forms the basis of the startup ecosystem, provided $6.7 billion in service exports in 2023, accounting for 41% of total service exports in the national economy [10].

Analyzing key events (Table 1), several stages of Ukrainian startup ecosystem development can be identified. 2021 became the peak year in terms of investment activity – Ukrainian startups attracted a record $832 million. The full-scale invasion in 2022 led to a sharp 74% drop in investments, but it was during this period that important regulatory changes were introduced, particularly the launch of the special legal regime Diia.City, which created favorable conditions for technology business. The launch of the Brave1 platform in 2023 became a significant

boost for defense technology development, uniting over 820 defense tech projects. The recovery of investment activity in 2024 (+120% compared to 2023) and landmark deals, such as Creatio's $200 million Series C funding, indicate gradual restoration of international investor confidence in Ukraine's technology sector, despite ongoing military actions [11].

Fig. 1. Key elements of Ukraine's startup ecosystem. Expert assessment on a 5-point scale

Source: developed by the author based on analysis of Startup Genome data and StartupBlink [12]

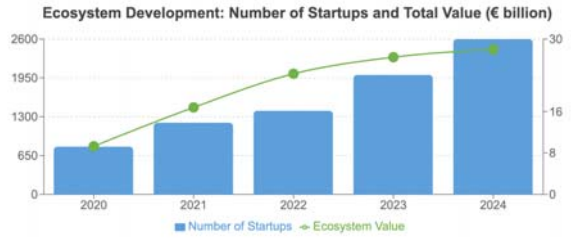

Fig. 2. Development of Ukraine's startup ecosystem

Source: developed by the author

Table 1

Key events in Ukraine's startup ecosystem development

2021	Record-high investments: $832 million
2022	Full-scale invasion, 74% decline in investments
2022	Launch of Diia.City, support for the technology sector
2023	Launch of Brave1, over 820 defence tech projects
2024	Investment growth of 120% compared to 2023
2024	Creatio raises $200 million in Series C funding
2024	Brave1 provides $40 million in grants to defence startups

Source: developed by the author

Analysis of the sectoral structure of Ukrainian startups (Fig. 3) demonstrates certain specialization that corresponds to global trends and market needs. According to the Civitta Ukraine study "Scaling Up: Accelerating Ukraine's Tech Sector Ecosystem Report" for 2024-2025, the most attractive investment sectors in Ukraine are E-commerce, FinTech, EdTech, AgriTech, HealthTech, and DefTech. The quantitative distribution of startups by sectors shows that the largest share is occupied by IT and software (35%), artificial intelligence and machine learning (15%), fintech (12%), e-commerce (10%), educational technologies (7%), medical technologies (5%), logistics and transport (5%), defense technologies (4%), other sectors (7%). This structure reflects both the strengths of Ukraine's technological ecosystem and potential directions for

its integration into the European innovation space, especially in the context of growing demand for AI solutions and digitalization of traditional economic sectors [10], [11], and [12].

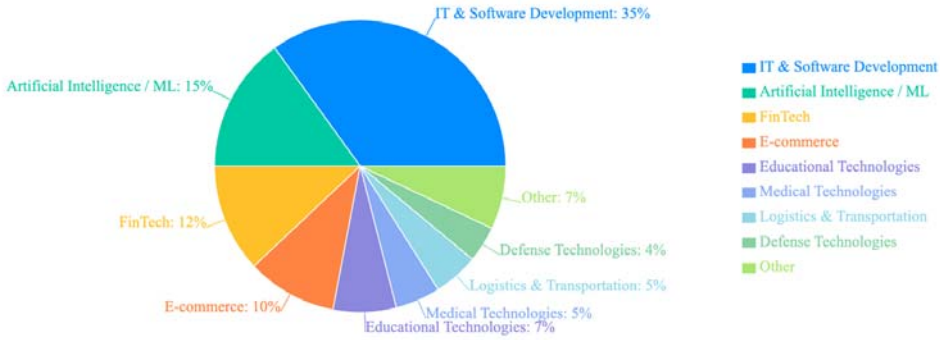

Fig. 3. Sectoral specialization of Ukrainian startups

Source: developed by the author

In the dynamics of startup movement development in Ukraine (Fig. 4), several stages can be identified. In 2021, Ukrainian startups attracted a record $832 million in investments, 45% more than in 2020. However, after Russia's full-scale invasion of Ukraine in February 2022, the volume of investments in Ukrainian startups was $218 million, representing a decline of almost 74% compared to 2021 [11].

In 2024, Ukrainian startups attracted a total of $462 million in investments – 120% more than in 2023 and the highest indicator since the beginning of the full-scale invasion [13]. The largest contribution to this amount was made by CRM platform Creatio, which raised $200 million in Series C, accounting for almost half of all investments for the year [11]. Among other significant deals: fintech startup Carmoola ($19.2 million), real estate platform Jome (NewHomesMate) ($9.8 million), financial management service IN1 ($6 million), neobank Fintech Farm ($5 million) [13].

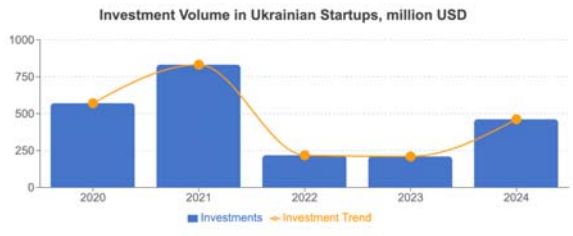

Fig. 4. Dynamics of Ukraine's startup ecosystem development (2020-2024)

Source: developed by the author

Analysis of investment structure by sectors in 2024 shows that the most funds were directed to marketing and sales automation – $215 million (46%), financial technologies – $41 million (9%), educational technologies – $39 million (9%), retail trade – $23 million (5%), other spheres including medicine, logistics, media, IT services – $85 million (18%). In 2024, Ukraine had approximately 2,600 startups, three times more than in 2020 [11].

A special development direction became the defense technology sector. Over 820 defense-tech projects registered on the Brave1 platform, launched in April 2023 [10]. In 2024, the defense technology sector attracted a total of $59 million, of which $18 million were venture investments and $41 million were grants. The largest grant provider was the Brave1 initiative, which provided $40 million in 2024 and plans to increase this amount to $100 million in 2025. The largest defense startups include Osavul ($3 million), Swarmer ($2.7 million), and Bavovna. AI ($2.7 million) [13].

SWOT Analysis of Ukraine's Startup Ecosystem. Based on the conducted analysis, key strengths and weaknesses, opportunities and threats for Ukraine's startup ecosystem can be identified. The SWOT analysis uses quantitative and qualitative methods to assess technological innovation, market potential, and investment attraction capabilities.

Ukraine's startup ecosystem demonstrates competitive advantages forming a foundation for innovative entrepreneurship. The country's greatest asset is exceptional human capital rooted in a powerful technical education system, enabling Ukraine to achieve 46th position among 100 countries in

StartupBlink's global ranking [10]. Ukraine's IT sector generated $6.7 billion in service exports during 2023 (41% of total service exports) [10], with two unicorn companies valued over $14.1 billion [12]. Ukrainian startups operate with relatively low development costs and demonstrate extraordinary wartime resilience.

However, the ecosystem faces structural challenges constraining its potential. Limited financing access remains critical, with 2024 investments of $462 million still below pre-war levels. Regional disparities threaten balanced development, as only six Ukrainian cities appear in StartupBlink's top 1000 ranking. Infrastructure limitations and talent displacement, with hundreds of thousands of IT specialists relocating abroad, create long-term risks [10].

Despite challenges, significant opportunities exist. European integration opens pathways to broader markets and financing. Defense technology emergence shows promise, with Brave1 platform attracting over 820 projects and $59 million in 2024 [9]. International support expanded dramatically, with grants increasing from $6.9 million in 2023 to $50 million in 2024, plus the European Innovation Council's €20 million support program [7]. Post-war reconstruction will create massive demand for innovative solutions.

The ecosystem faces serious threats from ongoing military conflict, creating persistent uncertainties affecting investor confidence. Talent exodus represents an existential threat, with war-induced migration displacing skilled professionals. External dependencies on international support create vulnerabilities, while cyber attacks on digital infrastructure pose operational risks.

SWOT analysis indicates (Fig. 5) that despite military challenges, Ukraine's startup ecosystem demonstrates impressive resilience. Success requires preserving competitive advantages in human capital while addressing structural weaknesses through financial infrastructure development and regional disparity reduction. European integration and defense technology development represent key growth drivers for Ukraine's startup ecosystem future.

Fig. 5. SWOT analysis of Ukraine's startup ecosystems

Source: developed by the author

Regional Features of Startup Ecosystem Development in Ukraine. Regional development of Ukraine's startup ecosystem demonstrates significant concentration in five major urban centers, each with distinct specializations and competitive advantages (Table 2). Kyiv maintains undisputed leadership, hosting approximately 40% of all Ukrainian startups and ranking 93rd globally in StartupBlink's 2022 assessment [12]. The capital benefits from largest talent concentration, most developed infrastructure including UNIT.City innovation park, and highest investor presence.

Table 2

Comparative Analysis of Ukrainian Regional Startup Ecosystems

Parameter	Kyiv	Lviv	Kharkiv	Odesa/Dnipro/Zaporizhzhia
Global Ranking	93rd (StartupBlink 2022)	Regional hub	Scientific center	Industrial centers
Key Specialization	Fintech, AI, E-commerce	Software development, Outsourcing	Engineering, IoT, Hardware	Logistics, Industrial tech, Energy
Educational Base	Leading universities, Largest talent pool	Lviv Polytechnic, Ivan Franko University	V.N. Karazin University, KhPI	Technical universities, Industrial focus
Infrastructure	UNIT.City, 1991 Incubator, Radar Tech	IT Cluster (200+ companies), Startup Depot	Innovation parks, Research base	Developing infrastructure
Investment Access	Highest concentration of VCs (AVentures, SID)	European proximity advantage	Limited by security situation	Limited, focus on industrial partnerships
Ecosystem Maturity	Most developed (40% of all startups)	Second largest hub	Pre-war strong positions	Emerging potential
Competitive Advantages	Capital status, Infrastructure, Investments	EU proximity, IT cluster, Cultural ties	Scientific traditions, Engineering excellence	Industrial base, Specialized sectors

Source: developed by the author based on StartupBlink data [12]

Lviv represents the second largest hub, distinguished by strong IT cluster uniting over 200 companies and geographic proximity to European Union markets [6]. The city leverages powerful educational base and cultural ties with Europe for international cooperation development.

Kharkiv functions as important scientific-educational center with strong engineering traditions, though its development faces security-related challenges. Despite constraints, the city maintains significant potential in IoT and hardware solutions development.

Other regional centers – Odesa, Dnipro, and Zaporizhzhia – demonstrate specialized potential in logistics, industrial technologies, and energy sectors respectively. While these ecosystems are less developed than primary hubs, they possess unique advantages related to their industrial heritage and sectoral specializations. Comparative analysis reveals that successful regional development requires combination of educational infrastructure, investment access, and sectoral specialization aligned with local competitive advantages [6].

The radar diagram (Fig. 6) illustrates comparative analysis of leading Ukrainian cities' startup ecosystems by key elements: human capital, educational base, access to financing, support infrastructure, mentorship, entrepreneurial culture, regulatory environment, market access, and network and connection development.

The highest indicators are observed in Kyiv, due to high talent concentration, developed support infrastructure, and greatest opportunities for investment attraction. Lviv and Kharkiv demonstrate strong positions thanks to powerful educational base and active IT clusters. Odesa, Dnipro, and Zaporizhzhia have promising potential, particularly in industrial innovations, logistics, and energy sectors, but require further development of support infrastructure and financial opportunities for startups.

Integration of Ukraine's Startup Ecosystem into European Innovation Space. Ukraine's startup ecosystem demonstrates significant resilience and development potential despite complex wartime conditions. According to StartupBlink's Global Startup Ecosystem Index 2024, Ukraine ranked 46th among 100 countries worldwide, rising 3 positions compared to the previous year after a sharp 16-point drop in 2022 [12].

An important step in integrating Ukraine's startup ecosystem into the European innovation space was Ukraine's inclusion in European Union support programs. Particularly, in 2023-2024, the EU invested €13.5 billion in research and innovation within the Horizon Europe program, which for the first time in program history will include targeted support for Ukraine [7].

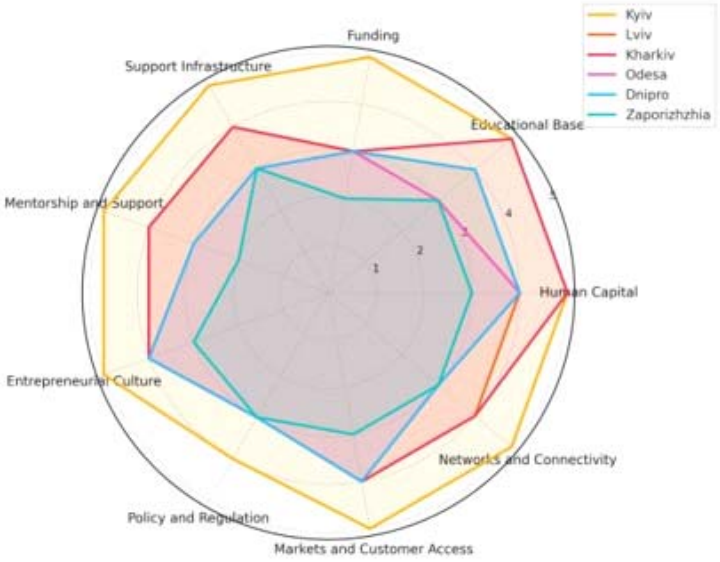

Fig. 6. Comparison of startup ecosystems in Ukrainian cities

Source: developed by the author

Additionally, the European Innovation Council (EIC) plays a significant role in supporting Ukrainian startups, launching a €20 million support program. The program provides grants up to €60,000 to Ukrainian deep-tech startups, as well as business consulting and networking services, promoting Ukrainian company integration into the European market [8].

Analysis of current trends in Ukraine's startup ecosystem development allows identification of several strategic directions for deepening integration into the European innovation space:

– deepening sectoral cooperation in priority sectors. Based on the previously examined sectoral specialization of Ukrainian startups, it is advisable to develop targeted integration into European innovation networks according to the "smart specialization" principle [7]. Particularly promising are collaborations in sectors where Ukrainian startups have competitive advantages: artificial intelligence, cybersecurity, and defense technologies, which gained special relevance under current security challenges [9];

– legal and regulatory harmonization. A critically important element is adaptation of Ukrainian startups to the European regulatory framework, particularly in intellectual property protection, product certification, data processing (GDPR), and ESG (Environmental, Social, Governance) principles implementation. Compliance with these standards should be viewed not as a barrier but as a competitive advantage opening access to European markets and investments [7];

– development of representation in European innovation hubs. Creating permanent representations of Ukrainian startup ecosystems in key European innovation centers (Berlin, Amsterdam, Stockholm, Barcelona) will ensure sustainable presence and facilitate access to local networks, investors, and partners [11]. Such representations can function as "soft landings" for Ukrainian startups entering the European market [7];

– integration into European funding programs. Systematic involvement of Ukrainian startups in European grant programs and venture funding funds, such as Horizon Europe, European Innovation Council (EIC) Accelerator, European Investment Fund, is a necessary condition for overcoming investment deficit [7]. Special attention should be paid to developing competencies in grant application preparation and investment pitches oriented toward European standards [8];

– development of cross-border cooperation. Formation of sustainable partnerships between regional startup ecosystems of Ukraine and neighboring EU countries (especially Poland, Slovakia, Hungary, Romania) will create integrated innovation spaces with synergistic effect [7]. Such partnerships can include joint incubation and acceleration programs, mutual exchange of mentors and experts, and creation of joint funds for supporting cross-border innovation projects [10].

The proposed strategic directions require coordinated efforts from all startup ecosystem stakeholders: government institutions, universities, business associations, venture funds, and startups themselves, and should consider regional specifics and competitive advantages of different Ukrainian regions.

An important trend in Ukraine's startup ecosystem development under Russian aggression conditions has been the formation of a powerful defense technology sector, which serves as one of the drivers of integration into the European innovation space. Ukrainian entrepreneurs' successes in transforming civilian technologies into weapons and civil defense systems have attracted attention from European governments and military to startup-style innovation potential [9].

Regional Startup Ecosystem Optimization Model. Development of regional startup ecosystems in Ukraine requires a comprehensive approach that considers each region's specifics, available resources, and integration potential into the European innovation space. An adapted model for optimizing Ukraine's regional startup ecosystems is proposed, including four key components (Fig. 7).

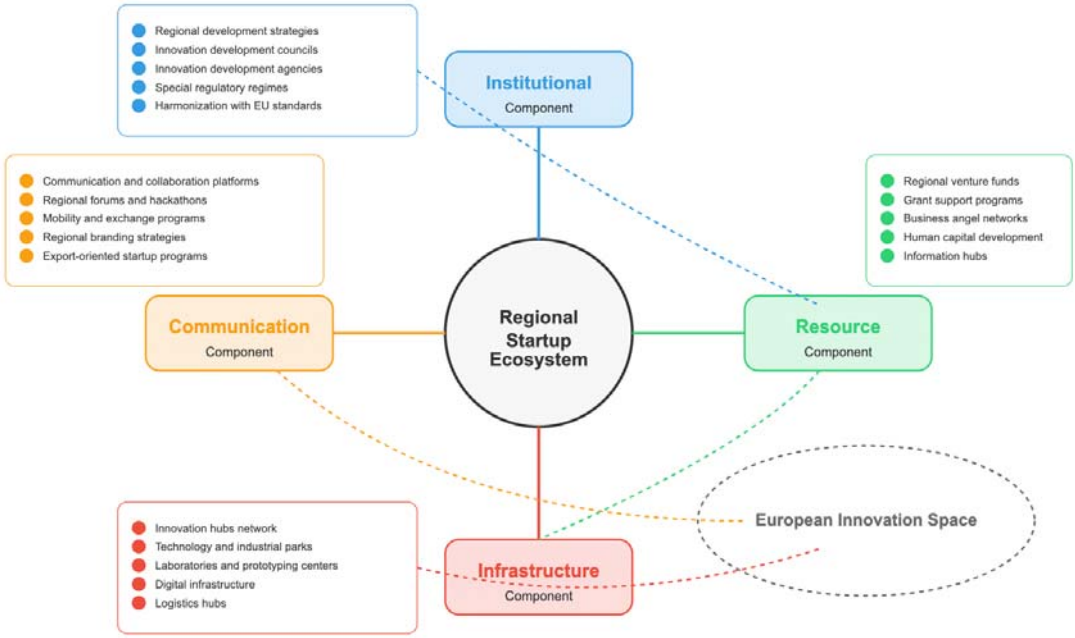

Fig. 7. Model for optimizing startup ecosystems in Ukraine in the context of integration into European innovation space

Source: developed by the author

The institutional component involves creating an effective regulatory environment and organizational structures for startup support at the regional level. For institutional component optimization, the following measures are proposed:

– development and implementation of regional startup ecosystem development strategies, harmonized with the National Strategy for Innovation Sphere Development and European policy documents;

– creation of regional innovation and entrepreneurship development councils uniting government, business, science, education, and civil society representatives according to the "quadruple helix" principle [4];

– formation of regional innovation development agencies responsible for strategy implementation and coordination of startup ecosystem participants' activities;

– implementation of special regulatory regimes for startups at the regional level (regulatory "sandboxes," simplified administrative procedures);

– harmonization of regional regulatory framework with European standards.

The resource component covers measures aimed at providing startups with necessary financial, human, and information resources. For resource component optimization, the following are proposed:

– creation of regional venture funds and seed funding funds oriented toward startup support, involving private capital and international donor funds [3];

– development and implementation of regional startup grant support programs in cooperation with

international funds and EU programs;

– formation of regional business angel and private investor networks integrated with European investment networks;

– development of personnel training and retraining programs for innovative entrepreneurship in regional universities and specialized training centers;

– creation of regional information hubs for providing startups with current information about market trends, technological innovations, funding sources, and European market entry opportunities.

The infrastructure component involves developing physical and digital infrastructure necessary for startup functioning. For infrastructure component optimization, the following are proposed:

– development of regional innovation hubs, incubators, and accelerators networks considering regional sectoral specialization;

– creation of specialized techno parks and industrial parks for startup development in regional economy priority sectors;

– development of laboratories, prototyping and testing centers accessible to startups;

– regional digital infrastructure development;

– formation of regional logistics hubs for simplifying startup access to European markets.

The communication component covers measures aimed at strengthening connections between startup ecosystem participants within regions, between regions, and with European partners. For communication component optimization, the following are proposed:

a) creation of regional communication and collaboration platforms for startups, investors, corporations, universities, and other stakeholders, integrated with European innovation networks;

b) organization of regular regional forums, conferences, and hackathons with European startup community representatives;

c) development of mobility and experience exchange programs with European startup hubs and innovation centers;

d) formation of regional brand strategies for promoting startup ecosystems at European and global levels;

e) creation of specialized support programs for startups with export potential.

Conclusions and recommendations

Ukraine's startup ecosystem demonstrates significant resilience and adaptability even under substantial challenges caused by military aggression. The value of Ukraine's startup industry is estimated at €28 billion, with a total number of active startups exceeding 2,600, allowing Ukraine to rank among the top three largest players in Central and Eastern Europe.

Analysis of regional features of startup ecosystem development revealed significant disparities. Key innovation development centers remain Kyiv, Lviv, Kharkiv, Odesa, and Dnipro, each with its unique specialization and advantages.

Based on the conducted research, the following practical recommendations are formulated for different startup ecosystem stakeholders.

For state and local government bodies:

a) develop and implement regional startup ecosystem development strategies;

b) create regional coordination bodies for innovation and entrepreneurship development;

c) implement special regulatory regimes for startups at the regional level;

d) develop cross-border cooperation programs with EU country regions.

For universities and research institutions:

– integrate into European research networks and consortiums;

– develop joint educational programs with European universities;

– create university spin-offs and startup laboratories;

– develop technology transfer systems according to European standards.

For business community and support infrastructure:

a) adapt startup business models and products to European market requirements;

b) integrate into European acceleration programs and innovation networks;

c) develop partnerships with European corporations and investment funds;

d) form inter-regional innovation clusters in priority economic sectors.

For startups:

– develop products considering European market needs and EU standards compliance;

– actively participate in international support and acceleration programs;

– develop competencies in attracting international investments;

– implement ESG principles in their activities.

Implementation of the proposed recommendations will contribute to Ukrainian regional startup ecosystem development, overcoming existing disparities, and successful integration into the European innovation space, ultimately strengthening national economy competitiveness and accelerating European integration processes.

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СТАРТАП-ЕКОСИСТЕМИ УКРАЇНИ: РЕГІОНАЛЬНИЙ РОЗВИТОК ТА ЄВРОПЕЙСЬКА ІНТЕГРАЦІЯ

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Розбудова інноваційної економіки є стратегічним пріоритетом європейської інтеграції України в умовах воєнних викликів. Стартап-екосистема України демонструє потенціал, оцінений в ˆ28 мільярдів, займаючи місце серед трьох найбільших гравців Центрально-Східної Європи, проте значні регіональні диспропорції стримують розвиток. Російське вторгнення створило виклики, але виявило виняткову стійкість технологічного сектору. Дослідження аналізує поточний стан та регіональні особливості розвитку стартап-екосистеми України, виявляє диспропорції та конкурентні переваги, розробляє рекомендації щодо оптимізації в рамках інтеграції до європейського інноваційного простору. Дослідження використовує змішаний методичний підхід, що інтегрує кількісний аналіз із якісним оцінюванням через SWOT-аналіз, порівняльне оцінювання, експертні оцінки за дев'ятьма параметрами: людський капітал, освіта, фінансування, інфраструктура, менторство, культура, регулювання, ринки, мережі. Джерела даних включають міжнародні звіти (StartupBlink, Dealroom, Civitta), інвестиційну аналітику, статистику за 2020-2024 роки. Результати виявляють регіональну концентрацію з Києвом, що приймає 40% стартапів. Відновлення інвестицій: у 2024 році інвестиції досягли $462 мільйони (зростання на 120%). Секторальний розподіл: IT/програмне забезпечення (35%), штучний інтелект (15%), фінтех (12%). Оборонні технології з'являються як проривний сектор із 820+ проектів, залучивши $59 мільйонів у 2024 році. Дослідження надає перший систематичний регіональний аналіз під час воєнної трансформації, представляючи чотирикомпонентну модель оптимізації для європейської інтеграції. Наукова новизна: методологія оцінювання стійкості до криз та емпірична основа для безперервності інновацій в екстремальних умовах. Результати пропонують стратегічну дорожню карту для інституцій та стейкхолдерів щодо підвищення конкурентоспроможності та прискорення європейської інтеграції, забезпечуючи основу для післявоєнної відбудови.

Ключові слова: стартап-екосистема, регіональний розвиток, європейська інтеграція, SWOT-аналіз, воєнна стійкість, інноваційна інфраструктура.

UKRAINIAN STARTUP ECOSYSTEMS: REGIONAL DEVELOPMENT AND EUROPEAN INTEGRATION

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Building innovation economy represents strategic priority for Ukraine's European integration amidst wartime challenges. Ukraine's startup ecosystem demonstrates potential valued at ˆ28 billion, ranking among Central-Eastern Europe's top three, yet regional disparities constrain development. Russian invasion created challenges but revealed exceptional technological resilience. This study analyzes current state and regional characteristics of Ukraine's startup ecosystem, identifies disparities and competitive advantages, develops recommendations for optimization within European innovation space integration framework. Research employs mixed-methods approach integrating quantitative analysis with qualitative assessment through SWOT analysis, comparative evaluation, expert assessments using nine parameters: human capital, education, financing, infrastructure, mentorship, culture, regulation, markets, networks. Data sources include international reports (StartupBlink, Dealroom, Civitta), investment analytics, statistics covering 2020-2024. Findings reveal regional concentration with Kyiv hosting 40% of startups. Investment recovery: 2024 investments reached $462 million (120% growth). Sectoral distribution: IT/software (35%), artificial intelligence (15%), fintech (12%). Defense technology emerges with 820+ projects attracting $59 million in 2024. Study provides first systematic regional analysis during wartime transformation, introducing four-component optimization model for European integration. Scientific novelty: crisis-resilient assessment methodology for innovation continuity under extreme conditions. Findings offer strategic roadmap for institutions and stakeholders to enhance competitiveness and accelerate European integration providing framework for post-war reconstruction.

Keywords: startup ecosystem, regional development, European integration, SWOT analysis, wartime resilience, innovation infrastructure.

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