Navigating the digital landscape: pioneering paths and hurdles of entrepreneurial innovation

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Abstract

Identifying and maximising new opportunities is the central element of entrepreneurial activity. Currently, these opportunities are defined by the development of digital technologies, specifically the synergy of informational, computational, communication, and connectivity technologies and the dynamics they induce in the economy and society. This article examines the key strategies, prospects, and challenges of implementing entrepreneurial innovations in digitalisation. The research employed general methods such as summarising, comparing, systematising, abstracting, analysis, synthesis, and concretisation. The study analyses the impact of global digitalisation on the innovative activity of enterprises and the potential of digital technologies to enhance the competitiveness and efficiency of business processes. The study identifies the main challenges and obstacles related to implementing innovation in the context of digitalisation. It analyses the main components of the risk minimisation strategy that accompanies the implementation of digital solutions and projects in the entrepreneurial sphere. It has been determined that the active implementation of digital optimisation technologies can increase the efficiency and competitiveness of enterprises, as well as their flexibility and adaptability while facilitating optimal management decisions. Further research on this topic involves a detailed analysis and evaluation of enterprises' practical implementation of new digital technologies in the context of Ukraine's post-war recovery.

Keywords: digital trade, innovative entrepreneurship, digital technologies, ecosystem, green entrepreneurship.
Resumen

Identificar y maximizar nuevas oportunidades es el elemento central de la actividad empresarial. En la actualidad, estas oportunidades vienen definidas por el desarrollo de las tecnologías digitales, concretamente la sinergia de las tecnologías de la información, la computación, la comunicación y la conectividad y la dinámica que inducen en la economía y la sociedad. Este artículo examina las principales estrategias, perspectivas y retos de la aplicación de innovaciones empresariales en la digitalización. La investigación empleó métodos generales como el resumen, la comparación, la sistematización, la abstracción, el análisis, la síntesis y la concreción. El estudio analiza el impacto de la digitalización global en la actividad innovadora de las empresas y el potencial de las tecnologías digitales para mejorar la competitividad y la eficiencia de los procesos empresariales. El estudio identifica los principales retos y obstáculos relacionados con la aplicación de la innovación en el contexto de la digitalización. Analiza los principales componentes de la estrategia de minimización de riesgos que acompaña a la implantación de soluciones y proyectos digitales en el ámbito empresarial. Se ha determinado que la aplicación activa de tecnologías de optimización digital puede aumentar la eficiencia y la competitividad de las empresas, así como su flexibilidad y adaptabilidad, al tiempo que facilita la toma de decisiones de gestión óptimas. Las futuras investigaciones sobre este tema incluyen un análisis y una evaluación detallados de la aplicación práctica de las nuevas tecnologías digitales por parte de las empresas en el contexto de la recuperación de Ucrania tras la guerra.

Palabras clave: comercio digital, espíritu empresarial innovador, tecnologías digitales, ecosistema, espíritu empresarial ecológico
Introduction

Enhancing the competitiveness of products and services through innovation is a priority task of the digital economy. To achieve this, specific digitalisation solutions are necessary, and they are currently considered critical factors in ensuring enterprises' competitiveness. Enterprises that actively integrate digital technologies and tools into their operations position themselves as more successful, flexible, and adaptive to new economic conditions amid instability and crises.

Numerous foreign and domestic scholars have explored enterprises' digitalisation and innovation activities in various aspects of their manifestation. For example, contemporary researchers analyse the potential for digital transformation in entrepreneurship (Samofatova, 2023; Kraus, & Kraus, 2020), investigate the impact of digitalisation on society and business processes (Savchenko, & Veriutina, 2020), and describe the relationship between digitalisation and innovation (Yakivchenko, 2023). Domestic scholars are currently discussing this topic (Popelo, & Olyfirenko, 2022; Lynnyk, 2023), examining the relationship between digitalisation and enterprise innovation development. Among the scholarly works exploring global trends in the innovative development of entrepreneurial activities, publications by V. V. Havrylyshyn, I. I. Oleksyn, A. B. Tsolka (2022) and M. A. Tepliuk (2021) stand out. They analyse contemporary trends in the digitalisation of financial investment instruments.

The significant research on this issue indicates that the problem of digitalising entrepreneurship and its innovation progress is relevant yet complex. Further investigation is required to explore the conceptual aspects of entrepreneurial innovation development, including orientations, principles, and barriers. Additionally, opportunities for correction should be identified to achieve strategic objectives in line with the needs of the digital economy.
Literature review

A study of innovative entrepreneurial activity in the context of global digitalisation requires a solid theoretical and methodological foundation reflected in scientific heritage. This topic is particularly relevant in the context of potential conflict, which may require transforming the concept of entrepreneurship development in Ukraine. Numerous research studies have evidenced that various scientific perspectives have been used to examine the issues and aspects.

In particular, contemporary scholars provide a systematic overview of modern innovative entrepreneurial experience in the context of the digitalisation trend in the investment-financial sphere (Tomakh, Sihaieva, & Martynenko, 2023), analyse the process of digital transformation of marketing activities (Vytvytska, Suvorova, & Koriuhin, 2022), explore the possibilities of using crisis periods as a driving force for adaptive improvements in entrepreneurial activities (Mihuș, & Koval, 2021), and investigate the problems and prospects of digital and innovative development of contemporary enterprises (Savras, & Fedynets, 2023).

Scientific works and publications have significantly impacted the development of modern strategies for innovative entrepreneurship (Stawicka, 2021; Sahut, Iandoli, & Teulon, 2021). These strategies involve a multifactorial analysis of the institutional transformations of traditional business processes into electronic formats. Researchers are exploring the emergence of digital entrepreneurship and e-business in developing countries, considering economic conditions and characteristics. Studies in institutional theory, such as those by Soltanifar et al. (2021) and Handayani and Agustina (2022), are actively investigating this area. However, many problematic aspects of innovative entrepreneurial activity must be fully disclosed in synergy with digitalisation and cutting-edge organisational and management changes.
Aims

This study aims to analyse the leading strategies and prospects for implementing entrepreneurial innovations in digitalisation, highlighting the main problems and prospects.

Materials and methods

Various interdisciplinary research methods were employed during the study to achieve research goals. These included analysis, synthesis, abstraction, induction, deduction, and comparison. The study utilised analysis and synthesis to identify the main factors shaping the essential functionality of digitalisation in entrepreneurial activity within the innovative development framework. The study employed both inductive and deductive methods. The former was used to develop prognostic directions for the investigated process.

In contrast, the latter was used to identify the priority vector of innovation transformation of entrepreneurship during the post-war recovery period in Ukraine. Abstraction was used to extract theoretical generalisations, identify vital categories and concepts, and form conclusions regarding the priority vectors of innovation development of enterprises in the digital national post-war space. Analogue to traditional approaches, the comparison was applied to identify specific features of the contemporary innovation paradigm in the digitalisation sector of entrepreneurship. The study was conducted based on the principles of complexity and systematicity in scientific research. It enabled the analysis of the research object as a holistic system with multiple interrelationships and interdependencies.

Results

Innovative entrepreneurial activity is a rational combination of production factors based on an innovative risk approach. In the context of the global digitalisation of the financial sphere, the digital transformation of entrepreneurship should aim to create new or improve existing business models, optimise business processes, and enhance the customer experience to adapt to the digital era. The latest quality
management paradigm in production and the implementation of digital approaches to organising activities are considered innovative elements that require alignment with the current requirements of digital optimisation of entrepreneurial activity.

Digital optimisation of business processes aims to promptly adopt effective decisions, adapt activities to dynamic market demands, and maximise consumer satisfaction. Personalisation is relevant at any touchpoint with the brand. Digitising the business model can predict customer expectations, reduce capital and operational costs, increase market share, and provide comprehensive problem-solving through various communication channels. The functioning of entrepreneurial entities is enhanced by implementing alternative competitive development strategies, relying on digital transformation. It involves promptly implementing digital technologies in economic activities and constantly updating them. Therefore, the digital revolution is a significant driver of innovative development in entrepreneurial activity.

When considering entrepreneurial innovation development, it is essential to highlight the critical aspects of digital strategy, management, digital environment, and culture. The global digitalisation trend has led to a rethinking of the levers for forming the competitive strategy of entrepreneurial activity. Therefore, digital management should shape the adaptive sector of the company’s strategic objectives. Each participant in the entrepreneurial structure must comprehend the essence of digitalisation and actively engage in the process. Therefore, the phenomenon of digital culture necessitates close interaction at all levels when implementing the digital strategy.

The primary drivers of digitalisation in the global economic sphere are the European Union countries, the USA, and Japan, propelling global innovation shifts. In saturated market conditions, enterprise leaders and employees are reconsidering their behavioural strategies to intensify competitiveness. Operational excellence is demonstrated by the most successful companies in the world through quality process execution, stable production, and the ability to build flexible and resilient management systems in the face of unforeseen changes.
Ukraine’s national economic space is marked by intense competition in management systems and models. State regulatory documents enshrine irrational decisions regarding quality and competitiveness, leading to disorientation in the domestic business sector and society. The government's focus on combating corruption and business deregulation has resulted in insufficient attention being paid to practically stimulating innovative development (Havrylyshyn, Oleksyn, & Tsolka, 2022; Tepliuk, 2021).

The industrial sector is considered the foundation for entrepreneurial development in the domestic economy. To ensure competitiveness, implementing digital economy principles should accompany the formation and rapid commercialisation of new business ideas. There needs to be synergy between these ideas. (Tomakh, Sihaieva, & Martynenko, 2023). The abovementioned concept requires carefully analysing innovation-driven business models and identifying new sources for generating intellectual resources. It, in turn, necessitates a fundamental change in management priorities and the utilisation of dynamic opportunities. Digital transformations offer market actors opportunities to achieve high levels of innovation, efficiency, competencies, leadership, and responsibility with high-performance indicators.

Enterprises can enhance their efficiency and competitiveness in the digital age by implementing a range of innovations using new digital technologies (Figure 1). Among these, it is worth highlighting the potential of artificial intelligence and business process automation. These technologies can improve customer service quality and task execution productivity, elevate analytical processes to a new level of quality, and increase the efficiency of managerial decision-making.

Upon analysing Fig. 1, it is essential to note that the Internet of Things (IoT) facilitates the optimisation of production and service management processes by collecting and analysing data in real time through a network of connected devices. Additionally, augmented and virtual reality can bring customers closer to the goods and services offered by utilising interactive, immersive experiences and corresponding web applications. Big data analytics offers the opportunity to process large volumes of information to evaluate consumer trends and changes in behaviour, strategic
planning, and forecasting. Hybrid cloud technologies are widespread and create an adaptive and robust foundation for long-term digital transformation success, providing access to large amounts of data and enabling the construction of flexible and scalable architectures. Simultaneously, products and services are created using natural language and image processing to optimise customer interaction and analyse visual information. The phenomenon of microservices is presented as a tool for creating and countering digital disruptions. It enables companies to automate routine business tasks. At the same time, digital platforms and e-commerce facilitate the creation of innovative online stores, convenient and secure electronic platforms for consumers, and personalisation systems. It is essential to consider the potential of blockchain technologies, which can provide transparency, reliability, and security for transactions and data exchange, depending on the user's needs. For enterprises, blockchain can be the foundation for building reliable and resilient supply chains and cross-border transformations of financial services.

Figure 1. Innovative Business Technologies in the Context of Digitalisation

Source: the author based on (Soltanifar, Hughes, & Göcke, 2021; Handayani, & Agustina, 2022)
Integrating innovative technologies into entrepreneurial processes accelerates the adoption of optimal management decisions, ensures real-time responsiveness to market dynamics, better meets changing customer expectations, and creates new competitive opportunities for businesses. Digital transformation is a constant and continuous adaptation to a changing environment. Experts from the World Economic Forum estimate that 70% of future value creation will rely on digital products based on digital business models (Savras, & Fedynets, 2023). Over 2019-2023, the share of the global GDP attributed to digitised enterprises has significantly increased, while non-digitised enterprises have experienced a reverse trend (Figure 2).

**Figure 2. Global GDP dynamics, trillion USD**

Innovation is critical for enterprises to adapt to integrated digital transformation successfully. Innovative processes and digital transformation are interrelated and complementary components (Vytvytska, Suvorova, & Koriuhin, 2022). Digital changes happen when innovative solutions involving digital technologies are implemented. These solutions enable the development of unique approaches to achieve enterprise goals and meet user needs. The enterprise's innovative activity
yields results in new technologies, improved products and services in green entrepreneurship, business process automation, digital ecosystems, and the implementation of artificial intelligence. These results contribute to digitisation and accelerate the enterprise's digital transformation.

Implementing innovations in entrepreneurial activity within digitisation may face various obstacles and challenges. The main issues may include personnel incompetence and significant financial costs. The implementation process may be hindered by employees' need for more knowledge regarding the successful operation of new digital tools, which requires additional training and staff development investments. Stakeholders may need more support for innovation. It is essential to analyse and evaluate all alternative options for cost compliance with the expected results of implementing innovative technologies using various strategies and approaches.

When implementing digital technologies, companies may face challenges such as cybersecurity issues, insufficient user awareness, and control over data access. Additionally, they must assume constraints related to patents, antitrust, environmental legislation, standards, regulations, licensing, and permits that may hinder innovation implementation. It is essential to develop strategic plans that consider these factors.

Ineffective implementation strategies can result from various factors, such as inadequate information about the external environment dynamics, insufficient analytics, lack of goals and a clear strategic business plan for implementation, underestimation of risks in innovation implementation, unqualified expertise, and unrealistic expectations (Stawicka, 2021; Sahut, Iandoli, & Teulon, 2021). To successfully implement innovation in the digital age, an enterprise should adopt a systematic approach and be prepared for constant change. It is crucial to consider the company's needs, industry specifics, and market trends and identify opportunities for further development.
Digitisation has a positive impact on an enterprise’s innovative activities. It expands opportunities for innovation implementation, making them more accessible and efficient. It enhances productivity, competitiveness, adaptability, flexible communication policies, resource utilisation efficiency, and decision-making effectiveness. Digitisation has enabled small companies to compete on equal footing with large enterprises, resulting in a gradual shift in the advantage of innovation implementation towards startups (Havrylyshyn, Oleksyn, & Tsolka, 2022; Tepliuk, 2021).

However, it is essential to note that digitisation also poses significant risks, such as the leakage of confidential information and cyber-attacks and the potential for rising unemployment. Successful innovation and digital transformation of entrepreneurial activities require aligning innovation and risk management. Minimising risks is possible through timely and realistic assessment of enterprise activities' internal and external environment, achieving a shared vision of the necessity and feasibility of digital innovation projects, and determining the priority of digital innovation projects. The digital transformation process should be gradual, considering innovations' priority, value, risks, and feasibility in specific space and time conditions (Samofatova, 2023; Kraus, & Kraus, 2020). When considering a project, evaluating its expected profitability, alignment with the enterprise's strategy and customer expectations, and potential synergistic effects with other innovative projects planned for implementation during the digital transformation process is crucial.

Promoting motivation and increasing digital culture within the internal environment of enterprise activities can enhance adaptability and flexibility in dynamic market conditions, responsiveness to consumer expectations, competitiveness, engagement of creative and professional talents, and effective communicative interaction. Digitisation can enhance competitiveness and create new opportunities, rather than being solely perceived as a threat, as is often the case in traditional business environments due to low levels of digital literacy and detachment from the digitisation process.
Discussions

Scholars' findings on key aspects of the process must be considered to conduct effective research on the potential of entrepreneurial innovation during the global digitisation era.

Eliakis et al. (2020) investigate entrepreneurship in complex, crisis-ridden economic conditions. They highlight the importance of digital infrastructure development as a hub for innovation and the scientific-educational sphere. Effective integration and coordination of activities among participants in priority areas of socio-economic development are necessary. Conversely, representatives of another academic school (Gawer, 2022; Ghezzi, & Cavallo, 2020) focus on sustainable entrepreneurial activity from a systemic perspective and digital optimisation.

According to J. Antonizzi and H. Smuts (2020), D. M. Steininger, M. Kathryn Brohman, and J. H. Block (2022), high-level entrepreneurial innovation can only be achieved under favourable societal conditions, effective market interaction, and proper functioning of relevant institutions in the context of economic digitisation. Furthermore, the authors stress the significance of safeguarding the entrepreneur's autonomy in decision-making.

Researchers have taken a prominent position among contemporary approaches to converging digital and innovative transformations in entrepreneurship. Kraus et al. (2023) and Kollmann et al. have explored this topic extensively. In 2022, the authors advocate for positioning the entrepreneurial environment as a reflection of the overall economic situation. This involves synthesising the presence of an entrepreneurial body, defining the level of economic freedom, the dominance of market-type economic interaction, the presence of innovative infrastructure, and the ability to utilise necessary resources.

Researchers of progressive approaches to green entrepreneurship and e-commerce (Hisrich, & Soltanifar, 2021; Jawad, Naz, & Maroof, 2021; Yemenici, 2022) emphasise that addressing issues related to organising work in scientific-technical
support of entrepreneurial innovation development, functioning of the intellectual property protection system, and intensification of information provision is possible through jointly coordinated interaction of the business environment, society, and government authorities.

Contemporary scholars' research and analytical work convincingly demonstrate the relevance of the trend towards shaping an innovative paradigm of entrepreneurship. This paradigm combines principles of sustainable development and digitisation. Promising research in this direction includes studying the ethical and legal aspects of digital innovations and learning methods and acquiring practical skills for successful digital transformation activities.

Conclusions

The research has demonstrated that the priority direction for entrepreneurship development in Ukraine's post-war recovery is the synergy of innovative and digital transformations, considering the trend of economic space integration into the European community. The proposed concept reflects the modern trend of innovative technology development in entrepreneurship amidst complex uncertainty, socio-economic crises, and societal transformation.

The analysis of implementing entrepreneurial innovations in the context of digitisation has identified several challenges for enterprise innovation activity in the era of global digitisation. One of these challenges is the need to mitigate cyber threats and breaches of financial information confidentiality. It has been explained that digitisation significantly impacts enterprise innovation by providing various digital tools to enhance competitiveness and business process efficiency.

The critical approaches to minimising risks related to implementing digital innovations in entrepreneurship have been highlighted. Enforcing new digital technologies can enhance enterprises' efficiency and competitiveness, as well as their flexibility and adaptability, leading to the adoption of optimal management decisions.
Ukraine possesses the necessary prerequisites for successfully implementing relevant foreign experience in digital and innovative solutions in entrepreneurship. Making management decisions regarding digital technologies involves judiciously applying a situational strategy. This strategy ensures an individual approach to each organisational or managerial change.

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