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ПРОБЛЕМИ ТА ПЕРСПЕКТИВИ РОЗВИТКУ СУБ'ЄКТІВ ПІДПРИЄМНИЦТВА В СУЧАСНИХ ЕКОНОМІЧНИХ УМОВАХ

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INNOVATIVE DEVELOPMENT IN THE CONDITIONS OF DIGITALIZATION AS A FACTOR INCREASING THE COMPETITIVENESS OF MODERN BUSINESS STRUCTURES

Modern business conditions are characterized by a high level of competition and dynamism. New players appear on the market, using more advanced technologies, management methods, business models, marketing tools, etc., which allow them to adapt more quickly to changes in the external environment, more efficiently satisfy consumer needs and form sustainable competitive advantages. In addition, the modern model of economic development is characterized by the complex use of digital technologies and the transition to the production of high-tech products, the intellectualization of economic activity, the application of innovations in the field of management solutions, the development of new development mechanisms, etc. Under such circumstances, enterprises are forced to constantly monitor the business environment, develop new products or improve existing ones in order to meet the changing demands of consumers. Thus, the ability of enterprises to innovate and ensure innovative development becomes the most important factor of competitiveness in the modern conditions of the business environment.

In a world where changes are happening very fast and competition is becoming tougher, innovation is becoming a necessary element of a strategy to increase

competitiveness both at the enterprise level and at the level of the national economy as a whole. Innovations allow enterprises to protect themselves from uncertainty and contribute to the effective use of existing and new development opportunities. Today, it is becoming increasingly difficult to maintain a high level of competitiveness without the active application of innovative approaches in the company's activities, because the development of an innovative business environment is impossible without scientific activity, partnership, new business initiatives, etc. A competitive enterprise does not wait for a decrease in demand and a decrease in product sales, in particular at the stage of market saturation of the product life cycle, but strives to anticipate this situation and be ready to make early and effective changes in its activities in order to gain a more favorable position on the market compared to competitors.

The growing role of digital technologies in the modern business environment makes it necessary to understand and analyze the impact of digitalization on innovation processes. Innovative development of business entities in the conditions of digitalization is critically important for the competitiveness and sustainability of modern enterprises. With the introduction of digital technologies, traditional business models are changing, new opportunities for optimizing processes, increasing efficiency and increasing profitability are emerging. Digitization contributes to the globalization of markets, the lowering of barriers to entry and the development of new industries, which makes research on this topic extremely relevant. In this context, the basis of changes should be considered the possibility of introducing innovations for the purpose of forming sustainable competitive advantages. Thus, innovation is today a key factor in effective development and ensuring a high level of enterprise competitiveness. The innovative development of business structures in the conditions of digitalization is associated with a number of problems and challenges that require careful analysis and resolution. There is a significant unevenness in the level of digitalization between different sectors of the economy and even between enterprises of the same industry. This leads to a different level of competitiveness and efficiency of business processes, which can lead to an increase in economic inequality.

Also, significant costs for the implementation of innovative technologies are an important problem. Many small and medium-sized enterprises face financial constraints that prevent them from investing in modern digital solutions, which, in turn, can lead to lagging behind competitors and decreasing market positions. Thus, the research of innovative development of business structures in the conditions of digitalization requires a comprehensive approach to overcome the mentioned problems and effectively use the opportunities provided by digitalization. Thus, the question of the impact of digitalization on the innovative development of business structures and increasing their competitiveness in order to ensure their stable market position today does not lose its relevance.

In modern scientific literature, interest in innovations is growing, in particular, innovations are considered the main factor in the country's economic development [17; 55]. Countries with an innovative type of economy are able not only to increase the level of international competitiveness, but also economic growth and the standard of living of the population [59]. Innovation contributes to the search for the best alternatives to create added value and achieve sustainable competitive advantage [21], and also exert a decisive influence on the development of productive forces and economic growth of countries and increase their international competitiveness [8].

Hrytsenko S.I. asserts that it is activity in the scientific and research sphere, the ability to attract financial resources, as well as the ability to adapt to changing external conditions, which ensures an increase in the level of competitiveness in the creation of new products and strengthens the synergistic effect in the context of the model of ensuring the country's competitiveness [45].

According to I. V. Kolodyazhna, innovative activity is a decisive factor in competition, which provides conditions for sustainable and long-term development of the enterprise [57]. Bilous-Sergeeva S.O. emphasizes that increasing the level of competitiveness is possible through the creation of new technologies and products, which at the same time allows reducing dependence on imports and attracting investments with the aim of strengthening the economic independence of Ukraine [5].

Today, the conditions of globalization create the need for a comprehensive assessment of the level of economic development of countries in order to determine the growth factors of one country against another [109]. In this context, such complex indices as the Global Innovation Index and the Global Competitiveness Index are increasingly used in academic research to compare the social and economic development of countries.

Therefore, in recent years, the issue of the relationship between innovation and the competitiveness of business structures has not been left out of the attention of foreign and Ukrainian scientists. Schwab K., the founder of the World Economic Forum emphasizes the importance of innovation in the conditions of the Fourth Industrial Revolution [87]. In addition, Christensen K., known for his theory of disruptive innovation, proves how new technologies can change markets and affect the competitiveness of companies [11].

Among Ukrainian scientists, researchers such as I.Yu. Epifanova can be singled out, who in her works examines the issue of improving the formation of an innovative strategy for the purpose of economic growth of domestic enterprises [105]. Denisenko M. and Breus S. emphasize the role of innovations in ensuring the effective development of modern business structures [14]. In addition, the constant search for innovative solutions and the use of innovations allow enterprises to compete in the international market [77].

The results of the analysis of scientific publications confirm that innovation is a key factor in ensuring the competitive advantages of the enterprise and the competitiveness of the national economy as a whole [16], since it is innovation that stimulates the development of new products and services, as well as contributes to increasing the efficiency of business structures in any field. Thus, more and more empirical studies focus on determining the relationship between eco-innovations, which are gaining more and more importance due to their potential to transform the economy and ensure competitiveness [65]. In other works, the relationship between social sustainability, innovation and competitiveness is determined based on the analysis of the ranking of ten leading countries according to the relevant indicators [23]. Also, a large number of

scientific publications are devoted to determining the impact of innovations on the competitiveness of business structures of such dynamic industries as ICT [108].

Thus, in today's highly competitive business environment, innovations are becoming an important tool for ensuring the competitiveness of both an individual enterprise and the country's economy as a whole. In addition to ensuring competitiveness and significant growth rates, innovations also contribute to reducing the country's trade deficit, as they reduce the need to import technologies and knowledge [75].

There is no consensus in the literature regarding the definition of innovation. In recent years, scientists have been trying to improve the concept of innovation from macroeconomic, microeconomic, social, ecological, cultural and political points of view [100]. At the micro level, innovation is defined as the successful development and application of new knowledge, as well as the transformation of knowledge into results [12]. In a broad sense, Freeman C. [25] argued that innovations concern not only the individual work of the company, but also the level of collective efforts at which the government and authorities perform the functions of stimulating the creation and spread of innovations in the national economy.

As you know, the basis of the theory of innovations and the innovation process is the concept of J. Schumpeter, on which a number of modern approaches to the definition of innovations are based. This concept is a combination of five aspects: bringing to the market a new product that is not yet known to consumers; introduction of a new production method that has not yet been used in the industry; opening a new market where the company had not previously worked, development of new sources of raw materials and energy; the emergence of a new organizational structure *укладу* [86]. Thus, J. Schumpeter promotes a dynamic and long-term analysis of economic problems, connecting economics with history and sociology. He assumes that the entrepreneur will de facto discover a gap in the market. This gap tells him that if he fills it, he will be able to get big profits from it. Therefore, the entrepreneur is not driven by the idea of invention, but by the desire to fill a gap in the market and the motivation to obtain more profit from the business in the future. However, bringing a new product to the market is not only a technical, but, above all, an economic innovation. The entrepreneur is looking for

the best option, which is faster and at the same time more flexible. At the same time, such an entrepreneur is not an inventor, but rather an innovator who craves profit. Thus, J. Schumpeter correctly assessed the importance of innovations, and established that with an increase in the number of innovations, their influence on the further development of individual enterprises also increases [86].

Thus, the concept of innovation by J. Schumpeter became the basis for the emergence of a number of modern concepts of innovation, as well as the basis for the emergence of new approaches to the definition of innovation. For example, Thompson V. claimed that innovations occur in generations, through the adoption and implementation of new ideas, product or service processes [99]. A number of other scientists considered innovation as a useful result of the ability of companies to generate new knowledge and their solutions, apply them to new products, processes, organizational projects and combinations of resources and markets [20; 83].

According to the OECD definition, innovation should be understood as the introduction of a new or significantly improved product or service, process, new marketing methods or new organizational approaches in business practice [70]. As mentioned, innovation is considered a key factor in economic development and increasing the competitiveness of the enterprise, the region and the country as a whole, so it can be argued that the relationship between competitiveness and innovation is direct and undeniable [62; 24; 82].

Based on the results of the analysis of theoretical approaches to the definition of innovation, it can be concluded that each of the authors considers innovation through the prism of their own criteria and indicators, but scientists agree on one thing: innovations provide competitive advantages and are an integral part of the life cycle of a successful enterprise.

Therefore, in the modern economy, innovative development is a key element of ensuring the competitiveness and stability of business structures. In the context of globalization and rapid technological change, businesses are forced to constantly adapt and implement new ideas, products, technologies and management practices in order to remain successful. Innovative development covers the entire process from

the generation of ideas to their implementation and scaling, which allows enterprises not only to adapt to market changes, but also to actively influence them [33].

The concept of innovative development includes several main aspects that determine its essence. First, innovation always involves novelty. These may be new or significantly improved products (goods or services), processes, marketing methods or organizational methods in business practices, workplace organization or external relations. Novelty is the criterion that distinguishes innovations from ordinary improvements.

Secondly, innovative development has a process nature. It is a continuous process covering all stages from idea generation to their commercial implementation and scaling. This means that businesses must constantly work on improving their products and services, looking for new opportunities for growth and development.

Thirdly, innovative development has a clearly defined goal. The goal of innovative development is to increase the efficiency of the enterprise, increase its profitability, enter new markets and meet the needs of consumers. This is achieved through the creation and implementation of innovations that allow enterprises to work more efficiently and meet the needs of their customers more effectively.

Also, innovative development involves an integration approach. This means that different fields of knowledge such as science, technology, management and economics must be involved for successful innovation. The integration of this knowledge allows you to create complex solutions that contribute to the development of the enterprise.

In addition, the essence of innovative development is a systematic approach to managing changes and innovations. This includes several key components. First of all, the creation of new knowledge, which involves conducting research and development (R&D), using scientific achievements and technical discoveries to create new products and technologies.

The next stage is the implementation of innovations, which involves the practical application of new ideas in production, management and marketing [71]. This may include the development of new products, optimization of production processes, implementation of new management methods, etc. Next comes the diffusion of innovation, which includes marketing and communication strategies for bringing new products and

technologies to market, as well as training staff to work with new tools and methods. The last stage is evaluation and control, which involves constant monitoring and evaluation of the results of implemented innovations to ensure their effectiveness and adjust strategies if necessary.

Innovative development is not only a means of adapting enterprises to the changing external environment, including technological changes, globalization of markets, changing consumer preferences and increased competition, but also as a tool of active influence on these processes. It allows enterprises not only to survive in conditions of competitive pressure, but also to actively grow and expand their market influence, ensuring long-term success and stability.

Today, modern entrepreneurship is experiencing a period of rapid changes and transformations, largely due to the development of innovative technologies. Digitization of business processes is one of the most important trends in modern entrepreneurship, which allows companies to increase operational efficiency, reduce costs and increase their competitiveness. Successful digitalization requires the use of various theoretical approaches that help structure this process and ensure its success. In the digital age, when information technologies become a key factor in economic development, the role of innovative technologies becomes of primary importance. Thus, the implementation of digital solutions in business processes allows companies not only to remain competitive, but also to open up new opportunities for growth and development.

In modern conditions, competitiveness is one of the key characteristics of the successful development and functioning of the economic environment in the world, which is an integral component of the market economy, which stimulates enterprises to find and implement innovative solutions. It is precisely because of competitiveness that enterprises must implement new ways of improving their products and services, increasing production efficiency and optimizing management processes. The competitiveness of the enterprise is closely related to its ability to respond to changes in the market and implement innovative solutions to strengthen its position in the competitive environment, which is the result of a combination and interaction of various factors that reflect the results of the struggle for quality, sales markets, consumers, and a high level of

profit etc. Porter M. emphasized that the country's economic success does not depend on inherited natural resources or labor force, and the key factor of competitiveness is precisely the ability of enterprises to innovate and modernize. Maintaining competitive advantages requires constant improvement of products, production methods and other aspects. Therefore, the basis of competitive advantages is the constant process of stimulating renewal and improvement [78].

Today, the concept of "innovation" is understood as a certain process aimed at implementing the results of completed scientific research and development or certain scientific and technical achievements into a new or improved product that is sold on the market, into a new or improved technological process, which is offered on the market, into a new or improved technological process used in practice, as well as accompanying scientific developments and research related to this process [34]. Also, the definition of "innovation" is interpreted as an innovative activity focused on the use and implementation of the results of scientific research and development for the purpose of releasing new competitive goods and services to the market [79].

Today, there are several approaches to understanding the economic essence of the concept of "innovation". Depending on the object and subject of research: innovation is understood as a process, as a result, as a change and as a system. Let's consider these approaches, which were studied by scientists, regarding the essence of innovations in the definitions of innovativeness (Table 1).

Table 1

Systematization of scientific approaches to defining the essence of the concept of "innovation"

No	Author	Definition
1	2	3
Process		
1	Mocherniy S. [69]	Innovation is the introduction of new equipment, technology, organization of production and sales of goods, etc., which makes it possible to gain advantages over competitors
2	Schumpeter J. [86]	Innovation is an innovative process, namely the production of a new product, not a "new" product; introduction of a new method, not a "new method"; development of a new market; obtaining a new source of raw materials; implementation
3	Illyashenko S. [51]	Innovation is the process of creating and commercializing innovations embodied in new products, technologies, management methods, etc., which have consumer value

1	2	3
Result		
4	Denisenko M. [15]	Innovation is the result of innovative activities aimed at changes in the object of activity and obtaining an economic, social, or other type of effect
5	Khariv P. [56]	Innovation is the result of innovative activity, reflected in the form of scientific, technical, organizational or socio-economic novelties, which can be obtained at any stage of the innovation process
System		
6	Oliynik Yu. [73]	Innovation is a system of coordinated and consistent actions of authorized entities aimed at the step-by-step implementation of the process of creation and implementation of innovations, which is based on the transformation of scientific knowledge into a product with the aim of obtaining an economic effect from the implementation of such a product
7	Pavlov V. [74]	Innovation is a multi-faceted system of purposeful organization of innovative activity, containing logically related actions, which include elements of generating new ideas, conducting fundamental and applied scientific research, research and development work, introduction into production, distribution, consumption of an innovative product and generally cover the entire complex of social-production and financial-credit relations in the cycle "science-technology-production-consumption"
8	Yastremska O. M. Demchenko H. V. [104]	Innovation is a set of measures for the introduction of new equipment, technologies, etc. into the economy
Change		
9	Law of Ukraine "On Innovative Activity" [63]	Innovations are newly created and improved competitive technologies, products or services, as well as organizational and technical solutions of a production, administrative, commercial or other nature, which significantly improve the structure and quality of production and the social sphere"
10	Baranov O. [2]	The innovation process is a set of scientific and technological, technological and organizational changes that occur in the process of implementing innovations

The most important debates arise between supporters of the approach that considers innovation as a process and the approach that considers innovation as a result of innovative activity. The first see innovation as a process of creating and spreading innovations or introducing new products, methods, elements, or principles to replace obsolete. Others define innovation as a result of such activities.

Glukhova S.V. and Chorna M.V. [42; 10] even consider the possibility that the idea itself can be considered an innovation. Effective implementation of innovations generates significant strategic advantages in the most competitive environment.

Companies that stand out through leadership achieve competitive advantage through innovation. This includes the use of the latest technologies and effective work methods. However, once advantages have been achieved, their preservation is possible only through continuous improvement, through continuous innovation. So, in the modern economic context, the key aspect of competitiveness is innovation – the system's ability to constantly develop, innovate and change in the economic sphere based on the implementation of innovative solutions. Also, innovation involves the use of scientific and technical, informational and intellectual potential for further development and increasing the efficiency of activities, which leads to an improvement in the quality of life in society. The importance and role of innovative activity in ensuring the competitiveness of business structures is shown in fig. 1.

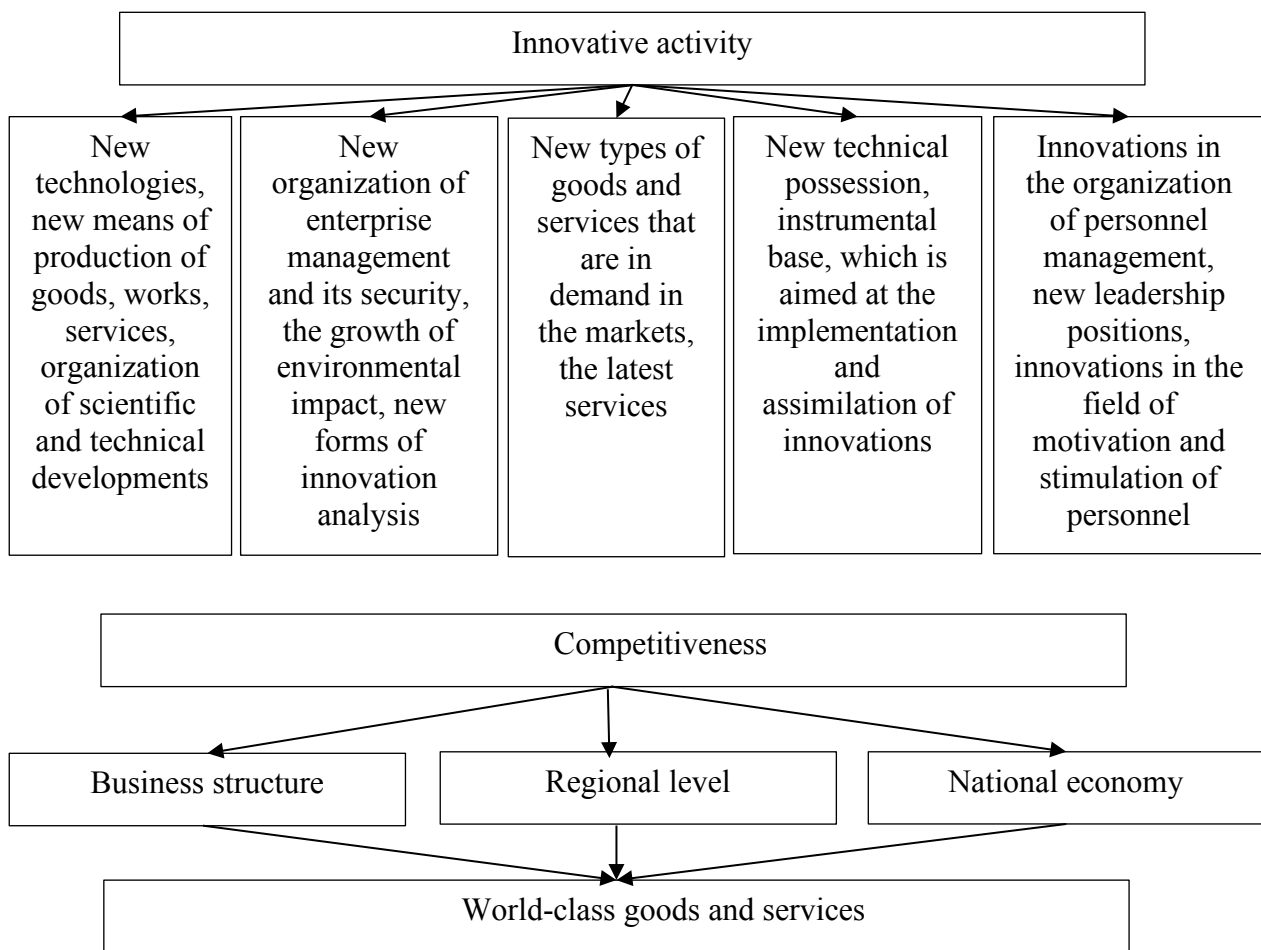


Fig. 1. The importance and role of innovative activity in ensuring the competitiveness of business structures [6]

The spread of innovations begins with various factors, taking into account the competitive struggle, the growth of consumer demand, the development of technical potential, the search for solutions to the problems of enterprises, scientific discoveries, the internationalization of science, invention, etc.

These factors significantly contribute to innovative activity and allow maintaining competitive advantages in the economic environment, which, as a result, makes it possible to occupy a strong position in world markets and maintain stability in production.

Reliable competitive advantages in the sectoral dimension form the basis of the competitiveness of the national economy, but this process requires not only the support of industries, but also the constant renewal and improvement of production through innovation. The stable development of the national economy and the maintenance of socio-economic stability in the country directly depend on the competitiveness of its enterprises.

Taking these aspects into account determines the strategic importance of innovative activity and the formation of competitive business structures. Therefore, its increase becomes one of the most important tasks of state policy. At the same time, the production of competitive products, which is the key to creating long-term competitive advantages, directly depends on the ability of enterprises to maintain a high level of innovative activity and high rates of production development.

Innovative technologies cover a wide range of tools and approaches, including automation, artificial intelligence, the Internet of Things (IoT), blockchain, cloud computing, augmented and virtual reality, big data, and many other [58]. Each of these technologies has the potential to significantly change the way business is conducted, increasing operational efficiency, reducing costs, improving the quality of products and services, and creating new business models.

Digitization of business processes has become not just a trend, but a necessity for the survival and development of enterprises in the global economy. It allows enterprises to quickly adapt to changes, be flexible and respond to market needs in real time. Innovative technologies contribute to the creation of efficient, transparent and

secure processes, which allows companies to focus on strategic tasks and long-term planning.

Innovative technologies play a key role in modern entrepreneurship and digitalization of business processes. They are the driving force of change, providing new opportunities for development, increasing efficiency and competitiveness. The main aspects demonstrating the importance of innovative technologies in this context are presented in fig. 2.

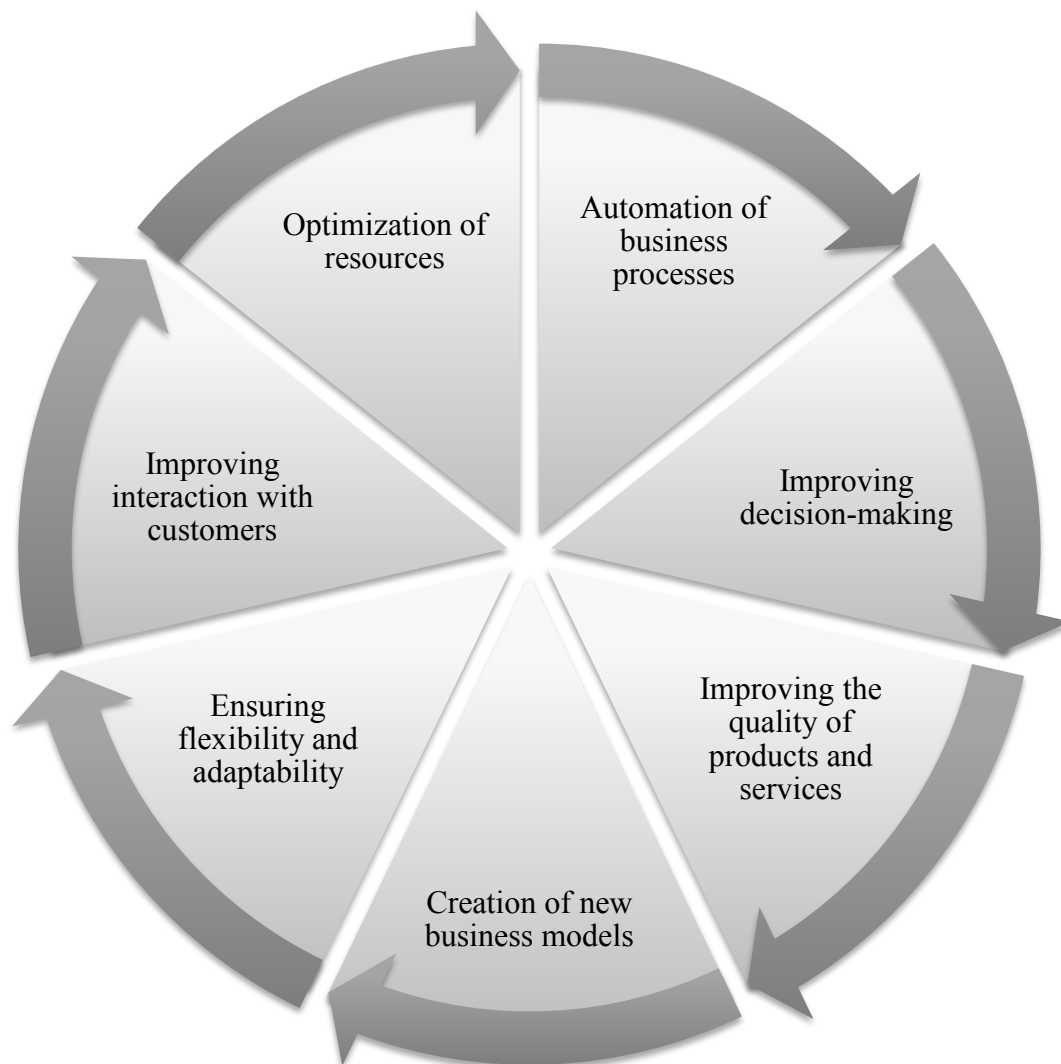


Fig. 2. The role of innovative technologies in modern entrepreneurship

1) Automation of business processes.

Innovative technologies make it possible to automate routine and repetitive tasks, which significantly increases labor productivity. Automation covers various fields of activity, such as production, logistics, finance, human resource management

and customer service [101]. The use of robotic process automation (RPA), enterprise resource planning (ERP) and other technologies reduces costs and minimizes the human factor.

2) Improvement of decision-making.

Thanks to innovative technologies, enterprises can collect and analyze large amounts of data, which contributes to informed decision-making. Data analysis tools such as business intelligence (BI), artificial intelligence (AI), and machine learning enable businesses to identify trends, predict future outcomes, and optimize business processes.

3) Improving the quality of products and services.

Innovative technologies contribute to the improvement of the quality of products and services by introducing new production processes and quality control. Technologies such as the Internet of Things (IoT) and Augmented Reality (AR) allow businesses to monitor the health of equipment in real time, detect defects at an early stage, and provide a high level of customer service.

4) Creation of new business models.

Innovative technologies open up opportunities for creating new business models and market niches. For example, the development of e-commerce and platforms for the exchange of services (sharing economy) has become possible thanks to Internet technologies and mobile applications. Businesses can develop new products and services that meet changing market needs.

5) Ensuring flexibility and adaptability.

Innovative technologies provide enterprises with flexibility and the ability to quickly adapt to changes in the external business environment. Cloud technologies, collaboration platforms and mobile solutions allow companies to quickly respond to changes, scale their operations and implement new initiatives.

6) Improvement of interaction with clients.

Modern technologies allow enterprises to improve interaction with customers, providing personalized service and increasing the level of customer satisfaction. The use of CRM systems, chatbots, social networks and other digital tools facilitates

the organization of feedback, detailed analysis of customer needs and long-term relationships.

7) Optimization of resources.

Innovative technologies help businesses use their resources more efficiently, reducing costs and increasing productivity. Optimization of inventory management, logistics and production processes allows to reduce storage, transportation and production costs.

Therefore, in the conditions of digitalization, the innovative development of enterprises requires the use of modern models and strategies that help integrate digital technologies into all aspects of business [61]. Today, many models and strategies of digital transformation are used in business practice, depending on the specifics of the functioning of a particular enterprise. The analysis of models and strategies that ensure successful digital transformation and innovative business development is given in the table 2.

Thus, in the modern conditions of digitalization of society, enterprises should use different models and strategies of innovative development to achieve their goals. Open and closed innovation, platform models, digital transformation and innovation clusters provide a wide range of opportunities for integrating digital technologies into business processes. Effective application of these strategies allows enterprises to increase their competitiveness, ensure sustainable development and create new values for customers in the digital world.

The application of various models and strategies of innovative development in the conditions of digitalization not only provides competitive advantages, but also creates conditions for the effective enterprise's development [67]. Choosing the right strategy depends on many factors, including industry specifics, company size, resources, and strategic goals. Regardless of the chosen approach, successful digital transformation requires a comprehensive approach and constant monitoring of the effectiveness of implemented solutions.

An important component of success is the development of digital competencies of employees and the creation of a culture of innovation in the organization. Businesses

must invest in training and upskilling of their staff to ensure effective use of the latest technologies. In addition, it is worth encouraging employees to generate new ideas and actively participate in digital transformation processes.

Table 2

Models and strategies of digital transformation at enterprises

Name	Essence	Advantages	Application examples
Open innovation model	Open innovation involves the use of both internal and external ideas and resources to develop new products, services and business models	<ol style="list-style-type: none"> 1. Involvement of external experts and partners. 2. Using collective intelligence and best practices. 3. Reduction of research and development costs 	<ol style="list-style-type: none"> 1. Cooperation with universities and research institutes. 2. Using crowdsourcing platforms to generate ideas. 3. Partnerships with startups and incubators
A model of closed innovation	Closed innovations are focused on the development and implementation of innovations exclusively by the internal forces of the company	<ol style="list-style-type: none"> 1. Preservation of confidentiality and protection of intellectual property. 2. Full control over the innovation process. 3. Formation of unique competitive advantages 	<ol style="list-style-type: none"> 1. Own research and development centers. 2. Internal innovation laboratories. 3. Involvement of own specialists in the creation of new products and technologies
Model platforms	Platform business models involve the creation of digital platforms that bring together different market participants to work together and share resources	<ol style="list-style-type: none"> 1. Creating an ecosystem of partners and customers. 2. Scalability and rapid growth. 3. Access to new markets and opportunities 	<ol style="list-style-type: none"> 1. E-commerce platforms (Amazon, Alibaba). 2. Platforms for sharing services (Uber, Airbnb). 3. Social networks and professional platforms (LinkedIn, Facebook)
Digital transformation strategy	Digital transformation involves a comprehensive rethinking and restructuring of all business processes of the enterprise using digital technologies	<ol style="list-style-type: none"> 1. Defining a digital strategy and roadmap. 2. Investments in new technologies and infrastructure. 3. Development of digital competences of personnel. 4. Rethinking business models and creating new digital products and services 	<ol style="list-style-type: none"> 1. Implementation of enterprise resource management systems (ERP). 2. Use of artificial intelligence for data analysis and process automation. 3. Development of mobile applications and online platforms for interaction with customers
Innovation cluster strategy	Innovation clusters are geographically concentrated groups of interconnected companies, suppliers, scientific institutions and other organizations that promote innovation.	<ol style="list-style-type: none"> 1. Cooperation and exchange of knowledge between participants. 2. Synergy from joint research and development. 3. Access to specialized resources and infrastructure 	<ol style="list-style-type: none"> 1. Silicon Valley in the USA. 2. Technology parks and innovation zones in Europe and Asia. 3. Innovation hubs and incubators in Ukraine

The integration of innovative technologies into business processes requires a systematic approach and clear strategic planning. To do this, businesses must develop a detailed digitalization roadmap that includes specific milestones, resources, and success indicators. It is also important to consider potential risks and challenges such as cybersecurity, data protection, and change management.

In addition to internal efforts, businesses can leverage external resources such as partnerships, consortia, innovation clusters, and incubators. This allows not only to expand access to new technologies and expertise, but also to increase innovation potential through synergy and exchange of experience.

In conclusion, innovative technologies and digitalization open wide opportunities for the development of modern entrepreneurship. Implementation of effective models and strategies of innovative development allows enterprises to increase their competitiveness, adapt to the changing market environment and ensure long-term success. However, the digital era requires enterprises not only to introduce new technologies, but also to constantly rethink their business processes and development strategies.

Successful digitalization requires the use of various scientific approaches that contribute to the structuring of this process and ensuring its successful implementation. The main approaches to digitization of business processes are shown in fig. 3.



Fig. 3. Basic approaches to digitalization of business processes

As you know, the system approach considers the enterprise as a complex system consisting of interconnected elements. Within this approach, digitalization is considered as the process of integrating digital technologies into all aspects of the company's activities [48].

The main elements of the system approach are:

1. Analysis of existing business processes and identification of bottlenecks where digital technologies can be useful.
2. Identifying digital tools that can be implemented to improve these processes.
3. Integration of new technologies into business processes, ensuring their compatibility and interaction.
4. Constant monitoring and optimization of processes after the introduction of digital tools.

The process approach focuses on improving specific business processes with the help of digital technologies. The main goal of this approach is to ensure the efficiency and effectiveness of processes through automation and optimization. The stages of the process approach include:

1. Mapping of business processes to determine their structure and key stages.
2. Identify opportunities for automation and optimization.
3. Implementation of digital solutions such as ERP systems, CRM systems, supply chain management systems and others.
4. Evaluation of the effectiveness of new processes and their further improvement.

The innovative approach focuses on creating new business models and solutions that fundamentally change the way business is conducted. This approach includes:

1. Generation of new ideas and concepts based on the latest digital technologies such as artificial intelligence, blockchain, Internet of Things (IoT) and others.
2. Conducting experiments and pilot projects for testing new ideas.
3. Implementation of successful innovations in the main activity of the enterprise.
4. Constant search for new opportunities for innovation.

A strategic approach to digitalization includes the development of a long-term digital transformation strategy that is consistent with the overall strategy of the enterprise. The main stages of the strategic approach:

1. Assessment of the enterprise's readiness for digitalization and definition of strategic goals.
2. Development of a digitalization roadmap, including key projects, milestones, and resources.
3. Strategy implementation taking into account risks and changes in the external environment.
4. Regular review and adjustment of strategy based on achieved results and new trends.

A customer-oriented approach emphasizes the needs and expectations of customers. This approach involves:

1. Analysis of customer experience and identification of key points of interaction with customers.
2. Using digital tools to improve customer service, such as chatbots, personalized marketing campaigns, online platforms and mobile applications.
3. Organization of feedback from customers and improvement of processes based on the received data.

Cloud computing, artificial intelligence, the Internet of Things, blockchain, and AR/VR are key technologies that are changing approaches to business management, improving productivity, reducing costs, and opening new opportunities for innovation [66]. Analysis of the current state of digital technologies in entrepreneurship shows their wide application and significant impact on all aspects of business (Table 3).

Thus, digitalization of business processes is a complex process that requires the integration of various theoretical approaches. Systemic, process, innovative, strategic and client-oriented approaches contribute to the structuring of this process and ensuring its successful implementation. Each of these approaches has its own advantages and can be applied depending on the specific needs and goals of the enterprise. The implementation of digital technologies not only increases the efficiency and effectiveness of business, but also creates new opportunities for its development and growth in the conditions of the modern digital economy.

Analysis of the state of use of digital technologies in business activities

The name of the technology	Description of the technology	Examples of use in business activities	Advantages of use in business activities
Cloud computing	Cloud technologies are becoming the standard for many enterprises, providing access to powerful computing resources and data storage. They allow companies to reduce IT infrastructure costs and quickly scale their operations.	<ol style="list-style-type: none"> 1. Cloud platforms for data storage (Amazon Web Services, Google Cloud, Microsoft Azure). 2. Cloud services for managing business processes (Salesforce, Oracle Cloud). 3. Virtual workplaces and remote collaboration (Microsoft Office 365, Google Workspace) 	<ul style="list-style-type: none"> – scalability; – flexibility in the use of resources; – reducing hardware costs
Artificial intelligence and Machine Learning	AI and ML are actively being implemented in various areas of business to automate routine tasks, analyze large volumes of data and make decisions based on predictions	<ol style="list-style-type: none"> 1. Analysis of customer behavior and personalization of services. 2. Automation of customer service through chatbots. 3. Demand forecasting and inventory management 	<ul style="list-style-type: none"> – increasing the efficiency and accuracy of operations; – optimization of resources; – improving customer service
Internet of Things (IoT)	IoT allows businesses to connect physical objects to the Internet to collect and analyze data in real time. This opens up new opportunities for managing production processes and monitoring the condition of equipment	<ol style="list-style-type: none"> 1. Monitoring and management of logistics and supply. 2. Monitoring equipment performance and preventing breakdowns. 3. Optimization of energy consumption and building management 	<ul style="list-style-type: none"> – productivity improvement; – reduction of maintenance costs; – increasing safety and efficiency
Blockchain	Blockchain technology provides transparency and security of transactions, which is critical for industries related to financial transactions, logistics and supply chain management	<ol style="list-style-type: none"> 1. Safe and transparent financial transactions. 2. Tracking the origin of goods in supply chains. 3. Smart contracts for contract automation 	<ul style="list-style-type: none"> – high data security; – reduction of fraud risks; – increasing trust between market participants
Augmented Reality (AR) and Virtual Reality (VR)	AR and VR technologies are used in various industries to create interactive experiences, train staff and improve design processes	<ol style="list-style-type: none"> 1. Staff education and training in a virtual environment. 2. Virtual tours and product demonstrations for customers. 3. Design and modeling in virtual reality 	<ul style="list-style-type: none"> – increasing the involvement and efficiency of training; – improving the customer experience; – reduction of development and design costs

Therefore, digital technologies are radically changing the landscape of modern entrepreneurship, providing new opportunities for optimizing business processes, as well as increasing efficiency and creating innovative products and services. An overview of the current state of digital technologies in business allows you to understand which tools and approaches are most effective, as well as to identify key current trends and challenges.

Digital technologies are radically changing modern entrepreneurship, creating new opportunities for innovative development. The integration of these technologies allows enterprises not only to increase their efficiency, but also to create new business models, optimize processes and ensure long-term success [38].

Digital technologies have a significant impact on the innovative development of the enterprise, in particular in four functional areas of activity: marketing, production, personnel and finance (Fig. 4).

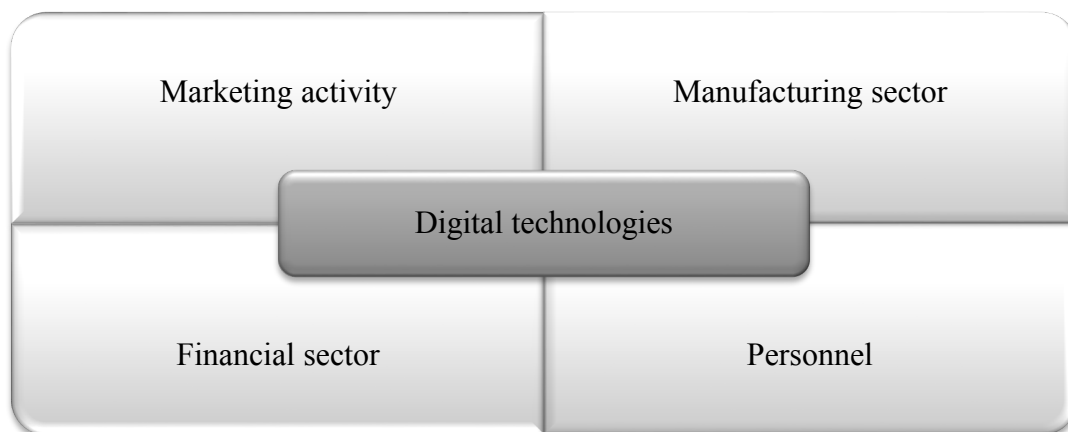


Fig. 4. The influence of digital technologies on the innovative development of enterprises in various industries

1. Marketing activity. Digital technologies radically change approaches to marketing activities, providing new opportunities for attracting and retaining customers, analyzing market data and optimizing marketing campaigns:

– analytics and big data: the use of analytical tools and big data allows marketers to analyze consumer behavior in detail, segment audiences and make informed decisions about marketing strategies;

- personalization: digital technologies such as AI and ML enable the creation of personalized offers and communications that increase customer engagement and the effectiveness of advertising campaigns;

- social networks and digital marketing: social network platforms and digital marketing tools provide direct contact with customers, allow you to conduct targeted advertising campaigns and analyze their results in real time;

- automation of marketing processes: Marketing automation tools (such as CRM systems) allow you to automate routine tasks such as sending emails, managing campaigns and analyzing results.

2. Production (production sector). In the manufacturing sector, digital technologies contribute to automation, optimization of processes, improvement of product quality and production efficiency. The implementation of the concept of Industry 4.0, which includes the use of IoT, cyber-physical systems and big data, allows to create smart factories with automated production processes. 3D printing technologies allow rapid prototyping, manufacturing of complex parts and reduction of production costs. The use of IIoT allows monitoring and management of production processes in real time, preventing equipment breakdowns and resources optimization [37]. Artificial intelligence and machine learning: AI and ML are used to forecast demand, optimize production processes and improve product quality by analyzing large volumes of data [96].

3. Personnel. Digital technologies are changing the ways of personnel management, increasing the efficiency of HR processes and contributing to the development of talents in organizations, in particular in the following areas [58]:

- HR analytics: the use of analytical tools for personnel management allows you to analyze performance, determine training needs and develop strategies for retaining talented employees.

- recruiting and onboarding: digital platforms for recruiting (LinkedIn, etc.) and automation of hiring processes ensure fast and efficient recruitment. Onboarding tools facilitate efficient and quick onboarding of new employees.

– remote work: technologies for organizing remote work (virtual workplaces, platforms for joint work) allow effective management of personnel regardless of their location.

– learning and development: online learning and training platforms provide continuous staff development, allowing employees to acquire new knowledge and skills.

4. Financial sector.

Digital technologies are transforming the financial sector, ensuring the safety, speed and convenience of financial transactions, as well as creating new opportunities for innovation in financial services. The development of financial technologies is facilitating the creation of new financial products and services, such as mobile payments, cryptocurrencies and digital banks. Blockchain technologies ensure the transparency, security and efficiency of financial transactions, reducing the risks of fraud and ensuring the authenticity of data. Accounting, expense management and financial planning automation tools allow you to reduce costs and increase the accuracy of financial transactions. Artificial intelligence (AI) can be used to analyze financial data, predict risks, automate trading and improve customer service.

Thus, digital technologies have a significant impact on the innovative development of business structures in various industries, contributing to automation, optimization of processes and the creation of new opportunities for their effective growth. In marketing, production, personnel management and the financial sector, these technologies provide increased efficiency, flexibility and competitiveness of business structures, which is a key factor for their success in today's dynamic market environment.

Therefore, the results of the analysis of the influence of digital technologies on the innovative development of business structures allow us to conclude that in the modern world, without the integration of digital technologies, the innovative development of an enterprise is practically impossible. The implementation of these technologies in marketing activities, production, personnel management and the financial

sector provides significant competitive advantages, contributes to increased efficiency and opens up new opportunities for growth. Enterprises that actively use digital technologies are able to adapt faster to changes in the market environment, better than competitors to respond to customer requests and satisfy their needs while maximizing profits.

In general, digital transformation is not only a choice, but a necessity for businesses seeking to remain competitive and successful in today's world. This requires investments in the latest technologies, development of digital competences of personnel and continuous improvement of business processes. The successful integration of digital technologies enables enterprises to create innovative products and services, expand sales markets and ensure long-term success in the digital age.

Enterprises that successfully integrate digital technologies into their business processes will gain significant competitive advantages and opportunities for sustainable development in the digital age. However, the implementation of digital technologies is also associated with certain challenges, such as the need to protect data, manage changes and adapt staff to new working conditions. Although digitalization opens up many opportunities for business entities, its implementation is accompanied by a number of problems and challenges [75]. The main problems and challenges faced by enterprises on the way to digital transformation are presented in fig. 5.

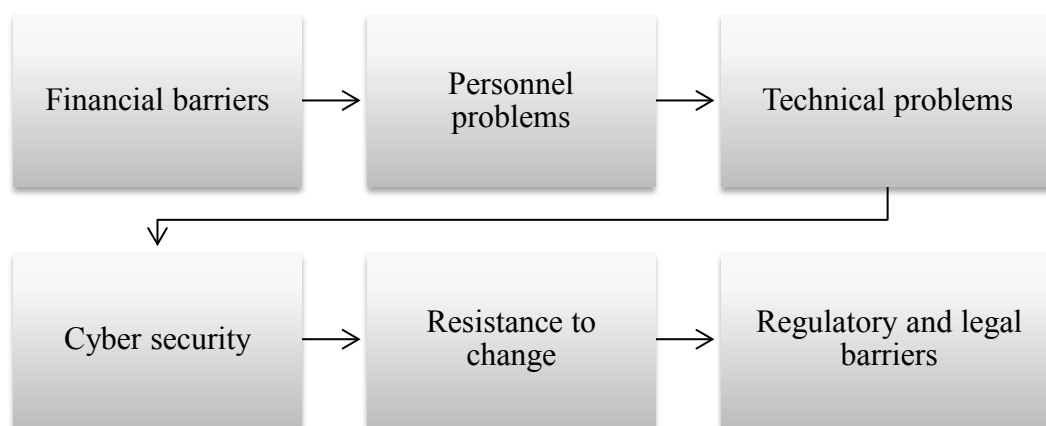


Fig. 5. Main problems and challenges of digitalization of enterprises

One of the most common problems is the high cost of implementing digital technologies. Usually, small and medium-sized enterprises do not have sufficient financial resources to invest in new technologies, software and infrastructure [22].

In addition, digital transformation requires qualified personnel with appropriate digital competencies. The lack of specialists or the insufficient level of knowledge and skills of existing employees can become a serious obstacle on the way to digitalization. The technical complexity of implementing new systems and integrating them with existing processes can also create significant difficulties. Businesses may lack the technical support or knowledge to successfully implement digital transformation.

Despite the many benefits, digitalization increases the risks of cyber threats such as hacker attacks, malware and data breaches. Under such circumstances, it is information protection and cyber security that become key aspects for enterprises in the digital environment. In addition, legislative and legal barriers limit the possibilities of introducing new technologies or create additional requirements for business structures.

Enterprises wishing to successfully implement digital technologies and overcome the relevant challenges should pay attention to a number of strategies and approaches [102]. So, based on the analysis of the impact of digitalization on the functioning of modern business structures, it is possible to identify the main problems for enterprises and ways to overcome them (Table 4).

Digital transformation is not only an important stage for enterprises, but also a necessary condition for their success and competitiveness in the modern world. It requires from enterprises not only investments in new technologies, but also changes in culture, management and methods of activity. Overcoming the challenges of digitization requires an integrated approach that includes strategic planning, investing in technology and human resources, creating a culture of innovation, ensuring cyber security, and effectively managing changes and risks [14]. Only if these conditions are fulfilled, enterprises can ensure their success and respond to the challenges of the modern market.

Analysis of the main problems of digitization of enterprises and ways to overcome them

Challenges	Problems	Ways of coping
1	2	3
Financial barriers	<p>Investing in new technologies: The high cost of acquiring and implementing digital systems can be prohibitive for some businesses.</p> <p>Return on investment: Not all enterprises can be sure of a quick return on investment in digitalization, which can deter them from adopting new technologies</p>	<p>State support and grants: Applying to state support programs and grants aimed at promoting digitalization of small and medium-sized businesses.</p> <p>Venture funding and investors: Attracting venture capital and investors who are ready to invest in innovative projects and technological startups [14].</p> <p>Lines of credit and leasing: Using lines of credit and leasing schemes to finance the purchase of necessary equipment and software.</p> <p>Phased implementation: Planning the phased implementation of digital technologies in order to spread costs over a long period of time</p>
Personnel problems	<p>Finding and retaining talent: Finding professionals with the right knowledge and skills can be difficult, especially for small businesses.</p> <p>Training and development: The need for ongoing training and development of existing employees requires time and resources</p>	<p>Training and development: Investing in continuous training and professional development of employees, holding internal trainings and seminars.</p> <p>Cooperation with educational institutions: Partnership with universities and other educational institutions to train specialists with the necessary skills and knowledge.</p> <p>Outsourcing: Using the services of external consultants and specialized companies to implement digital projects.</p> <p>Recruitment: Attracting qualified professionals through recruitment agencies and professional networks such as LinkedIn</p>
Technical problems	<p>Systems integration: Ensuring that new technologies are compatible with existing systems and processes can be challenging.</p> <p>Support and maintenance: Lack of technical support can lead to problems with maintaining and updating digital systems</p>	<p>Technical Support: A selection of technology providers that offer comprehensive technical support and service.</p> <p>Integration platforms: Use of modern integration platforms that allow easy integration of new systems with existing business processes.</p> <p>Testing: Conducting thorough testing of new systems before their implementation to identify potential problems and eliminate them.</p> <p>Cloud technologies: Using cloud solutions to reduce infrastructure costs and ensure system flexibility</p>

1	2	3
Cyber security	<p>Data protection: Ensuring reliable protection of confidential information and customer data requires the implementation of modern cyber security tools.</p> <p>Threat Response: Businesses must be prepared to respond quickly to cyber threats and have contingency plans in place</p>	<p>Investing in cyber security: Implementing modern data protection and information systems, such as anti-virus programs, firewalls and intrusion detection systems.</p> <p>Staff training: Conduct regular cyber security training to increase employee awareness of possible threats and protection methods.</p> <p>Backup: Implementation of data backup systems to preserve important information in case of cyber incidents.</p> <p>Incident Response Plan: Develop and implement cyber incident response plans to quickly address the impact and restore systems</p>
Resistance to change	<p>A culture of change: Creating a culture that supports innovation and change takes time and effort.</p> <p>Staff motivation: Insufficient motivation of employees to master new technologies and work methods for them personally and for the organization as a whole</p>	<p>Involvement of employees: Active involvement of employees in the process of digital transformation, informing them about the advantages and opportunities of new technologies.</p> <p>Changes in corporate culture: Creating a corporate culture that supports innovation and change, motivating employees to learn new technologies.</p> <p>Management support: Active support for digitalization from the company's management, which demonstrates the importance and priority of this process.</p> <p>Communication: Regular communication with employees about the stages and results of the digital transformation, which helps to reduce the level of uncertainty and resistance</p>
Regulatory and legal barriers	<p>Compliance with regulatory requirements: Businesses must ensure compliance of new technologies with applicable regulatory and legal requirements.</p> <p>Changes in legislation: Constant changes in legislation can create additional challenges for businesses adopting digital technologies</p>	<p>Legal advice: Using the services of legal consultants to ensure compliance of new technologies with current regulatory requirements.</p> <p>Adaptation of processes: Constant monitoring of changes in legislation and adaptation of internal processes in accordance with new requirements.</p> <p>Cooperation with regulators: Active cooperation with regulators to obtain advice and recommendations on the introduction of new technologies</p>

Thus, for successful digital transformation, enterprises need to develop a comprehensive approach to overcoming the problems and challenges of digitalization, which includes investments in new technologies, training and development of personnel, ensuring reliable cyber security and adaptation to regulatory requirements. Only through the active implementation of these measures can enterprises maximize the benefits of digitalization and ensure their stable growth in today's competitive environment.

The introduction of digital tools into business processes is a key aspect of the modern transformation of enterprises. This helps increase efficiency, optimize costs, and improve customer interaction processes. The implementation of digital tools is a complex but necessary process that contributes to a significant increase in competitiveness and ensures the long-term success of any business. We describe the main stages of this process (Fig. 6):

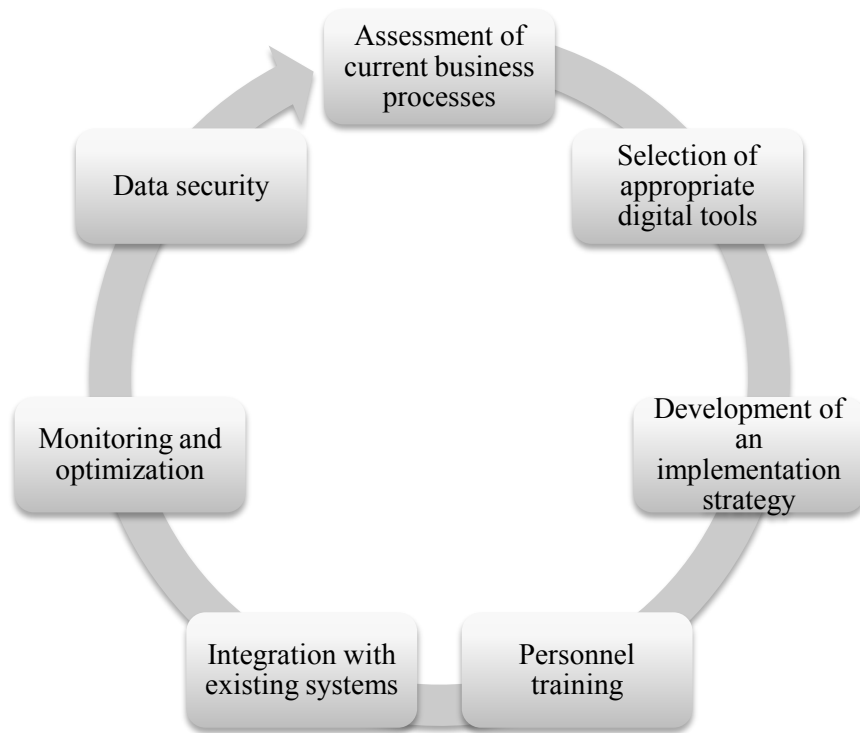


Fig. 6. The process of introducing digital technologies into business processes

Stage 1. Assessment of current business processes.

The first step is a detailed analysis of current processes to identify weak points and opportunities to eliminate them. This can be done through data analysis, employee and customer surveys, process maps, etc.

Stage 2. Selection of appropriate digital tools.

Based on the results of the assessment, tools are chosen that can help in solving specific tasks, including CRM systems (for example, Salesforce, HubSpot), ERP systems (for example, SAP, Oracle), project management systems (for example, Trello, Asana), marketing automation tools (for example, Marketo, Mailchimp), etc.

Stage 3. Development of an implementation strategy.

This strategy should take into account phased implementation plans, division of responsibilities, implementation timeline and assessment of required resources.

Stage 4. Staff training.

Training employees is an important stage, since the success of introducing digital technologies into business processes depends on their competence. Training can be organized in the form of seminars and trainings, online courses, support from software developers, etc.

Stage 5. Integration with existing systems.

In order to avoid duplication of data and ensure seamless exchange of information between different parts of the business, integration can be of the API type, middleware or in the form of specialized modules.

Stage 6. Monitoring and optimization.

After the implementation of digital technologies, it is necessary to regularly monitor the effectiveness of new tools and make the necessary adjustments. At the same time, you can use KPIs (key performance indicators), analytical reports and feedback from users.

Stage 7. Data security.

In order to protect confidential information, a high level of data security should be ensured, in particular by encrypting it, making a backup copy, or setting an appropriate access policy for users.

Analysis of the effectiveness of the use of digital technologies in business processes is critical for assessing their impact on the competitiveness of business structures and achieving goals. This process can be characterized by the appropriate sequence of stages (Fig. 7).

1. Determination of goals and performance indicators (KPI).

First of all, it is necessary to determine the specific goals that are planned to be achieved with the help of digital technologies, as well as the corresponding KPIs for their evaluation [50]. This can be increased revenue, reduced costs, increased productivity, improved customer experience, and reduced time for processes.

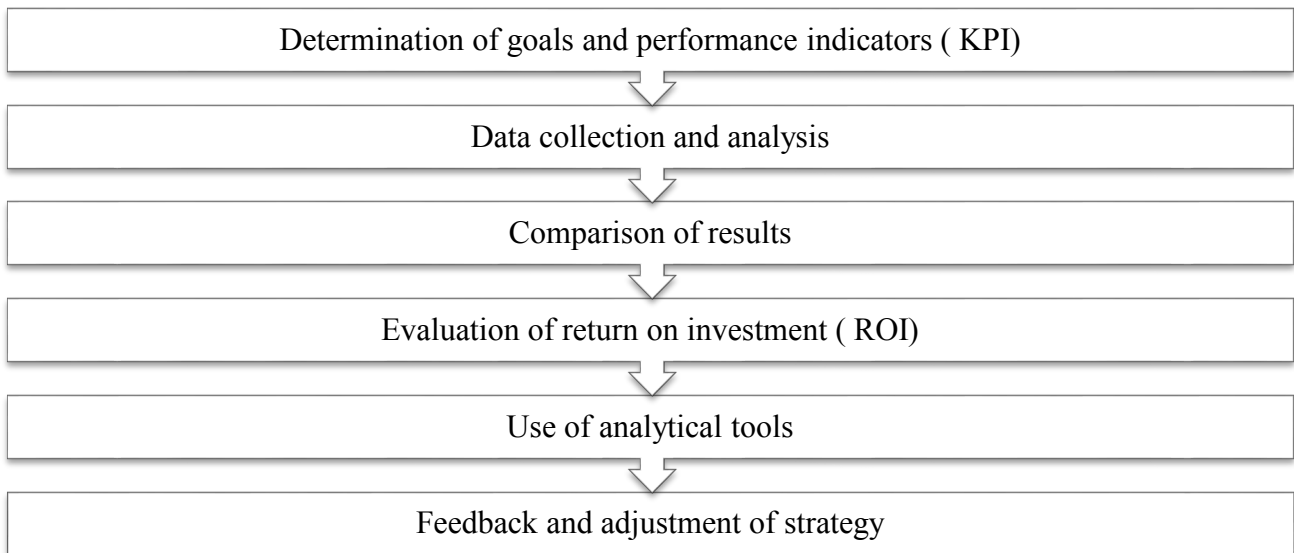


Fig. 7. Stages of evaluating the effectiveness of the use of digital technologies in business processes

2. Data collection and analysis.

To assess efficiency, it is necessary to have data on the state of the enterprise and the values of relevant indicators before and after the implementation of digital technologies. The main methods of data collection include:

- 1) analytical tools (Google Analytics, Power BI);
- 2) surveys and feedback from employees and customers;
- 3) reports from CRM and ERP systems.

3. Comparison of results

Analyzing the results of a comparison before and after the implementation of digital technologies allows to assess the level of their effectiveness, in particular through the analysis of trends in key performance indicators during the corresponding period or comparing the results with groups where the technologies were not implemented.

4. Evaluation of return on investment (ROI) in order to determine the rationality of investments in the implementation of digital technologies.

5. Use of analytical tools that provide detailed information on process efficiency, including Business Intelligence (BI) systems: Power BI, Tableau, big data analytics: Hadoop, Spark, process analysis tools: Celonis, UiPath Process Mining, etc.

6. Feedback and adjustment of the strategy.

Regular feedback from users of digital technologies (employees and customers) contributes to the quick identification of problems and their subsequent resolution through surveys, interviews, focus groups, etc.

Let's consider the foreign experience of implementing digital technologies on the example of well-known companies, which confirms the significant increase in competitiveness due to digitalization and innovative development (Table 5).

Table 5

Successful examples of digitization in well-known global companies

Com pany	Aspect	Problem	Decision	Results
Amazon	Automation and the use of big data	Amazon, the world's largest online retailer, faced the challenge of managing large volumes of data and ensuring fast delivery of goods	<ul style="list-style-type: none"> – automation of warehouses: Implementation of robotics and automated systems of storage and movement of goods (Kiva Systems) to increase the efficiency of warehouses; – big data and analytics: Using big data to forecast demand and optimize inventory. Analytical models help predict which products will be in demand and adjust inventory accordingly 	<ul style="list-style-type: none"> – increasing the speed of order processing and delivery of goods; – reduction of storage and inventory management costs; – increasing customer satisfaction through fast delivery
Netflix	Content personalization through data analysis	Netflix aimed to keep users on the platform by offering them relevant content that matches their preferences [25]	<ul style="list-style-type: none"> – user data analysis: collection of data on views, ratings and user behavior; – personalization algorithms: development of sophisticated machine learning-based recommendation algorithms that analyze collected data and offer users content they may like 	<ul style="list-style-type: none"> – significant increase in user retention on the platform; – increasing the time users spend on the platform; – growth in new subscribers through improved customer experience
Starbucks	Digital transformation through a mobile application	Starbucks sought to increase customer engagement and improve service efficiency in its cafes	<ul style="list-style-type: none"> – mobile application: implementation of a mobile application that allows customers to order and pay for drinks and food in advance; – loyalty program: integration of a loyalty program into the application, which allows customers to accumulate bonuses and receive special offers 	<ul style="list-style-type: none"> – a significant increase in the number of mobile orders, which reduced the waiting time in the cafe; – increasing customer satisfaction due to the ease of use of the application; – increased sales thanks to an effective loyalty program
Siemens	Industry 4.0 and smart factories	Siemens wanted to improve the efficiency and flexibility of its manufacturing processes to meet changing market demands	<ul style="list-style-type: none"> – internet of things (iot): introduction of sensors and iot devices to monitor production processes in real time; – digital duplicates: creation of digital models of production processes for testing and optimization of production without the need to stop real lines; – automation and robotics: implementation of automated systems and robots to perform complex production tasks 	<ul style="list-style-type: none"> – reduction of production costs due to increased efficiency of processes; – increasing the flexibility of production, which allows you to quickly adapt to changes in demand; – improvement of product quality due to accurate monitoring and control of processes

Correct implementation of digital technologies and evaluation of their effectiveness allows to increase productivity, reduce costs and improve interaction with customers, which ultimately contributes to long-term business success (Table 6).

Table 6

The advantages of using digital technologies in ensuring the competitiveness of the enterprise

Aspect	Advantages	Example
Improvement of operational efficiency	Digital technologies help to automate routine processes, which reduces costs and increases the speed of tasks	–bookkeeping automation using software (for example, QuickBooks, Xero); –optimization of supply chains using ERP systems (for example, SAP, Oracle).
Improving decision-making	Analytical tools allow enterprises to collect and analyze large volumes of data, which contributes to more informed and faster business decisions	–Business Intelligence (BI) systems (Power BI, Tableau) for data visualization and trend detection; –demand forecasting using big data analytics (Hadoop, Spark)
Innovations and new business models	Digital technologies stimulate the development of new products and services, and also enable the creation of new business models	– e-commerce platforms (Amazon, Alibaba) that have changed traditional retail models; – subscription model (Netflix, Spotify) for media and entertainment
Improving interaction with customers	Digital tools allow businesses to better understand customer needs and provide a more personalized approach	– CRM systems (Salesforce, HubSpot) for managing interaction with customers; – social media and chatbots for fast and efficient customer service
Global expansion	Digital platforms make it easy for businesses to enter new markets and interact with customers around the world	– global marketplaces (eBay, Etsy); – digital marketing using Google Ads, Facebook Ads tools
Competitive advantage through innovation	Investing in digitization can be a source of significant competitive advantage, especially in industries where innovation is critical	– financial technologies (FinTech) like Revolut, which offer new financial services thanks to digital platforms; – industry 4.0: Using the Internet of Things (IoT), big data and artificial intelligence to optimize production.
Increasing flexibility and adaptability	Digital technologies allow businesses to respond more quickly to changes in the market and consumer demand	– flexible methods of software development (Agile, DevOps) for quick adaptation to changes; – cloud computing (AWS, Microsoft Azure) for rapid infrastructure scaling.

Thus, the use of the latest digital technologies allows companies not only to solve existing problems, but also to open new opportunities for growth and innovative development, since today, the scientific and innovative industry in Ukraine is a key factor for the further development of the national economy, but it faces with a number

of complex problems. These problems include insufficient funding, outflow of qualified personnel, high level of risks, insufficient attention of society and other factors.

A comparison of the development of scientific and innovative spheres in Ukraine with the leading countries of the world makes it possible to identify potential ways of activation and possible options for solving these problems. One of the important indicators of the country's innovation policy is its position in international rankings that assess innovation potential, capacity for innovation, and the effectiveness of innovation policy. Their comprehensive characteristics are reflected in such world rankings as the Global Innovation Index – GII, the Global Talent Competitiveness Index – GTCI, the Global Sustainable Competitiveness Index – GSCI, Summary Innovation Index – SII. In fig. 8 shows the dynamics of the values of the above ratings of Ukraine for the period 2014-2023.

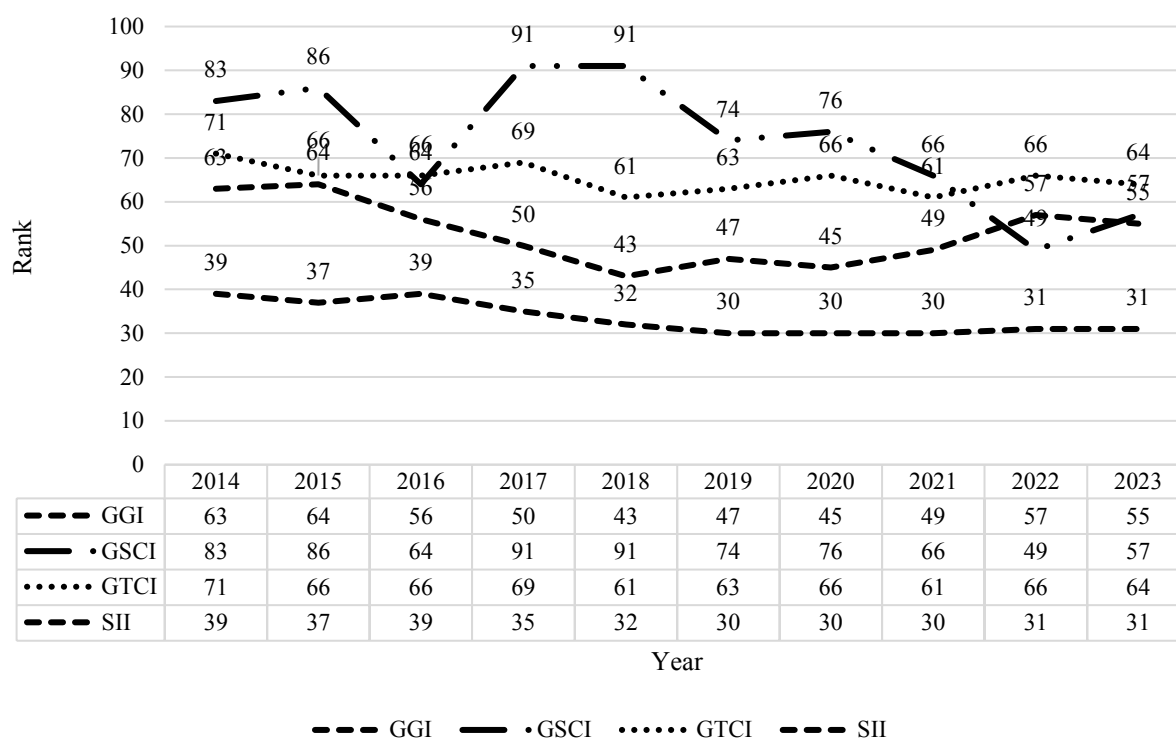


Fig. 8. Ratings of Ukraine according to indices of innovative capacity 2014-2023 [26; 27; 28; 30; 98]

The analysis of the dynamics of Ukraine's ratings according to four global indices for the assessment of innovative capacity for the period from 2014 to 2023 (GII, GSCI,

GTCI, SII) shows that our country occupies a rather modest position, but in recent years there has been an increase in the relevant indicators. For example, in 2022, in the international ranking of the State Institute of Statistics, Ukraine entered the top 50 out of 180 countries in the world. International ratings of innovative development testify to the high level of scientific and educational potential of Ukraine, which is the basis for increasing the competitiveness of the scientific and innovative sphere. This potential is the basis for scientific developments, innovations, new techniques and technologies, etc. So, " Global Innovation Index 2023 " according to the latest data in 2023 had the slogan "Innovation in conditions of uncertainty".

This is the 16th edition of the Index, which ranks 132 world economies and identifies the 100 best scientific and technological innovation clusters [29]. Ukraine rose two positions in the "Global Innovation Index" rating. The rating is based on the analysis of about 80 indicators characterizing the innovative development of countries of the world that are at different levels of economic development. The index is calculated using two groups of indicators – resources and conditions for innovation, as well as practical results of innovation (Table 7).

Table 7

Top 5 innovative economies by country group by per capita income level (World Bank grouping) in 2023 [63]

High-income group (total 48)	Income above average (total 36)	Income below average (total 37)	Low-income group (total 12)
1. Switzerland (1)	1. China (12)	1. India (40)	1. Rwanda (103)
2. Sweden (2)	2. Malaysia (36)	2. Vietnam (46)	2. Madagascar (107)
3. USA (3)	3. Bulgaria (38)	3. Ukraine (55)	3. Togo (114)
4. Great Britain (4)	4. Turkey (39)	4. Philippines (56)	4. Zambia (118)
5. Singapore (5)	5. Thailand (43)	5. Indonesia (61)	5. Uganda (121)

For 13 years in a row, Switzerland has taken first place in the GII, because the economy of this country is recognized as the most innovative. It is followed by Sweden, the USA, Great Britain and Singapore. The most popular innovation clusters (or science and technology centers – regions of the world where the largest number of innovators, inventors and scientists are concentrated) in the field of science and technology in 2023 are Tokyo-Yokohama, followed by Shenzhen-Hong Kong-Guangzhou, Seoul,

Beijing and Shanghai-Suzhou. This year, China overtook the USA in terms of the number of innovation clusters [28].

Despite the military actions, in 2023 Ukraine rose two places in the Global Innovation Index and ranks 55th. North Macedonia has the highest rating and the Philippines has the lowest rating. Also this year, our country for the first time entered the TOP-3 most innovative economic countries in the group with below-average incomes. In 2022, Ukraine's rating was less important, i.e. 57th position (in 2021, Ukraine occupied 49th position) in the GII rating (out of 132 countries), as well as 34th place among 39 European countries. According to the Global Innovation Index, which takes into account 80 criteria in 7 areas and allows for annual monitoring of the innovative activity of countries (132 in 2023), the rating of innovative activity of Ukraine in the world decreased during 2019-2023 (Fig. 9).

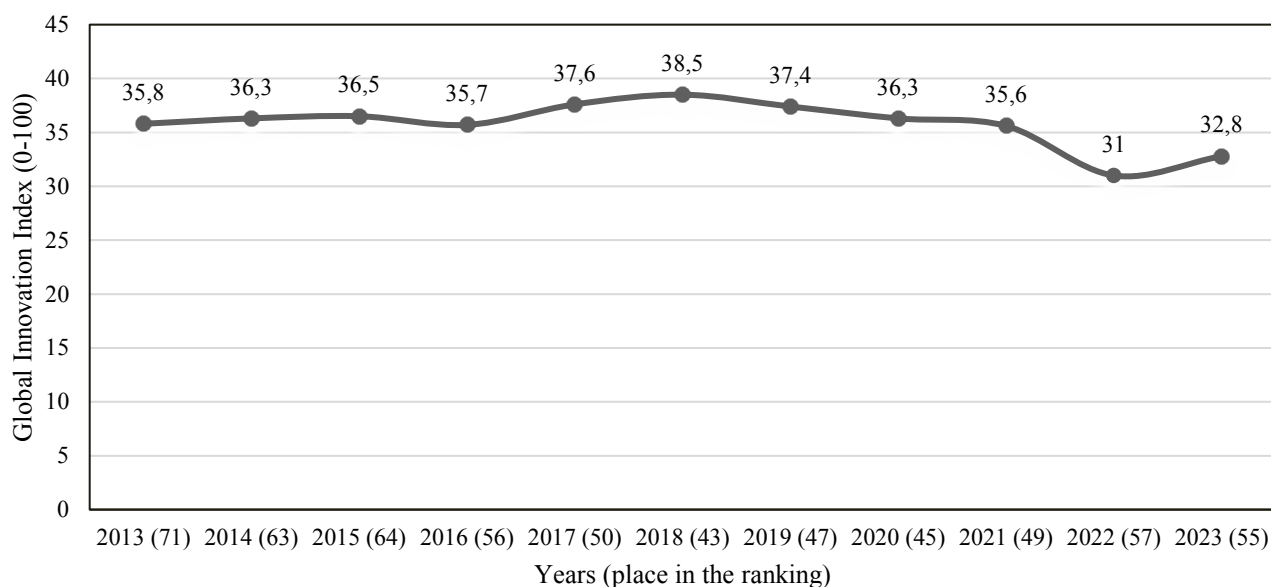


Fig. 9. Dynamics of the rating of Ukraine according to the Global Innovation Index in 2013-2023 [26; 27; 28]

In 2014 and 2015, Ukraine ranked 63rd and 64th, respectively. In 2016, Ukraine was in 56th place, in 2017 – in 50th place. In 2018, Ukraine rose to 43rd place, scoring 38.5 points – a historic result. After that, the rating began to regress again: 2019 – 47th place, 2020 – 45th, 2021 – 49th, 2022 – 57th. However, in 2023, the value of the analyzed indicator increased slightly and Ukraine rose to 55th place in the world

rating. Let's consider in more detail the marked trend of 2022 and 2023 by seven areas of development (Fig. 10).

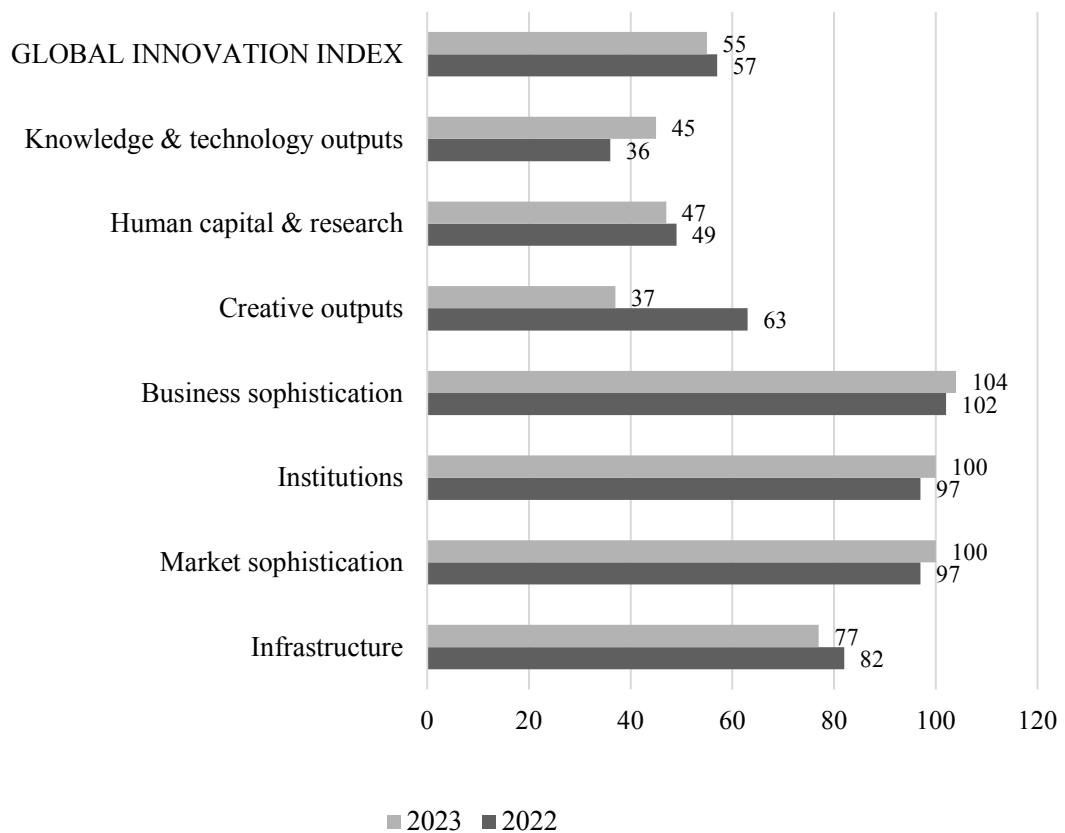


Fig. 10. Ratings of Ukraine by 7 blocks of GII indicators in 2022-2023 [26; 27; 28]

Ukraine took the highest positions in the areas of "Human capital and research", "Complexity of doing business", "Knowledge and technological results", "Creative results". The worst indicators were in the areas of "Market complexity" (credits, investments, competition), "Infrastructure" and "Institutions" (politics, business conditions). The highest number of points is in the field of "Complexity of doing business", the lowest is "Complexity of the market". Based on these data, it can be concluded that the degree of development of Ukrainian education, information and communication technologies, and the intellectual level of human capital received the highest ratings. The lowest are the state of the institutional field, trust in business, the state of the infrastructure, which is not surprising in the conditions of a full-scale war.

According to the data of the State Statistics Service of Ukraine for the period 2014-2023, as well as the results of forecasting the share of the number of innovatively active enterprises in the total number of industrial enterprises for the period 2024-2027, the following data were obtained (Table 8).

Table 8

Forecast of the share of the number of innovatively active enterprises in the total number of industrial enterprises for 2014-2027.

Year	Year number, t	Share of the number of innovatively active enterprises in the total number of industrial enterprises, %	Year	Year number, t	Share of the number of innovatively active enterprises in the total number of industrial enterprises, %
2014	1	16.1	2021	8	16.94
2015	2	17.3	2022	9	17.08
2016	3	18.9	2023	10	17,22
2017	4	16.2	2024	11	17.36
2018	5	16.4	2025	12	17.5
2019	6	15.8	2026	13	17.64
2020	7	16.8	2027	14	17.78

The method of average absolute growth was used for forecasting [101]:

$$\bar{\Delta y} = \frac{y_k - y_0}{k-1} \quad (1)$$

where: y_k – final value of the dynamic series level;

y_0 – the initial value of the level of the dynamic series;

k – number of elements of the dynamic series.

Therefore, $\bar{\Delta y} = \frac{16,8-16,1}{6-1} = 0.14\%$ based on the table. 8, a forecast of the share of the number of innovatively active enterprises in the total number of industrial enterprises for the period $\frac{(k+1)}{n}$.

So, based on forecast values, the share of the number of innovatively active enterprises in the total number of industrial enterprises gradually increases from 16.1% in 2014 to 17.78% in 2027 (the data is calculated without taking into account

the conditions of martial law in Ukraine) as a result of such growth rates indicate that there are problems with the introduction of innovations in industrial enterprises related to their financing. Therefore, it is appropriate to analyze the sources of financing of innovative activities of industrial enterprises (Table 9).

Table 9

Sources of financing of innovative activities of industrial enterprises [93]

Years	Innovation costs							
	own funds of enterprises		state budget funds		funds of non-resident investors		other sources of funds	
	million hryvnias	%, volume	million hryvnias	%, volume	million hryvnias	%, volume	million hryvnias	%, volume
2014	6540.3	85.0	344.1	4.5	138.7	1.8	672.8	8.7
2015	13427.0	97.2	55.1	0.4	58.6	0.4	273.0	2.0
2016	22036.0	94.9	179.0	0.8	23.4	0.1	991.1	4.3
2017	7704.1	84.5	227.3	2.5	107.8	1.2	1078.3	11.8
2018	10742.0	88.2	639.1	5.2	107.0	0.9	692.0	5.7
2019	12474.9	87.7	556.5	3.9	42.5	0.3	1147.0	8.1
2020	12297.7	85.4	279.5	1.9	125.3	0.9	1704.2	11.8

Therefore, based on the results of the analysis of the sources of financing of innovative activities of industrial enterprises, it can be concluded that the share of innovatively active enterprises in Ukraine is not significant due to the fact that in the analyzed period of 2014-2023 (forecast of 2024-2027) enterprises must independently finance all innovation (Fig. 11).

But despite the fact that the share of costs for innovations from the state budget is rather insignificant, the exponential trend line can be used to trace the tendency to their annual increase in forecast values. Accordingly, the same trend is followed by indicators of funds of non-resident investors and attracting funds from other sources.

In addition, the imperfection of the legislative framework of innovative activity may indicate problems regarding the financing of innovative development. At the moment, innovative legislation of Ukraine includes more than a thousand normative legal acts that regulate various aspects of innovative activity [64]. However, this legislation is complex, as it covers both domestic and international legal acts to which Ukraine is a party. The analysis of the legislation of Ukraine on innovation points to the absence of a coordinated system of innovation stimulation. Even with

numerous initiatives to improve this situation, Ukrainian innovation legislation has not yet reached optimal quality and needs to be systematized and adapted to international standards, in particular, to the norms of the European Union.

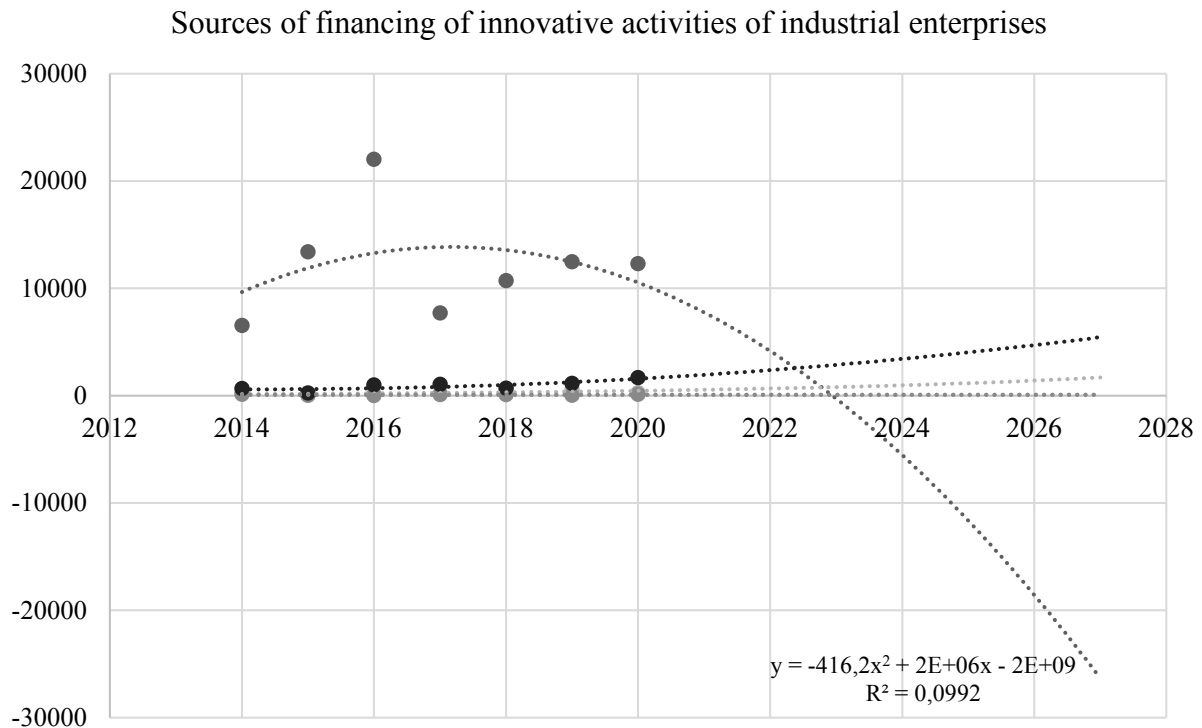


Fig. 11. Sources of financing innovative activities of industrial enterprises [93]

Today, one of Ukraine's main priorities is inclusion in the European Research Area. This is possible thanks to active bilateral international cooperation with the member states of the European Union, Eastern Partnership countries, as well as due to Ukraine's participation in the EU Framework Program for Research and Innovation "Horizon 2020". It is the largest funding program for science and innovation of the European Union with a budget of 95.5 billion euros for the period from 2021 to 2027. The main goal of the program is to promote scientific research, develop innovative technologies, solve global problems, increase Europe's competitiveness and expand scientific cooperation.

In June 2022, Ukraine joined the program as an associated country, which gave Ukrainian researchers and innovators the opportunity to compete on equal terms with partners from EU member states and receive funding for their projects [54]. Ukrainian scientists will now have expanded opportunities thanks to the Horizon Europe office,

which will facilitate their more effective cooperation at the European level and faster integration into EU scientific initiatives. The opening of the office of the National Research Fund will be a key point for receiving grants, developing proposals for improving the state research policy and adapting Ukrainian legislation to European standards in this area.

"Mind.ua", together with "KPMG Ukraine" and the open innovation platform "RE:ACTOR", conducted an analysis and created the Mind Innovation Index for Ukrainian companies. This study evaluates the level of innovation, readiness for change and adaptation of large companies in Ukraine to modern challenges in 10 different industries. The main purpose of this Index is not to create ratings or determine the most innovative companies based on competition, but rather to analyze the readiness of these companies for changes, identify achievements and shortcomings for future forecasting of their activity [89].

Therefore, according to the conducted research, the state is also interested in the activation of innovative activities. The research conducted by "Mind.ua" and "KPMG Ukraine" identified 10 sectors of the Ukrainian economy that are experiencing significant changes or have the potential for significant transformations through the introduction of innovations [92]. In addition, the level of innovativeness for each of these industries was investigated on the basis of GII.

Therefore, the results of the evaluation of scientific and innovative activity of Ukraine indicate a number of unresolved problems:

1. Absence of an effective mechanism for introducing innovations in the field of economy and their further commercialization.
2. Low level of state support for innovative projects and financing both from the state budget and at the expense of private investors.
3. Failure to use the full range of opportunities provided by the Association Agreement between Ukraine and the EU, in particular regarding scientific and technological cooperation, development of entrepreneurship and industrial policy.
4. Low level of cooperation between innovative enterprises and research institutions.

These results emphasize the need to develop and implement a single, coordinated scientific, technical and innovation policy in order to increase the competitiveness of domestic business structures. In addition, they emphasize the importance of taking real steps towards the implementation of the necessary structural changes in the economy and science, as well as technological modernization of production and stimulating business to innovation. Thus, innovations become a key factor that determines the success of modern business structures and allow achieving stable growth, development and increased competitiveness.

As mentioned, digitalization today is one of the key driving forces of modern business, opening up new opportunities for enterprises of various industries. In the era of rapid technological changes and global competition, the ability to adapt and implement innovative solutions becomes a determining factor in the success of entrepreneurial activity. Innovative technologies, such as artificial intelligence, IoT, Big Data and blockchain, not only transform traditional business processes, but also create new business models that increase the efficiency, productivity and competitiveness of enterprises.

According to the estimates of experts of the World Economic Forum, in the future approximately 80% of the created value will be based on digital business models and rely on digital products [90].

According to the data in Figure 12, it can be seen that during the period 2021-2023, the amount of global GDP attributable to digitalized enterprises increased more than 3 times. This shows the significant growth and impact of digital technologies on the global economy. Businesses that actively implement digital solutions have significant advantages and opportunities for growth.

The amount of global GDP attributable to non-digital enterprises decreased by 23%. This shows that companies that do not implement digital technologies lose competitive positions and have less impact on the global economy. Thus, in 2023, the volume of global GDP attributable to digitalized enterprises exceeds the volume of GDP attributable to non-digitalized enterprises. This is a demonstration of a fundamental change in the structure of the world economy, where digitalization is becoming a dominant factor in development.

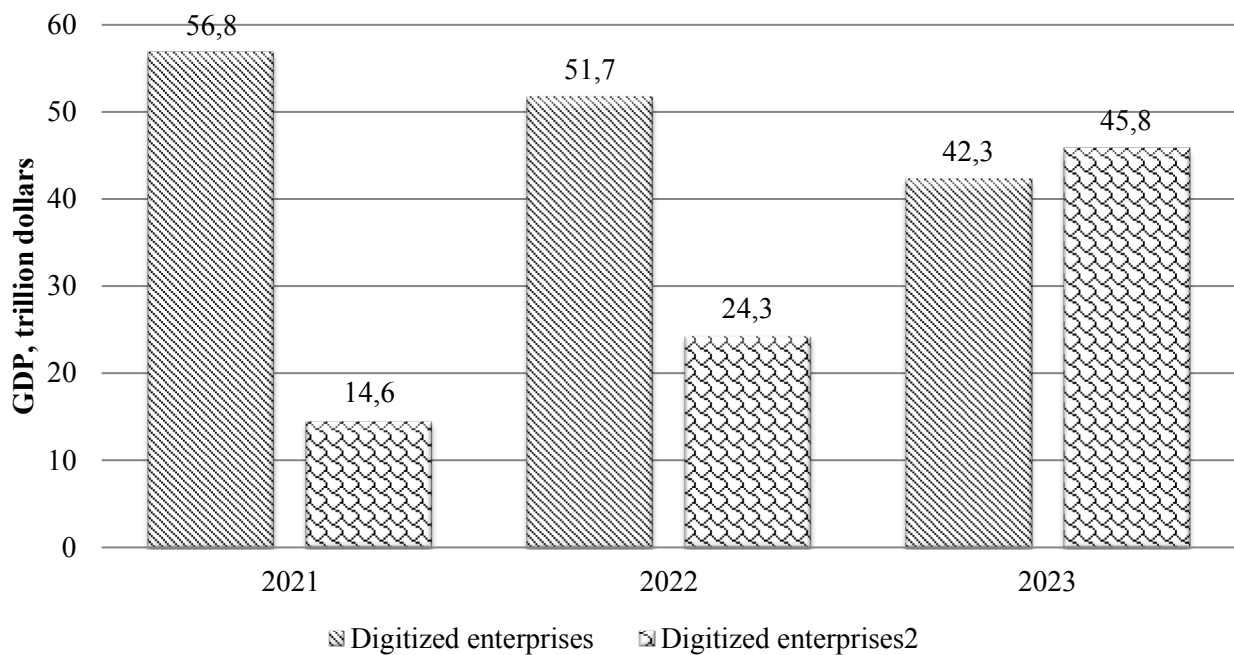


Fig. 12. Volume of global GDP attributable to digitalized and non-digitalized enterprises in 2021-2023 [43]

Consequently, digitalization is becoming a key driver of economic growth, and businesses that do not adapt to this trend risk losing their market positions. Investing in digital technologies and business models is critical for successful development in today's global economic environment. For enterprises seeking to remain competitive and increase their market share, digitization is becoming a necessity, which includes the introduction of new technologies, modernization of business processes, development of digital skills of personnel, etc.

However, the implementation of these technologies requires a clear understanding of their capabilities, as well as a strategic approach to their integration into existing business processes. Without proper preparation and planning, digitalization can become a difficult task, which will lead to additional costs and risks [95]. Therefore, an important step is the implementation of specific recommendations that will help enterprises to effectively use innovative technologies to optimize their processes. These recommendations are aimed at ensuring a comprehensive approach to digitalization, which includes not only technological aspects, but also change management, development of employee competencies and ensuring cyber security (Table 10).

Table 10

Recommendations for optimizing digitalization of enterprises using innovative technologies

Branch	Recommendations
Implementation of artificial intelligence (AI) and machine learning (ML)	Process Automation: Use AI to automate routine tasks such as data processing, responding to customer inquiries, and inventory management
	Analytics: Implement AI-powered analytics tools to predict market trends, analyze customer behavior, and optimize marketing campaigns
	Improve customer service: Use chatbots and virtual assistants to improve customer service
Use of cloud technologies	Flexibility and scalability: Move your IT resources to the cloud for flexibility and scalability
	Collaboration: Use cloud services to improve collaboration between employees, especially if they work remotely
	Cost reduction: Optimize your IT infrastructure costs by using cloud computing that allows you to pay only for the resources you use
Internet of Things (IoT)	Monitoring and management: Implement IoT devices to monitor equipment health, track logistics and manage production processes
	Data collection: Use IoT to collect real-time data, allowing you to react quickly to changes and make informed decisions
	Security: Provide cybersecurity to protect data transmitted through IoT devices
Big Data	Data Analysis: Implement solutions to analyze large volumes of data to uncover hidden patterns and trends
	Decision-making: Use big data to support fact-based strategic decision-making
	Business Process Optimization: Apply big data analytics to optimize operational processes and improve productivity
Blockchain	Transaction security: Use blockchain to ensure transparency and security of financial transactions
	Supply chain: Implement blockchain to track goods in your supply chain, ensuring authenticity and preventing fraud
	Data Management: Use blockchain to securely manage and store data
Robotics and automation	Increase productivity: Use robots to automate production processes, which allows you to increase productivity and reduce labor costs
	Safety: Apply robotics to dangerous tasks, reducing risks to workers
	Product quality: Implement automated quality control systems to improve product quality
Cyber security	Data Protection: Implement comprehensive cybersecurity solutions to protect corporate data from cyberattacks
	Employee awareness: Conduct regular cybersecurity training for employees to increase their awareness of potential threats
	Update systems: Update your software and security systems regularly to protect against new vulnerabilities
Augmented and virtual reality (AR/VR)	Training and Development: Use AR/VR to train staff and simulate production processes
	Increase efficiency: Implement AR to provide real-time instructions on the manufacturing floor or in the customer service process
	Marketing: Use VR to create interactive marketing content and product demonstrations

Implementation of these recommendations will help enterprises not only to optimize their business processes, but also to increase competitiveness in the modern digital world. We will analyze the key indicators of the level of digitalization of enterprises in Ukraine for 2015-2023 and their development prospects for the period of 2024-2025 using the above recommendations for optimizing the digitalization of enterprises using innovative technologies (Table 11).

Table 11

Key indicators of the level of digitization of enterprises in Ukraine for 2022-2023 and their forecast for the period 2024-2025, subject to optimization

Indicator	2022	2023	2024	2025
The total percentage of automated business processes at domestic enterprises	15%	40%	55%	75%
Share of business processes using cloud solutions at domestic enterprises	10%	35%	45%	70%
Share of the number of implemented solutions based on AI and MN	5%	10%	30%	50%
Share of the number of connected IoT devices	15%	40%	60%	80%
Percentage of processed and analyzed data at domestic enterprises	60%	75%	90%	100%
Frequency of cyber attacks and their success rate (percentage of number of successful attacks per year)	45%	35%	20%	5%
The number of transactions made using the blockchain	7%	30%	75%	90%
Percentage of employees who have received training in digital technologies	10%	30%	65%	80%

The given data characterize the current state of digitalization of enterprises in Ukraine and establish target indicators that can be achieved in 2025 using the presented recommendations on digitalization of enterprises using innovative technologies.

From 2022 to 2023, the overall percentage of automated business processes increased significantly from 15% to 40%. This significant growth indicates the active efforts of enterprises in the direction of automation of routine tasks. The strategic vision for the period 2024-2025 envisages a further increase in automation to 75%. This involves the introduction of advanced technologies, such as robotic process automation (RPA), which will significantly reduce costs and increase the efficiency of enterprises.

The share of business processes using cloud solutions has increased from 10% in 2022 to 35% in 2023, which indicates the gradual transition of enterprises to cloud technologies that provide flexibility and scalability. By 2025, the target value of this indicator is 70%, which emphasizes the need for further implementation of cloud services to optimize IT infrastructure costs and increase the efficiency of cooperation.

The share of implemented solutions based on artificial intelligence (AI) and machine learning (ML) increased from 5% in 2022 to 10% in 2023. This trend demonstrates the initial steps in the use of advanced analytical tools. The strategic goal for 2024-2025 is to reach 50%, which requires the active implementation of AI and ML in business processes to increase forecasting accuracy and optimize decisions.

The share of IoT devices increased from 15% in 2022 to 40% in 2023, which indicates the growing popularity of Internet of Things technologies for monitoring and managing production processes. It is expected to reach 80% by 2025, further expanding the use of IoT for real-time data collection and supply chain optimization.

The percentage of processed and analyzed data increases from 60% in 2022 to 75% in 2023. This indicates the gradual implementation of solutions for working with big data. The strategic goal by 2025 is to achieve 100%, which involves the full integration of big data technologies to support strategic decision-making and optimize business processes.

The frequency of successful cyber attacks decreased from 45% in 2022 to 35% in 2023, indicating an improvement in cyber security measures. It is planned to reduce this indicator to 5% by 2025, which requires the introduction of advanced protection systems and constant updating of security solutions.

The share of transactions carried out using blockchain increased from 7% in 2022 to 30% in 2023. This marks the initial steps in the use of blockchain technology to ensure transparency and security of transactions. By 2025, the target is 90%, which implies the widespread adoption of blockchain solutions to increase trust and authenticity in financial transactions.

The percentage of employees receiving digital skills training increased from 10% in 2022 to 30% in 2023. This indicates the gradual improvement of the qualifications of

the personnel in this direction. By 2025, the goal is to reach 80%, which involves intensive training and development of digital competencies of employees to support digitization processes in business.

Therefore, the analysis of the dynamics of these indicators shows significant progress in the digitization of enterprises in Ukraine over the past two years and ambitious goals for the period 2024-2025. Under the conditions of optimization, a significant increase in the efficiency and competitiveness of enterprises is expected through the introduction of innovative technologies that take into account the automation of processes, the use of cloud solutions, the introduction of AI and ML, the expansion of the use of IoT, the analysis of big data, the improvement of cyber security, the integration of blockchain technologies and the development of digital skills of employees.

Thus, digitalization is the main driving force of the economic growth of modern business structures. Any country will improve its economic performance by increasing the competitiveness of enterprises. Increasing the competitiveness of countries due to innovative development is not limited only to countries with a high level of income. Developing countries are also actively working to strengthen their innovation potential. Policies in this area are shaped according to specific needs and have different impacts, even if the level of development of countries is similar. Some developing countries are steadily improving their scientific and technological performance, which has a positive impact on their competitiveness. After all, innovation covers many areas of development in the country, as a result, it means the introduction, development and use of new or improved solutions based on scientific and technical achievements. The main goal of innovation is to meet the growing and changing demands of society and increase the competitiveness of the enterprise. At the same time, digital transformation is becoming a necessity for enterprises in today's world, where the speed of change and competitive pressure are constantly increasing, because it is digital transformation that opens wide opportunities for innovative development of enterprises. The introduction of digital technologies makes it possible to increase the efficiency of business processes, increase competitiveness and expand market opportunities. However, there

are certain challenges such as financial constraints, staffing issues, cyber security and legislative barriers that require attention and a strategic approach.

Digital transformation is not a one-time process, but a complex strategic initiative that requires constant improvement and adaptation of the enterprise to changes in the external business environment. Today, it has been proven that digital transformation has become an integral part of modern business and an important factor in ensuring the competitiveness of enterprises in the digital age. The success of digital transformation depends to a large extent on the leadership, commitment and engagement of the company's management. Only with their support and perseverance can we ensure the successful implementation of digital initiatives and the achievement of the desired results.

In modern conditions, when the economy is becoming more and more dynamic and unpredictable, the issues of managing innovative development are of particular importance. To ensure economic growth, it is necessary to have a clear innovation management strategy focused on solving specific tasks and problems. Thus, there is a need to develop a management model for innovative development that will ensure the competitiveness of modern business structures in conditions of digitalization.

Innovation management is a process aimed at creating new or improving existing products, services and processes with their subsequent introduction to the market. The goal of innovation management is to increase competitiveness and growth of business structures. Ensuring competitiveness and effective growth of business structures, on the other hand, is aimed at the balanced development of the economy, in particular meeting the needs of consumers. The interaction of these two processes occurs at several levels:

1. Innovation as a factor in the competitiveness of business structures. Innovations can become an important factor in ensuring the competitiveness of business structures, if they are aimed at economic, social and environmental sustainability and can lead to increased productivity, improved quality of life of the population and reduced negative impact on the external environment.

2. Innovation management as a tool for ensuring the competitiveness of business structures. Innovation management can be used as a tool for ensuring the competitiveness

of business structures in terms of developing an innovation management strategy that takes into account appropriate measures to support the development of business structures.

Thus, innovative development must be managed, since it is innovations that contribute to increasing the competitiveness of business structures and the growth of the economy in general. In turn, successful management of innovations requires taking into account the peculiarities of the economy and the branch affiliation of business structures. The processes of managing innovative development and ensuring the competitiveness of business structures are interconnected and interdependent. In order to ensure the competitiveness of business structures, it is necessary to take into account their innovative potential and opportunities for its implementation.

The specific scheme of interaction of the processes of managing innovative development and ensuring the competitiveness of business structures may differ depending on the specific situation, sectoral features of the economy, etc. However, in general, it is possible to distinguish the main stages and elements of interaction of the process of managing the innovative development of modern business structures (Fig. 13).

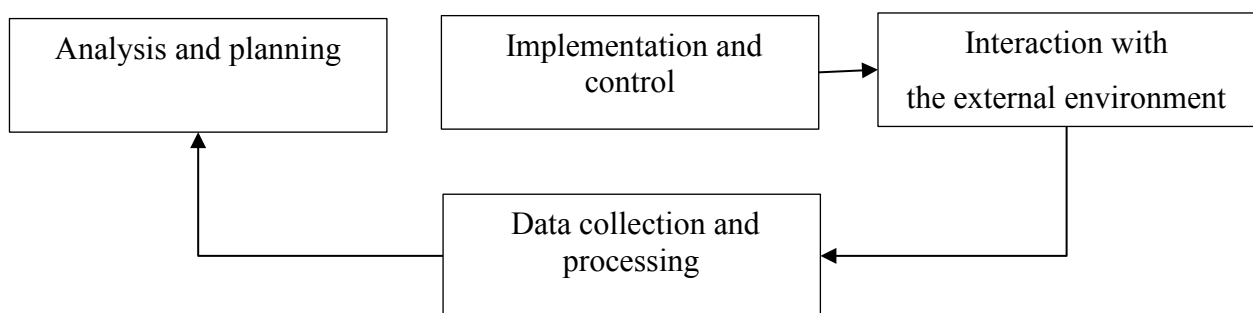


Fig. 13. Scheme of interaction of processes of management of innovative development in ensuring the competitiveness of business structures

It is appropriate to highlight the features of each of the proposed processes, namely:

1. Analysis and planning:

– assessment of needs of business structures in innovation and development of a strategy for their innovative development taking into account this analysis;

- analysis of the innovative potential of the business structure and determination of priority areas of development;

- development of plans and programs to support and stimulate the innovative activity of business structures.

2. Implementation and control:

- organization and implementation of measures to stimulate the innovative activity of business structures;

- monitoring and evaluation of the results of innovative activity of the business structure, as well as the effectiveness of measures aimed at its support;

- adjustment of the strategy and plans for the innovative development of the business structure based on the results obtained.

3. Interaction with the external environment:

- cooperation with scientific and educational institutions to attract new technologies and developments;

- interaction with state authorities to obtain support and funding;

- working with investors and partners to attract investments and implement joint projects.

Therefore, innovation is a key factor in ensuring the competitiveness of business structures, while the results of innovation are manifested in the long term. In this regard, it is important to pay attention to both the process of creating innovations and their implementation and monitoring their effectiveness in the long term.

It should be noted that the processes of managing innovative development interact in a cyclical manner, where innovations contribute to ensuring the competitiveness of business structures, which, in turn, provides favorable conditions for innovations (Table 12).

Thus, the formed matrix of relationships between the processes of managing innovative development and ensuring the competitiveness of business structures contains two blocks:

- management of innovative development;

- ensuring the competitiveness of business structures.

The matrix of relationships between the processes of managing innovative development and ensuring the competitiveness of business structures

Ensuring the competitiveness of business structures	Management of innovative development		
	Science and research	Marketing	Commercialization
Development of innovations	X		
Social responsibility		X	
Economic efficiency			X

Each block presents the main processes related to the management of innovative development and ensuring the competitiveness of business structures, respectively. For example, processes such as science and research, commercialization, marketing can be specified in the "management of innovation development" block, and processes such as innovation development, social responsibility and economic efficiency can be specified in the "ensuring the competitiveness of business structures" block.

The matrix schematically shows the relationship between the processes. For example, science and research in the block "management of innovative development" can indicate the processes of development and implementation of innovations in the block "ensuring the competitiveness of business structures". This means that science and research should be aimed at the development and implementation of innovations that, in turn, contribute to ensuring the competitiveness of business structures.

Thus, the developed matrix testifies to the importance of the interaction of innovation development management processes in ensuring the competitiveness of business structures, that is, innovation and the competitiveness of business structures are interconnected, and changes in one process can affect another process. For example, an increase in innovation activity can lead to an increase in the level of competitiveness. Management of innovative development is aimed at creating and implementing new ideas, developments, technologies and products, contributing to the development of business structures and increasing their efficiency. The interaction of these processes allows combining innovative approaches with sustainable

development strategies, which contributes to the creation of a favorable environment for innovation.

The management model of innovative development aimed at ensuring the competitiveness of business structures in conditions of digitalization should be based on a process approach. The process approach in innovation management is a methodology focused on managing processes related to the creation and implementation of new technologies and products [52; 82]. This approach makes it possible to manage innovative processes and ensure their systematicity, interconnection and integrity [53]. Innovation management processes can include different stages in the general gradation from the idea to the commercialization of a new product or service . It should be noted that the implementation of the process approach, which is used in the context of managing innovative development, can affect the processes of ensuring the competitiveness of modern business structures due to several elements (Fig. 14).

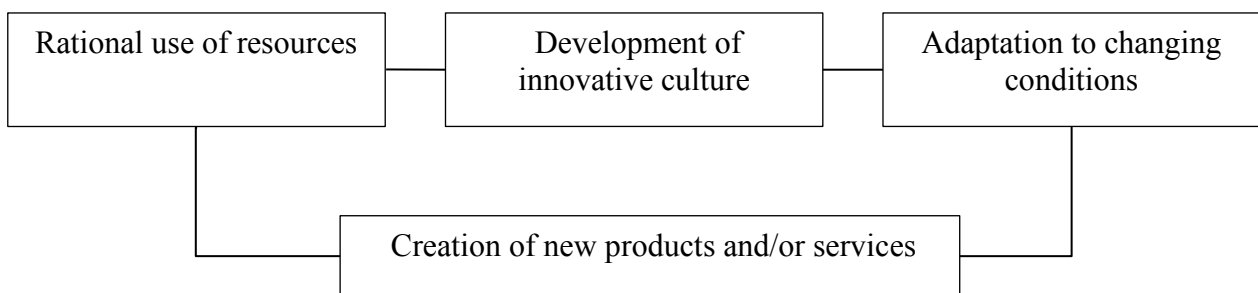


Fig. 14. Elements of the process of ensuring the competitiveness of business structures

The rational use of resources means the management of innovations, which allows to optimize the use of resources, including financial, human and technological, which can significantly reduce costs and increase the efficiency of the business structure. Innovative development management processes contribute to the formation and strengthening of an innovative culture, which is a necessary condition for the successful implementation of innovations and rapid adaptation to changes in the external environment. In addition, one of the advantages of the process approach in the management of innovative development should be the ability to manage innovative processes at all stages of their life cycle, which contributes to the effective use of resources and increasing the competitiveness of business structures.

Analyzing the process approach from the point of view of managing innovative development, it can be described through a number of basic principles that allow implementing such an approach in practical activity [53]. So, the main components of the general system of the process approach will be: market orientation (the approach is focused on the needs of the market and on the search for solutions that meet these needs), focus on the result (orientation on the achievement of specific results and goals), integration (the process approach involves the integration of all stages of the innovation process, and even all process participants), systematicity (a systematic approach that includes standardization of processes, control and risk management) and iterativeness (constant testing and improvement of ideas, products and processes throughout the entire life cycle of innovation) [107].

However, it is important to note that the effectiveness of using a process approach in innovation management may vary depending on specific conditions and context, which requires justification of the use of appropriate methods and tools in order to achieve the best results in terms of innovation development. Thus, the process approach in the management of innovative development is an important factor in ensuring the competitiveness of business structures.

It is appropriate to define the stages of the process model of managing innovative development (Fig. 15).

Based on the defined stages, the process model of managing the innovative development of business structures in conditions of digitalization can be presented in the form of a closed cycle, which begins with the analysis of the needs and capabilities of the business structure. In the next stage, based on the results of the analysis, tasks and goals of innovative activity are formulated, resources and tools for their achievement are determined. The third stage is the development and selection of innovative projects. Then innovations are introduced and their effectiveness is evaluated. At the stage of monitoring and control, the results are analyzed and decisions are made regarding the optimization of the innovation management process.

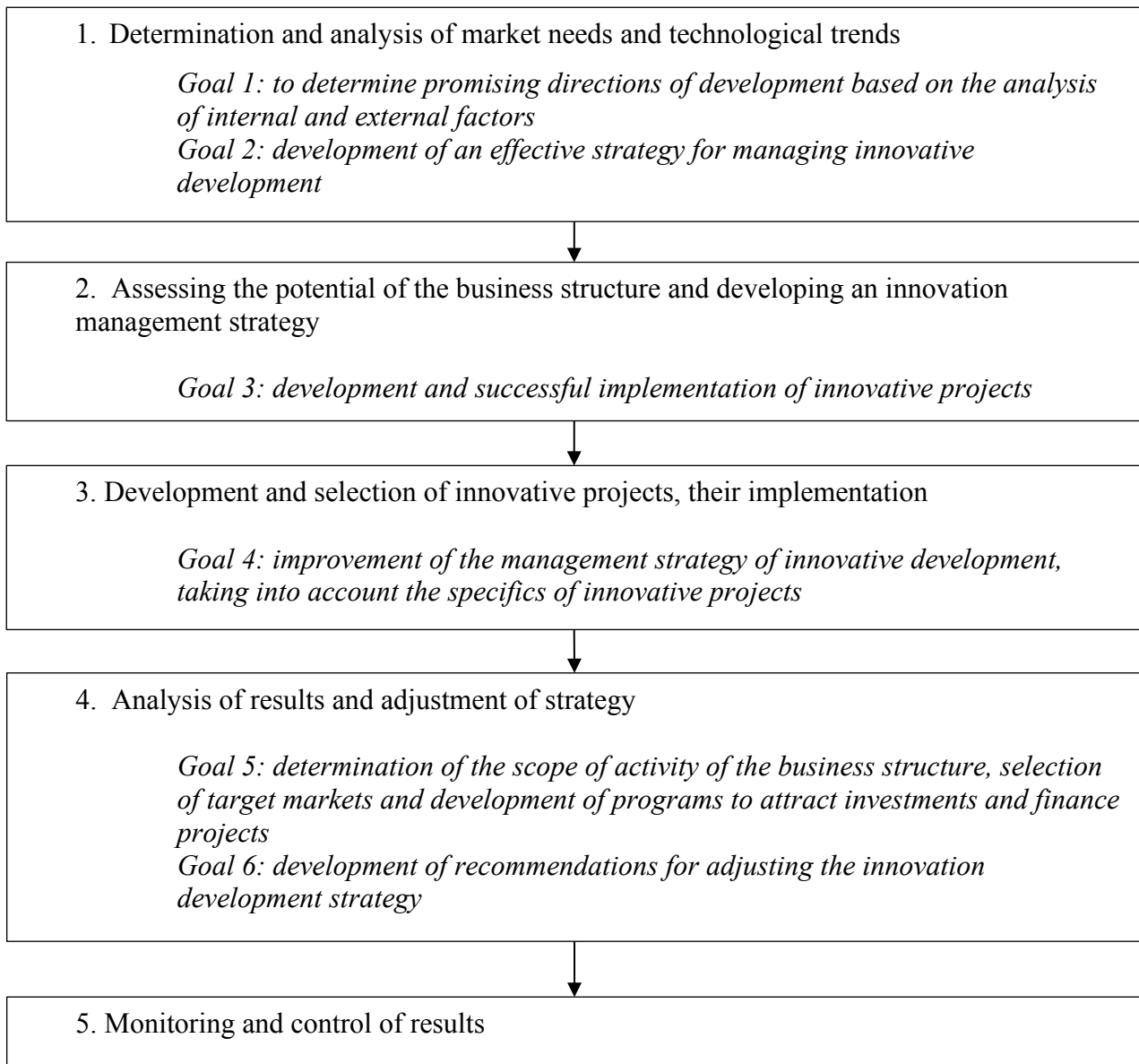


Fig. 15. The main stages of the process model of managing the innovative development of business structures in conditions of digitalization

Stage 1. Determination and analysis of market needs and technological trends. At this stage, an analysis of market needs is carried out, as well as technological and economic trends that may affect the development of business structures. The analysis is carried out taking into account the peculiarities of functioning in the conditions of digitalization. The ultimate goal of this stage is to determine promising directions for the development of business structures based on the analysis of external and internal factors. Within this stage, it is also necessary to perform a number of tasks:

- conduct an analysis of the external environment, which includes an assessment

of the general economic situation in the country and the world, analysis of trends in the development of markets related to the activities of the business structure and analysis of trends in the development of technologies that may affect the activities of the business structure;

- conduct an analysis of the internal environment, in particular, an analysis of current activities, assess the potential of the business structure, including resources and financial capabilities, as well as an assessment of personnel potential;

- determine promising directions for the development of the business structure based on the results of the analysis of the external and internal environment, as well as the SWOT analysis;

- to formulate strategic goals and objectives of the business structure based on the selected prospective directions of development;

- to develop an action plan for the implementation of the strategy, including stages, deadlines and those responsible for their implementation;

- to determine the key performance indicators that will be used to evaluate the effectiveness of the implementation of the selected strategy.

Stage 2. Assessing the potential of the business structure and developing an innovation management strategy.

At this stage, the potential of the business structure is evaluated and an innovation management strategy is developed, which will contribute to the development of the business structure in the conditions of digitalization. It is important to take into account the peculiarities of the functioning of the business structure, its branch affiliation, competitive advantages and resources.

The ultimate goal of this stage is to create a realistic and effective innovation management strategy of the business structure, which will contribute to increasing the level of its competitiveness on the market. Within the framework of this stage, it is also necessary to perform a number of certain tasks:

- determination of the potential of the business structure, in particular the analysis of competitive advantages and their features in order to establish the types of innovations within the scope of the innovation management strategy;

– development of innovation management strategy. Based on the analysis of the potential of the business structure and the competitive environment, an innovation management strategy is developed. The strategy takes into account the goals, tasks, resources and terms of implementation. Also, the strategy should define the main directions of development of the business structure and innovative projects;

– determination of necessary resources. To ensure the success of the innovation management strategy, appropriate resources are needed: financial, material, technical, informational and other. At this stage, the necessary resources are determined and plans for their involvement and use are developed;

– implementation of innovation management strategy. At this step, the innovation management strategy is implemented, including planning the implementation of selected innovation projects, attracting and using the necessary resources, and monitoring the implementation of the strategy implementation plan.

Stage 3. Development and selection of innovative projects and their implementation. At this stage, innovative projects are determined, which will be implemented within the framework of the innovation management strategy. It is important to take into account their potential in ensuring the sustainable development of the business structure and their compliance with current market requirements.

The main goal of the third stage is the creation and successful implementation of innovative projects that can bring significant benefits and increase the level of competitiveness of business structures. As a result of the successful implementation of projects, the enterprise receives new products, services or technologies, improves its processes and optimizes the consumption of available resources, which, in turn, can lead to increased profits and business expansion.

The third stage of the innovation management process model, which ensures an increase in the competitiveness of the business structure, includes the definition of innovative projects and their further implementation. At this stage, potential innovative projects are analyzed and their selection and justification is carried out. To identify innovative projects, it is necessary to conduct marketing research and identify potential markets for the development of a business structure. Based on the results of the research,

projects are chosen that best meet the needs of the market and are capable of increasing the competitiveness of the business structure. After the selection of innovative projects, their implementation begins. In the context of this process, it is necessary to determine the people responsible for the implementation of the projects, set the terms of their implementation and allocate the resources necessary for their implementation. It is also necessary to determine the criteria for evaluating the results and effectiveness of project implementation. An important aspect at this stage is risk management. Innovative projects can have a high level of uncertainty, so it is necessary to develop a risk management strategy and monitor their implementation at all stages of project implementation.

Stage 4. Analysis of the results and adjustment of the strategy. At this stage, the implementation of innovative projects is evaluated and the innovation management strategy is adjusted according to the results obtained (if necessary). Evaluation of the results of implementation of innovative projects is an important stage in the process of research and development of new ideas, technologies or products. It allows you to determine the effectiveness and success of the project, as well as identify its main advantages and problems. In this context, the evaluation of results is based on the use of quantitative and qualitative methods that allow measuring and analyzing the results achieved. One of the most common methods of measuring results is the use of key performance indicators (KPIs). KPI is an indicator of specific metrics reflecting project goals and expectations [10].

In addition, qualitative methods such as customer satisfaction analysis, surveys and benchmarking studies can be used to evaluate the results. For example, when a new product is being developed, a consumer survey can be conducted to gauge their satisfaction with the new features and characteristics of the product. Based on the obtained results, the strategy of innovation management is adjusted, which may include changing the priorities of the innovative development of the business structure, as well as making changes to the methods and tools of innovation management.

Thus, the final goal of this stage is to improve the innovation management strategy and the implementation of innovative projects, taking into account changes in

the external and internal environment of business structures and increasing the efficiency of the use of resources for the implementation of innovative projects, which, in turn, should lead to an increase in the level of competitiveness of the business structure on the market.

The final, fifth stage of the process model of managing the innovative development of business structures in conditions of digitalization, namely monitoring and evaluation of the obtained results, involves the use of methods such as KPI, economic analysis, social impact analysis, as well as comparative analysis with competitors, etc., in order to determine the achieved results, as well as establishing strengths and weaknesses for further planning of innovative development measures with the aim of increasing the competitiveness of the business structure in conditions of digitalization.

Thus, the implementation of the proposed process model for managing the innovative development of business structures in the conditions of digitalization will contribute to increasing the level of competitiveness of the business structure on the market through effective management of innovative activities. The developed model takes into account the mechanisms of comprehensive assessment and monitoring of the innovative potential of the business structure, as well as innovation management processes and is aimed at increasing the level of competitiveness of the business structure in the conditions of digitalization.

References

1. Antoshchenkova V. V. (2019). Competitiveness as the basis of an effective national economy. *Visnyk Kharkiv. nats. tekhn. un-tu sil. hosp-va im. P. Vasylenka. Ekon. nauky*. 200, 84-95.
2. Baranov, O. H. (2004) Innovatsiyni protses yak ob'ekt derzhavnogo rehuljuvannia [The innovation process as an object of state regulation]. *Aktualni problemy ekonomiky*, № 6 (36), 172-178.
3. Bezus, A. M., Shafranova, K. V. & Bezus, P. I. (2018) Rol innovatsiinoho rozvytku u stiiosti pidpriemstva [The role of innovative development in the sustainability of the enterprise]. *Investytsii: praktyka ta dosvid*. № 8, 22-25. http://www.investplan.com.ua/pdf/8_2018/7.pdf.
4. Bibarsov, K. & Khokholova, G. (2017). Conceptual Basics and Mechanism of Innovation Project Management. *European Research Studies Journal*, Vol. XX, Issue 2B, pp. 224-235. <https://doi.org/10.35808/ersj/675>.
5. Bilous-Serhieieva, S. O. (2023) Innovatsiine pidpriemnytstvo yak kliuchovi faktor rozvytku rehionu u pislivoienni period [Innovative entrepreneurship as a key factor in the development of the region in the post-war period]. *Visnyk Pryazovskoho Derzhavnogo Tekhnichnoho Universytetu. Serii: Ekonomichni nauky*, №1(38), 45-50. [https://doi.org/10.31498/2225-6725.1\(38\).2023.280738](https://doi.org/10.31498/2225-6725.1(38).2023.280738).

6. Bohma, O. S. & Bolduieva, O. V. (2010) Rol innovatsii u zabezpechenni konkurentospromozhnosti natsionalnoi ekonomiky [The role of innovations in ensuring the competitiveness of the national economy]. *Visnyk Zaporizkoho natsionalnoho universytetu*, №3(7), 166-170.
7. Bozkus, K. (2024). Organizational Culture Change and Technology: Navigating the Digital Transformation. *IntechOpen*. <https://doi.org/10.5772/intechopen.112903>.
8. Brych, V. Ya. & Okhota, V. I. (2019) Mizhnarodna konkurentospromozhnist krain v umovakh hlobalizatsii [International competitiveness of countries in the conditions of globalization]: monograph. Ternopil: TNEU. 212 pp.
9. Chernoiwanova, H. S. (2018) Orhanizatsiino-ekonomichne zabezpechennia upravlinnia innovatsiinyi ta innovatsiinoiu pratseiu [Organizational and economic support for management of innovations and innovative work]: monograph. Kharkiv: Liburkina L. M., 284 pp.
10. Chorna, M. V. (2012) Otsinka efektyvnosti innovatsiinoi diialnosti pidpriemstv [Evaluation of the effectiveness of innovative activity of enterprises]: monograph / ed. by Chorna M. V., Hlukhova S. V. Kharkiv, 210 pp.
11. Christensen, C. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Boston, MA: Harvard Business School Press, 1997
12. Cinicioglu, E. N., Ulusoy, G., Ekici, Ş. Ö., Ülengin, F., & Ülengin, B. (2017). Exploring the interaction between competitiveness of a country and innovation using Bayesian networks. *Innovation and Development*, 7(2), 175-209. <https://doi.org/10.1080/2157930X.2017.1292617>.
13. Danial, M., Bazzaz, H., & Sajjadi, M. (2012). Innovation and Improvements In Project Implementation and Management. *Social and Behavioral Sciences*. Vol. 41. <https://doi.org/10.1016/j.sbspro.2012.04.050>.
14. Denysenko, M., & Breus, S. (2023). Pidvyschennia konkurentospromozhnosti pidpriemstva yak chynnyk udoskonalennia protsesu upravlinnia yoho ekonomichnoiu bezpekoiu [Increasing the competitiveness of the enterprise as a factor in improving the process of managing its economic security]. *Vcheni zapysky Universytetu "KROK"*, (2(70), 139-146. <https://doi.org/10.31732/2663-2209-2022-70-139-146>.
15. Denysenko, M. P. & Henyk, A. M. (2019) Orhanizatsiini struktury dlia realizatsii innovatsii na pidpriemstvakh [Organizational structures for the implementation of innovations at enterprises] *Investytsii. Praktyka ta dosvid*, № 24, 31-34.
16. Dereli, D. (2015) Innovation Management in Global Competition and Competitive Advantage. *Procedia-Social and Behavioral Sciences*. Vol. 195, 1365-1370. <https://doi.org/10.1016/j.sbspro.2015.06.323>.
17. Dutta, S., Reynoso, R. E., Garanasvili, A., Saxena, K., Lanvin, B., Wunsch-Vincent, S., & Guadagno, F. (2018). The global innovation index 2018: Energizing the World with Innovation. Global Innovation Index 2018.
18. Dykan, O. V. & Stoyan, M. M. (2023). Realizatsiia stratehii dyversyfikovanoho zrostannia biznesu v konteksti vprovadzhennia tekhnolohii Industrii 4.0 [Implementation of diversified business growth strategies in the context of the introduction of Industry 4.0 technologies], *Visnyk ekonomiky transportu i promyslovosti*, Vol. 81-82, 138-149.
19. European Innovation Scoreboard. URL: https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en.
20. Fagerberg J, Mowery D. C. & Nelson R. R. The Oxford Handbook of Innovation. Oxford University Press: Oxford; 2006.
21. Farinha, L., Ferreira, J. J., & Nunes, S. (2018). Linking innovation and entrepreneurship to economic growth. *Competitiveness Review: An International Business Journal*, 28(4), 451-475.
22. Filippova, S. V. (2018) Innovative strategies and innovative technologies. *Ekonomichnyi zhurnal Odeskoho politekhnichnoho universytetu*, № 1(11), 77-86.
23. Fonseca, L. M., & Lima, V. M. (2015). Countries three wise men: Sustainability, Innovation, and Competitiveness. *Journal of Industrial Engineering and Management*, 8(4), 1288-1302.
24. Frambach, R. T. & Schillewaert, N. (2002) Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research. *Journal of Business Research*, 55, 163-176. [https://doi.org/10.1016/S0148-2963\(00\)00152-1](https://doi.org/10.1016/S0148-2963(00)00152-1).

25. Freeman, C. Technical innovation, diffusion, and long cycles of economic development. In *The long-wave debate*. Springer, 1987.
26. Global Innovation Index 2021. URL: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf
27. Global Innovation Index 2022: What is the future of innovation-driven growth. URL: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf>.
28. Global Innovation Index 2023: Innovation in the face of uncertainty. URL: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023-en-global-innovation-index-2023-16th-edition.pdf>.
29. Global Innovation Index 2023: Ukraine is in 55th place. Mind.ua. URL: <https://mind.ua/news/20263287-global-innovation-index-2023-ukrayina-na-55-mu-misci>.
30. Global Sustainable Competitiveness Index URL: <https://solability.com/the-global-sustainable-competitiveness-index/the-index>.
31. Grynko, T. & Hviniashvili, T. (2024). Strategic Business Management in the Digital Economy. *Challenges and Issues of Modern Science*, 2, 372-376. URL: <https://cims.fti.dp.ua/j/article/view/126>
32. Grynko, T. V. & Hviniashvili, T. Z. (2023) Formuvannia systemy konkurentospromozhnosti subiektiv pidprijemnytstva v umovakh tsyfrovizatsii [Formation of the system of competitiveness of business entities in conditions of digitalization]. *Pidprijemnytstvo: suchasni vyklyky, trendy ta transformatsii*: collective monograph, ed. by Hrynko T.V., Dnipro, 121-186.
33. Grynko, T. V. & Sokolova, K. O. (2024) Rol innovatsii ta novitnikh tekhnolohii u rozvytku ekonomichnoi inkluzii [The role of innovations and the latest technologies in the development of economic inclusion]. *Mizhnarodna naukovo-praktychna Internet-konferentsiya "Ekonomika i menedzhment 2024: perspektyvy intehratsii ta innovatsiinoho rozvytku*. Issue 1, 86-88.
34. Grynko, T. V. & Sokolova, K. O. (2024) Stratehii upravlinnia zminy v umovakh nestabilnogo rynkovoho seredovyscha [Change management strategies in unstable market environment] *Mizhnarodna naukovo-praktychna Internet-konferentsiya "Ekonomika i menedzhment 2024: perspektyvy intehratsii ta innovatsiinoho rozvytku*. Issue 1, 30-33.
35. Grynko, T. V., Hviniashvili, T. Z. & Moroka, D. M. (2021) Osoblyvosti ta priorityty innovatsiinoho rozvytku pidprijemnytskykh struktur v suchasnykh minlyvykh umovakh. *Ekonomichnyi prostir*, № 175, 52-58. <https://doi.org/10.32782/2224-6282/175-10>.
36. Grynko, T., Hviniashvili, T. & Filippova, V. (2023) Change management in business structures under the conditions of digitalization. *Efficient econom.* № 5. <http://doi.org/10.32702/2307-2105.2023.5.22>.
37. Grynko, T., Hviniashvili, T. & Kaliberda, M.S. (2023) Stratehichne upravlinnia pidprijemstvom v umovakh tsyfrovoy ekonomiky [Strategic management of the enterprise in the conditions of the digital economy] *Ekonomika ta suspilstvo*, №50. <https://doi.org/10.32782/2524-0072/2023-50-71>.
38. Grynko, T., Hviniashvili, T. & Timar, V. (2024) Osoblyvosti vprovadzhennia innovatsii v malomu biznesi v umovakh didzhitalizatsii [Peculiarities of implementing innovations in small business in conditions of digitalization]. *Ekonomika ta suspilstvo*, 61. <https://doi.org/10.32782/2524-0072/2024-61-20>.
39. Grynko, T. V., Hviniashvili, T. Z. & Malkova, O. S. (2024) Osoblyvosti formuvannia marketynhovoï stratehii pidprijemstva v umovakh tsyfrovizatsii [Peculiarities of the formation of the marketing strategy of the enterprise in the conditions of digitalization.]. *Efektivna ekonomika*, №5. <https://doi.org/10.32702/2307-2105.2024.5.29>.
40. Grynko, T. V., Hviniashvili, T. Z. & Romanova, L. P. (2022) Naukovo-metodychnyi pidkhid do formuvannia mekhanizmu upravlinnia rozvytkom innovatsiinoho potentsialu pidprijemstva [A scientific and methodological approach to the formation of a management mechanism for the development of the innovative potential of the enterprise]. *Innovation and Sustainability*, № 4, 30-38. <https://doi.org/10.31649/ins.2022.4.30.38>.
41. Hlobalnyi innovatsiinyi indeks-yak zminiuvalosia mistse Ukrainy u reitynhu [Global innovation index-how Ukraine's place in the ranking changed]. *Slovo i Dilo*. 2023. URL:

- <https://www.slovoidilo.ua/2023/12/21/infografika/svit/yak-zminyuvalosya-misce-ukrayiny-rejtynh-u-najbilsh-innovaczijnyx-krayin>.
42. Hlukhova, S. V. (2008) Suchasni pidkhody do vyznachennia sutnosti innovatsii [Modern approaches to defining the essence of innovation]. *Economic analysis*, № 3(19), 82-84.
 43. How do you balance innovation and risk management when advising clients on digital transformation strategies? URL: <https://www.linkedin.com/advice/3/how-do-you-balance-innovation-risk-management-4e>.
 44. Hrynkevych, S. S., & Beno, Yu.-I. (2023) Innovation as a factor in ensuring the competitive advantages of the enterprise. *Problemy suchasnykh transformatsii. Seriya: ekonomika ta upravlinnia*, (10). <https://doi.org/10.54929/2786-5738-2023-10-04-05>.
 45. Hrytsenko, S. I. (2017) Zabezpechennia konkurentospromozhnosti krainy v konteksti stratehii innovatsii ta modernizatsii promyslovosti na osnovi obiednan po spivpratsi [Ensuring the country's competitiveness in the context of the strategy of innovation and modernization of industry on the basis of cooperative associations.]. *Visnyk ekonomichnoi nauky Ukrainy*, № 2, 22-27. URL: [http://www.venu-journal.org/download/2017/2\(33\)/pdf/05-Hrytsenko.pdf](http://www.venu-journal.org/download/2017/2(33)/pdf/05-Hrytsenko.pdf).
 46. Hu, Y., Pan, Y., Yu, M. et al. (2024) Navigating Digital Transformation and Knowledge Structures: Insights for Small and Medium-Sized Enterprises. *J Knowl Econ*. URL: <https://doi.org/10.1007/s13132-024-01754-x>.
 47. Husieva, O. Yu. & Lehominova, S. V. (2018) Dydzhitalizatsiia-yak instrument udoskonalennia biznes-protseviv, yikh optymizatsiia [Digitalization-as a tool for improving business processes, their optimization] *Ekonomika. Menedzhment. Biznes*, № 1 (23), 33-39.
 48. Hviniashvili, T. (2021) Changing the paradigm of strategic enterprise management in a digital economy. *Ekonomichnyi prostir*, № 172, 23-28.
 49. IAB Europe's AdEx Benchmark report is the definitive guide to the state of the European digital advertising market. URL: abeurope.eu/wp-content/uploads/2023/07/IAB-Europe_AdEx-Benchmark-2022_REPORT-2.pdf.
 50. Iankovyi, O. H. (2013) Konkurentospromozhnist pidpriemstva: otsinka rivnia ta napriamy pidvyshchennia [Competitiveness of the enterprise: assessment of the level and directions of improvement]: monograph / ed. by Yankovoho O. H. Odesa, 470 pp.
 51. Illiashenko, N. S. (2009) Methodical approach to justifying the feasibility of implementing innovative projects. *Mekhanizm rehuliuвання ekonomiky*, №1, 184-193.
 52. Ippolitova, I. Ya. & Seleznova, H. O. (2020) Upravlinnia innovatsiinoiu diialnistiu pidpriemstva: protsesnyi pidkhid [Management of the innovative activity of the enterprise: a process approach]. *Visnyk Odeskoho natsionalnoho un-tu*. Vol. 25. Issue. 6(85), 143-149.
 53. Karazhia, E. (2021), Process-oriented management of innovation activity of ukrainian enterprises, *Agrovit*, Vol. 16, 69-76. <https://doi.org/10.32702/2306-6792.2021.16.69>.
 54. Katsimon, O. V. Ukraini vidkryly ofis Horyzont Yevropa [The Horizont Europe office was opened in Ukraine]. *Suspilne Novyny*. 2023. URL: <https://suspilne.media/644150-v-ukraini-vidkrili-ofis-gorizont-evropa-akij-dopomoze-z-finansuvanna-nauki-ta-innovacij/>.
 55. Kaynak, S., Altuntas, S. & Dereli, T. (2017). Comparing the innovation performance of EU candidate countries: an entropy-based TOPSIS approach. *Economic research-Ekonomika istraživanja*, 30 (1), 31-54. <https://doi.org/10.1080/1331677X.2016.1265895>.
 56. Khariv, P. S. & Mykytiuk, P. P. (2014) Analiz stanu innovatsiinoho rozvytku promyslovykh pidpriemstv ta shliakhy yoho stymuliuвання [Analysis of the state of innovative development of industrial enterprises and ways of its stimulation]. *Ekonomichnyi analiz*, Vol. 16, № 2, 187-195.
 57. Kolodiazhna, I. V. (2018) The development of innovative activity of the enterprise in conditions of competition. *Naukovi visnyk Uzhhorodskoho natsionalnoho universytetu*, Vol. 18., Issue. 2., 58-62. URL: http://www.visnyk-econom.uzhnu.uz.ua/archive/18_2_2018ua/14.pdf.
 58. Korobka, S. V. (2021) Didzhitalizatsiia pidpriemnytskoi diialnosti [Digitization of entrepreneurial activity]. *Visnyk Kharkivskoho natsionalnoho universytetu imeni V.N. Karazina. Seriya "Ekonomichna"*, № 100, 88-95.

59. Kostoska, O., & Hristoski, I. (2017). ICTs and innovation for competitiveness: Evidence for Western Balkans vis-A-vis the European Union. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu*, 35(2), 487-518 URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3104529#paper-references-widget.
60. Kotelnikova, Yu. (2022). Pidvyshchennia konkurentospromozhnosti pidpriemstv v umovakh tsyfrovizatsii [Increasing the competitiveness of enterprises in the conditions of digitalization] *Innovation and Sustainability*, (4), 101-108. <https://doi.org/10.31649/ins.2022.4.101.108>.
61. Kovshova, I. O. & Babych, Yu. V. (2021) Stratehichni napriamy rozvytku innovatsiinoho marketynhu na rynku vysokokh tekhnolohii [Strategic directions for the development of innovative marketing in the high-tech market]. *Innovatsiina ekonomika*, №1-2. 2021[86], 120-125.
62. Lancker, J. V., Mondelaers, K., Wauters, E. & Huylenbroeck, G.V. (2016) The Organizational Innovation System: A systemic framework for radical innovation at the organizational level. *Technovation*. Vol. 52, 40-50. <https://doi.org/10.1016/j.technovation.2015.11.008>.
63. Law of Ukraine "On Innovative Activity". Information of the Verkhovna Rada of Ukraine (VVR), 2002, No. 36, Art. 266. URL: <https://zakon.rada.gov.ua/laws/show/40-15#Text>
64. Law of Ukraine "Pro skhvalennia Stratehii rozvytku sfery innovatsiinoidiialnosti na period do 2030 roku". 10.07.2019 № 526-p. URL: <https://zakon.rada.gov.ua/laws/show/526-2019-%D1%80#n12>.
65. Loann, A. (2024). Innovation Strategy and Firm Competitiveness: A Framework to Support the Holistic Integration of Eco-Innovation. *Journal of Innovation Economics & Management*, 43, 247-283. <https://doi.org/10.3917/jie.pr1.0153>.
66. Makhmudov, Kh. & Chukhlib, V. (2023) Vplyv tsyfrovokh tekhnolohii na efektyvnist upravlinnia personalom [The influence of digital technologies on the effectiveness of personnel management]. *Problemy i perspektyvy ekonomiky ta upravlinnia*, № 4 (32), 17-26.
67. Martech market size and growth. URL: <https://www.martechalliance.com/stories/what-is-martech>.
68. Martínez-Peláez, R., Ochoa-Brust, A., Rivera, S., Félix, V.G., Ostos, R., Brito, H., Félix, R. A. & Mena, L.J. (2023) Role of Digital Transformation for Achieving Sustainability: Mediated Role of Stakeholders, *Key Capabilities, and Technology*. *Sustainability*, 15(14) 11221. <https://doi.org/10.3390/su151411221>.
69. Mochernyi, S. V. (2001) Metodolohiia ekonomichnogo doslidzhennia [Methodology of economic research]: monograph. Lviv: Svit, 416 pp.
70. OECD. Oslo manual: Organisation for Economic Co-operation and Development; Paris 2005. 164 pp. <https://ec.europa.eu/eurostat/documents/3859598/5889925/OSLO-EN.PDF>. p. 47.
71. Oliinyk, T. I. & Sokolova, K. O. (2024) Stratehichni planuvannia vykhodu pidpriemstv na mizhnarodni rynky z urakhuvanniam innovatsii ta novitnikh tekhnolohii [Strategic planning of enterprises entering international markets, taking into account innovations and the latest technologies]. *Molodyi vchenyi*, № 1(125), 130-135. <https://doi.org/10.32839/2304-5809/2024-1-125-2>.
72. Oliinyk, T. I. & Sokolova, K. O. (2024) Stratehii vykhodu na mizhnarodni rynky dlia malykh ta serednikh pidpriemstv [Strategies for entering international markets for small and medium-sized enterprises]. *Mizhnarodna naukovo-praktychna Internet-konferentsiya "Ekonomika i menedzhment 2024: perspektyvy intehratsii ta innovatsiinoho rozvytku"*, Issue 4, 65-68.
73. Oliinyk, Yu. A. (2014) Teoretychni zasady vyznachennia sutnosti innovatsiinykh protsesiv v Ukraini [Theoretical principles of determining the essence of innovative processes in Ukraine] *Biznes Inform*, № 12, 182-187.
74. Pavlov, V. I. (2004) Innovatsiinyi potentsial rehionu: diahnozyka ta realizatsiia: monograph / ed. by Red V.I. Pavlov, Yu.M. Koretskoho. Lutsk: Nadstyria, 244 pp.
75. Petrakis, P., Kostis, P. & Valsamis, D., (2015), Innovation and competitiveness: Culture as a long-term strategic instrument during the European Great Recession. *Journal of Business Research*, 68, Issue 7, 1436-1438. <https://doi.org/10.1016/j.jbusres.2015.01.029>.
76. Poliakov, M., Khanin, I., Shevchenko, H., Bilozubenko, V., & Kornieiev, M. (2024). Systemni osoblyvosti rozvytku innovatsii u SShA [Systemic features of innovation development in the USA.]. *Financial and Credit Activity Problems of Theory and Practice*, 1(54), 348-363.

77. Popko, O. & Verbovskiy, I. (2023) Vplyv vprovadzhennia tekhnolohii Industrii 4.0 na realizatsiiu mizhnarodnykh konkurentnykh stratehii natsionalnykh ekonomik [The influence of the implementation of Industry 4.0 technologies on the implementation of international competitive strategies of national economies]. *Ekonomika. Upravlinnia. Innovatsii*. №2 (33). URL: <http://eui.zu.edu.ua/article/view/295145>.
78. Porter, M. E. *The Competitive Advantage of Nations*. Free Press, New York. 1990.
79. Prodius, O. I. (2019) Napriamy rozvytku inkluzyvyvnykh innovatsii na zasadakh vzaiemodii vlady, biznesu ta hromadskosti [Directions for the development of inclusive innovations based on the interaction of government, business and the public.]. *Prychornomorski ekonomichni studii*, №48, 35-39.
80. Pushak, V. Ya. & Horbal, N. I. (2020). Innovatsii yak chynnyk pidvyschennia konkurentospromozhnosti Ukrainy [Innovations as a factor increasing the competitiveness of Ukraine]. *Visnyk ekonomichnoi nauky Ukrainy*, 1 (38), 131-137. [https://doi.org/10.37405/1729-7206.2020.1\(38\).131-137](https://doi.org/10.37405/1729-7206.2020.1(38).131-137).
81. Radicic, D. & Petković, S. (2023) Impact of digitalization on technological innovations in small and medium-sized enterprises (SMEs), *Technological Forecasting and Social Change*, Vol. 191, <https://doi.org/10.1016/j.techfore.2023.122474>.
82. Reinders, M. J., Frambach, T. T. & Schoormans, J. P. L. (2010) Using product bundling to facilitate the adoption process of radical innovations. *Journal of Product Innovation Management*, № 27; 1127-1140. <https://doi.org/10.1111/j.1540-5885.2010.00775.x>.
83. Saridakis, G., Idris, B., Hansen, J.M. & Dana, L.P. (2019) SMEs' internationalisation: When does innovation matter? *Journal of Business Research*, 96; 250-263. <https://doi.org/10.1016/j.jbusres.2018.11.001>.
84. Sariwulan, T., Thamrin, S., Suyatni, M., Agung, I., Widiputera, F., Susanto, A. B., & Capnary, M. C. (2021). Impact of employee talent management. *Academic Journal of Interdisciplinary Studies*, 10(5), 184. <https://doi.org/10.36941/ajis-2021-0133>.
85. Schallmo, D., Willams, A. & Boardman, L. (2018). Digital Transformation of Business Models- Best Practice, Enabler, and Roadmap. *International Journal of Innovation Management*, 21(8), 17-27. <https://doi.org/10.1142/s136391961740014x>.
86. Schumpeter, J. A. *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge: Harvard University; 1934.
87. Schwab, K. *The Fourth Industrial Revolution*. 2016. World Economic Forum. Cologne/Geneva, Switzerland. https://law.unimelb.edu.au/data/assets/Schwab-The_Fourth_Industrial_Revolution_Klaus_S.pdf.
88. Semylytko, D. (2019) Dydzhytalizatsiia v dii: yak tsyfrova transformatsiia biznesu vplyvaie na uspikh kompanii [Digitalization in action: how digital transformation of business affects the success of the company]. *Audytor Ukrainy*, № 5, 76-79.
89. Sereda, S. (2023) The results of the KPMG 2023 Global Construction Survey have been released. Mind.ua. URL: <https://mind.ua/publications>.
90. Shaping the Future of Digital Economy and Society. URL: https://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Digital_Economy_and_Society_2P_190916.pdf.
91. Shelest, T. (2021). Efficiency of innovation-oriented development of businesses in the conditions of digital transformations. *The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism*, (13), 135-144. <https://doi.org/10.26565/2310-9513-2021-13-14>.
92. Stadnyk, V., Yokhna, V. & Naskalnyy, S. (2022) Funktsional didzhytalizatsii u formuvanni pidpriemnytskoho seredovyscha: perspektyvy ta problemy rozvytku v Ukraini [Functionality of digitalization in the formation of the business environment: prospects and problems of development in Ukraine]. *Visnyk Khmelnytskoho natsionalnoho universytetu. Ekonomichni nauky*, № 4, 68-75.
93. State Statistics Service of Ukraine. URL: <https://www.ukrstat.gov.ua/>.

94. Strategy of sustainable development of Ukraine until 2030. URL: <http://w1.c1.rada.gov.ua/pls/zweb2/webproc34?id=&pf3511=64508&pf35401=462260>.
95. Strutynska, I. V. (2019) Definititsii poniattia "Tsyfrova transformatsiia" [Definitions of the concept of "Digital transformation"]. *Prychornomorski ekonomichni studii*, № 48, 91-96.
96. Tang, D. (2021). What is digital transformation? *The EDP Audit, Control, and Security Newsletter*, 64(1), 9-13. <https://doi.org/10.1080/07366981.2020.1847813>.
97. Taranenko, I. V. (2013) Modyfikatsiia hlobalizatsiino-innovatsiinoi modeli svitovoi ekonomiky na zasadakh staloho rozvytku: novi vymiry konkurentospromozhnosti [Modification of the globalization and innovation model of the world economy on the basis of sustainable development: new dimensions of competitiveness]. *Yevropeiskyi vektor ekonomichnoho rozvytku*, № 1(14), 172-185.
98. The Global Talent Competitiveness Index. URL: <https://www.insead.edu/global-talent-competitiveness-index>.
99. Thompson, V. A. (1965) Bureaucracy and Innovation. *Administrative Science Quarterly*, 10, 1-20. <https://doi.org/10.2307/2391646>.
100. Trofymenko, O. O. (2021). Conceptual foundations of innovative development of the national economy in the context of technological structures and energy innovations. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 8(1), 105-119. [https://doi.org/10.52566/msu-econ.8\(1\).2021.105-119](https://doi.org/10.52566/msu-econ.8(1).2021.105-119).
101. Tymoshenko, N. Yu. & Shabanova M. A. (2021) Rozvytok innovatsiinoi diialnosti v umovakh tsyfrovizatsii [Development of innovative activity in the conditions of digitalization]. *Ekonomika i suspilstvo*, №29, 79-85.
102. What is digital transformation? URL: <https://www.ibm.com/topics/digital-transformation>.
103. Yanovska, V., Levchenko, O., Tvoronovych, V. & Bozhok, A. (2019) Digital Transformation of the Ukrainian Economy: Digitization and Transformation of Business Models. *SHS Web of Conferences* 67, 05 003. <https://doi.org/10.1051/shsconf/20196705003>.
104. Yastremska, O. M. & Demchenko, H. V. (2018) Aktyvizatsiia innovatsiinoi diialnosti pidpriemstv [Activation of innovative activity of enterprises]: monograph. Kharkiv, 232 pp.
105. Yepifanova, I. Yu. (2020) Formuvannia innovatsiinykh stratehii promyslovykh pidpriemstv u suchasnykh umovakh [Formation of innovative strategies of industrial enterprises in modern conditions]. *Pidpriemnytstvo ta innovatsii*, (13), 33-39. <https://doi.org/10.37320/2415-3583/13.6>.
106. Yuleva-Chuchulayna, R. (2021). Digitalization and innovation as a factor in increasing the competitiveness of small and medium-sized enterprises. *Knowledge International Journal*, Vol.45.1, 83-87.
107. Ziailyk, M. F. & Vivchar, O. I. (2013) Protsesnyi pidkhid do menedzhmentu yakosti [Process approach to quality management]. *Innovatsiina ekonomika*. № 1, 191-194. URL: http://nbuv.gov.ua/UJRN/inek_2013_1_47.
108. Zoroja, J. (2015). Fostering Competitiveness in European Countries with ICT: GCI Agenda. *International Journal of Engineering Business Management*, 7 (Godište 2015), 7-18. <https://doi.org/10.5772/60122>.
109. Zos-Kior, M., Kuksa, I., Samoilyk, Iu., & Storoška, M. (2017). Methodology for assessing globalisation development of countries. *Economic Annals-XXI*, 168(11-12), 4-8. <https://doi.org/10.21003/ea.V168-01>.