

DIRECTIONS FOR THE DEVELOPMENT OF THE INNOVATION POTENTIAL OF ENTERPRISES IN THE CONTEXT OF DIGITAL TRANSFORMATIONS

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Abstract. The *article is aimed* at reviewing and clarifying the theoretical and methodological aspects of forming the concept of "innovation potential of enterprise". To assess the state of development of the innovative potential of Ukrainian enterprises in the context of digital transformation. To substantiate the feasibility of using a digital transformation strategy to achieve the set goals in the current competitive environment. The level of development of the innovation potential of Ukrainian enterprises was measured over a number of years (2010–2021). *Methodology.* The article uses economic and abstract and logical research methods in combination with methods of analysis, synthesis and graphical representation. This made it possible to assess the level of development of the innovative potential of Ukrainian enterprises according to the main international rating and macroeconomic indicators. *Results.* The results of the assessment of the development of Ukraine's innovation potential revealed that the cost of implementing innovative developments in the country's GDP is decreasing every year. It was found that Ukrainian enterprises are slowly diversifying their production towards knowledge-intensive goods and services. This slow state of innovation is reflected in global indices, where Ukraine ranks among lower-middle-income countries. The main reason for this situation is the limited state policy in the field of innovation. It is established that at the state level, the development of innovation potential in the context of digital transformations is formed within the framework of scientific research and high-tech start-ups. *Practical implications.* In order to increase the innovation activity of enterprises and grow their innovation potential, it is advisable to change the values and guidelines of strategic management. In these conditions, the digital transformation strategy, which is considered as part of the overall communication strategy of the enterprise, becomes relevant for application. In the course of implementing the digital transformation strategy, effective communication interaction between the enterprise and its customers is ensured, and a qualitatively new model of communication processes management is formed and applied, taking into account digital technologies. *Value/originality.* Research on the development of innovation potential in Ukraine proves the need to use a digital transformation strategy as an effective modern tool for managing an enterprise in the context of digital transformation.

Keywords: innovation potential, development, digital transformation, strategy, management, technology, enterprise.

JEL Classification: O12, O33, O38

1. Introduction

Global transformations have exacerbated the contradictions of the modern world, brought turbulent, unpredictable processes to a politically secure environment, and worsened the socio-economic situation at regional and global levels. Ukraine is

no exception. Significant crisis phenomena in the Ukrainian economy are hampering the development of domestic enterprises. In this context, there is an urgent need to preserve the innovative potential of Ukraine, taking into account the development of mechanisms for appropriate financing.

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One of the important issues in today's conditions is the restoration of the innovative activity of Ukrainian enterprises, the search for development directions and the effective use of their innovative potential to ensure higher productivity of innovative processes in the conditions of digital transformation. In this connection, it is advisable to carry out the full innovative development of Ukraine on the way of integration into the European Community on the basis of sustainable development in accordance with the programmes and orders of the Government, which will be the key to meeting the Copenhagen criteria for accession to the EU. Thus, the necessity of carrying out this research in the face of today's challenges and requirements has been updated.

2. Theoretical Aspects of Formation of Innovative Potential

The theory of innovation has been developing for almost a century, and its founder was J. A. Schumpeter. Its origins also bear the name of the eminent classical economist M. Tugan-Baranovsky. He introduced the use of a reproduction approach to take into account the unevenness of economic development processes under the influence of scientific and technological progress. Today, companies that adopt an innovative approach to their economic behaviour are more likely to maintain and increase their competitiveness in the long term.

The concept of "innovative potential" was introduced into scientific circulation by K. Freeman (Freeman, 1995). He claimed that it "ensures the growth of the system through innovation in economic processes".

The first attempt to consider innovation capacity at the micro level was the work of T. Burns (Burns & Stalker, 1961) on "innovation capacity, which reflects the ability of an organisation to successfully adopt or implement new ideas, processes or products".

Since 1980, the category of "innovative potential" has become increasingly widespread in the literature. It allows to study this concept in terms of the organisational and economic activity of an innovative firm. Daniele Archibugi (Archibugi, 1996) formulates innovation potential as the ability of the system to transform the current state into a new state in order to satisfy existing or new needs (the firm is an innovator, a consumer, a market).

In the future, the researchers will supplement the existing meaningful characteristics of the concept of "firm innovation potential" from the perspective of resource and strategic approaches, taking into account the influencing factors of the external and internal environment.

According to scientists (Martyusheva & Kalishenko, 2002), the concept of "innovative potential of an enterprise" is a set of resources organised in certain

socio-economic forms. Taking into account certain internal and external factors of the innovation environment, aimed at the implementation of innovative activities to meet the needs of society. Similar opinion is expressed by A. Savchuk (Savchuk, 2003), who argues that "innovation potential is the set of all resources that can be involved in the process of implementation of innovative activities".

According to N. Amara, R. Landry (Amara & Landry, 2005), innovation potential is a set of conditions of the external and internal environment of the company, due to which the company itself and the products it produces change.

According to N. Franke, E. Von Hippel, M. Schreier (Franke, Von Hippel & Schreier, 2006), innovation potential is a characteristic of a company or an industry that allows timely adaptation to changes in the external environment as a result of effective implementation of commercial activities.

According to other researchers (Chaban, 2004), the concept of "innovative potential of an enterprise" should be understood as existing and hidden opportunities for attracting and using resources, aimed at the perception and implementation of innovations that can be attracted to achieve the goals of economic entities. This position is supported by L. Fedulova and M. Kolosh (Fedulova & Kolosh, 2007). In their opinion, "innovation potential" is interpreted as a measure of the enterprise's readiness to perform tasks that ensure the achievement of the set innovation goal. That is, it is a measure of the readiness to implement a project or programme of innovative strategic changes.

Modern researchers, in the process of defining the essence and content of the concept of "innovative potential of the enterprise", emphasise the integral characteristics of this economic category, which was formed in accordance with the requirements of the world market.

A. Catozzella and M. Vivarelli (Catozzella & Vivarelli, 2014) consider innovation potential through the prism of sources, opportunities, means and reserves of the firm that can be used to solve financial problems and achieve a certain goal.

O. Gudz and A. Glushchenkova (2017) interpret the concept of "innovative potential of an enterprise" as an integral phenomenon that determines its current and future capabilities to transform the set of innovative resources and capabilities through the competencies of its employees. This understanding of "innovation potential" is important for implementing targeted innovation activities, taking into account the system of internal and external factors. Researchers propose to consider innovative competencies separately from innovative resources, factors and opportunities that serve as the basis for the innovative development of an enterprise. In their

view, innovative competencies demonstrate an enterprise's ability to use innovative resources, not just to create and accumulate them. This refined approach to determining the innovative potential of an enterprise characterises innovative potential not as a static indicator but as a dynamic, complex category. This category comprises a set of resources, capabilities and competencies of an enterprise for carrying out innovative activities and is considered as an open, hierarchical, stochastic system that responds appropriately to various changes in the external environment.

N. Yevtushenko and R. Ryazantsev have a similar view on the concept of "innovation potential" (Yevtushenko & Ryazantsev, 2023). In their work, they write that the innovation potential of an enterprise should be considered as a multifaceted economic category, the content of which implies a balanced interaction of enterprise resources with external and internal opportunities. According to their definition, "innovation potential" is a set of resources and capabilities of an enterprise necessary for the creation, implementation and dissemination of new ideas, technologies and innovative products. According to them, all this will help meet the modern needs of producers and consumers in the face of constant change. With a perfect match between innovation capabilities and resources, an enterprise can create a unique set of competitive advantages to expand production and output of products (services) in line with market demand.

However, the most modern and interesting view on the essence of the concept of "innovation potential of an enterprise" is provided by O. Gudz (2016). According to her, in the context of digital transformation, the "innovative potential of an enterprise" is a system of abilities to transform the actual order of things into a new state to meet existing or new needs.

The aim of this article is to review and clarify the theoretical and methodological aspects of the concept of 'innovative potential of enterprise'. The paper assesses the current state of development of the innovative potential of Ukrainian enterprises in the context of digital transformation. It aims to substantiate the feasibility of using digital transformation strategies to achieve goals in the modern competitive environment.

3. Research Methodology

3.1. Global Indices of Digital Economy Development and Ukraine's Position in Them

According to the definitions of scientists (Podolchak, Bilyk & Levytska, 2019), the digital economy is a type of market of subjects of the

economic system, in which one, several or all stages of economic processes are carried out through computer network. It is understood as one of the manifestations of economic freedom, innovativeness and level of economic development.

According to the Concept for the Development of the Digital Economy and Society of Ukraine (Order of the Cabinet of Ministers "On Approval of the Concept for the Development of the Digital Economy and Society of Ukraine for 2018–2020 and Approval of the Action Plan for its Implementation", 2018), this development consists in creating market incentives, motivations, demand and needs for the use of digital technologies, products and services in Ukrainian economic sectors. This is necessary for their efficiency, competitiveness and national development, growth of high-tech production and welfare of the population.

This approach involves the implementation of Ukraine's innovation policy in various spheres of life, taking into account the conditions (technological environment, digital infrastructures, etc.). This would allow the economy to use digital means and instruments instead of the usual traditional ones, as they are more efficient, faster, cheaper and of higher quality. The main rating targets for the implementation of the Concept are the following achievements of Ukraine in 2020 (Order of the Cabinet of Ministers "On Approval of the Concept for the Development of the Digital Economy and Society of Ukraine for 2018–2020 and Approval of the Action Plan for its Implementation", 2018):

- 30th place in the Networked Readiness Index rating (NRI) (64th place in 2016);
- 40th place in the Global Innovation Index (INSEAD, WIPO) (56th place in 2016);
- 50th place in the ICT Development Index (IDI) (79th place in 2016);
- 60th place in the Global Competitiveness Index (GCI) (85th place in 2016).

3.2. Ukraine's Position in the Global Competitiveness Index

The Global Competitiveness Index allows to study the level of innovation activity of countries. It is published annually by the World Intellectual Property Organisation (WIPO) in cooperation with Cornell University and INSEAD. Here is Ukraine's ranking in the Global Competitiveness Index (Table 1).

The analysis revealed that Ukraine's position in the Global Competitiveness Index was unstable during the period under study. In 2019–2020, Ukraine returned to the level of 2016. This confirms the low effectiveness of government policy measures to develop scientific, technical and innovation potential. These circumstances contribute to Ukraine's

Table 1

Ukraine's ranking in the Global Competitiveness Index (2010–2020)

Ukraine's position among selected countries	2010–2011 (out of 144 countries)	2011–2012 (out of 144 countries)	2012–2013 (out of 144 countries)	2013–2014 (out of 148 countries)	2014–2015 (out of 144 countries)	2015–2016 (out of 140 countries)	2016–2017 (out of 138 countries)	2017–2018 (from 135 countries)	2018–2019 (from 140 countries)	2019–2020 (from 141 countries)
China	27	26	29	29	28	28	28	28	28	28
Poland	39	41	41	42	43	41	36	37	37	37
Russia	63	66	67	64	53	45	43	45	43	43
Greece	83	90	96	91	81	81	86	87	57	59
Turkey	61	59	43	44	45	51	55	58	61	61
Georgia	93	88	77	72	69	66	59	67	66	74
Namibia	74	83	92	90	88	85	84	90	100	94
Ukraine	89	82	73	84	76	79	85	89	83	85
Honduras	91	86	90	111	100	88	88	103	101	101

Source: (Yevtushenko & Salo, 2021)

inclusion in the list of "traditionally underdeveloped" or "lower-middle-income countries" along with Namibia and Honduras.

In order to clarify in detail the reasons for the decline in Ukraine's position in the Global Competitiveness Index, an analysis of individual indicators included in this index was carried out: "Financial market development (8)", "Market size (10)", "Business sophistication (11)", "Innovation (12)". According to the results of the analysis, some of Ukraine's positions in the Global Competitiveness Index (2010–2020) are not stable, and some of them deteriorate from year to year. For example, according to the component "Financial Market Development", Ukraine in 2019–2020 has fallen by 53 positions compared to 2010 (from 83 in 2010 to 136 in 2020), and in the component "Market Size" – by 9 positions compared to 2010 (from 38 in 2010 to 47 in 2020). At the same time, a review of legislative acts on business development in Ukraine in 2019–2020 contributed to an increase in the Business Sophistication component by 15 positions compared to 2010 (from 100 in 2010 to 85 in 2020).

Scientists argue (Yevtushenko & Salo, 2021) that an important factor ensuring Ukraine's low ranking in the Global Competitiveness Index (2010–2020) is the policy of distorted trade. This is in addition to the problems associated with the unbalanced socio-economic and political development of Ukraine. The authors of this study believe that the low level of use of innovative technologies in the activities of Ukrainian enterprises leads to the creation of goods with a low level of quality. All this affects the level of competitiveness of enterprises and their purchasing power.

3.3. Ukraine's Ranking in the Global Innovation Index

A more detailed assessment of Ukraine's place in international rankings (Global Innovation Index, Bloomberg Innovation Index and Summary Innovation Index) was carried out. They allow assessing its innovation potential (Figure 1).

The data presented show Ukraine's good performance in the above-mentioned assessments of the development of the country's innovation potential. For example, Ukraine ranks 49th out of 132 economies in the Global Innovation Index in 2021, compared to 45th in 2020. According to estimates (Yatskevych, 2022), the following countries were among the top three innovative economies in terms of income in 2021:

- Countries with high incomes: Switzerland, Sweden, and the United States of America;
- countries with above-average incomes: China, Bulgaria, Malaysia;
- countries with lower-middle income: Vietnam, India, Ukraine;
- low-income countries: Rwanda, Tajikistan, Malawi.

Some of the countries mentioned above have demonstrated better innovation outcomes (knowledge and technological outputs, creative outputs) compared to their innovation inputs (infrastructure, institutions, market and business sophistication, human capital and research). This group includes Ukraine. Ukraine's ranking by innovation resources in the Global Innovation Index is shown in Figure 2.

In general, in 2021 Ukraine's position in the Global Innovation Index decreased according to individual indicators. Among them, the largest number related

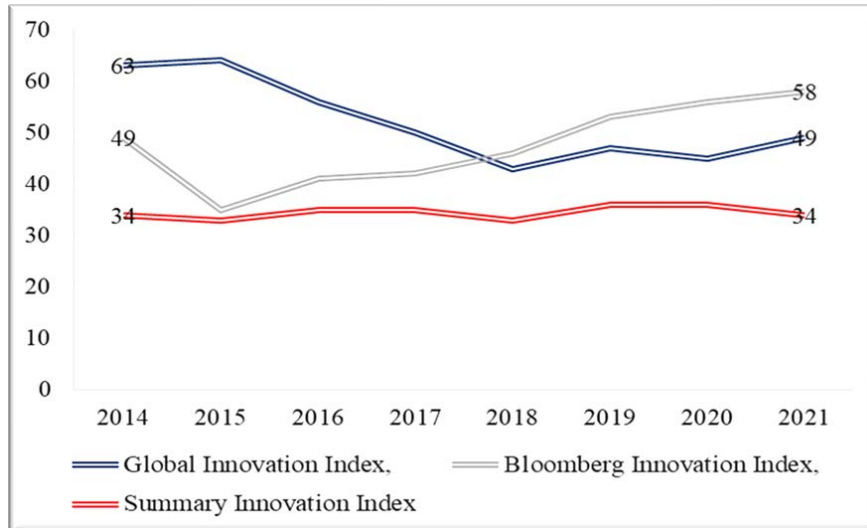


Figure 1. Ukraine's rankings by the Global Innovation (2014–2021)

Source: compiled by the authors on the basis of (Pysarenko, Kuranda, et al., 2022)

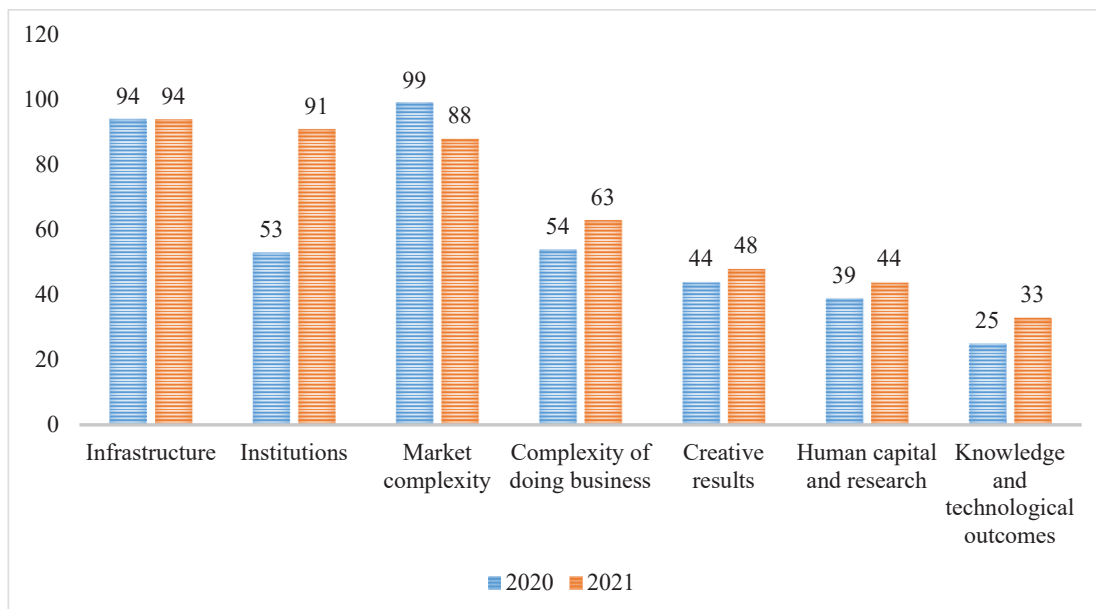


Figure 2. Ukraine's rankings by selected indicators in the Global Innovation Index (2020–2021)

Source: compiled by the authors on the basis of (Pysarenko, Kuranda et al., 2022)

to the innovative activity of business – its implementation of the results of knowledge and technologies. The reasons for this situation may be management difficulties: production and export of high-tech products, labour productivity, certification process (ISO 9001), intellectual property rights.

It is found that Ukrainian enterprises are slowly diversifying their production towards knowledge-intensive goods and services. The main reason for this is the limited vision of the state policy on innovation. According to the directions of the state policy, it is advisable to develop the innovation potential within the framework of scientific research and high-tech start-ups.

4. The State of Innovation in Ukraine and its Readiness for Digital Transformation

According to the Law of Ukraine "On Innovative Activity" (The Law of Ukraine "On Innovative Activity", 2002), the main principles of the state innovation policy are:

- Focusing on innovative ways of developing the Ukrainian economy;
- identification of state priorities for innovation development;
- development of a regulatory framework for innovation;

- creation of conditions for preservation, development and use of the domestic scientific, technical and innovative potential;
- provision of interaction between science, education, industry and the financial and credit sector in the development of innovation;
- efficient use of market mechanisms to promote innovation;
- support for entrepreneurship in the research and production sector;
- implementation of measures to support international scientific and technical cooperation, technology transfer, protection of domestic products in the domestic market and their promotion to foreign markets;
- financial support, implementation of favourable credit, tax and customs policies in the field of innovation;
- promotion of the development of innovation infrastructure; information support for innovation entities;
- training in the field of innovation.

Researches of scientists (Yevtushenko & Salo, 2021) noted that in developed countries the state creates conditions in which the growth of expenditures on development of scientific and technological progress and promotion of innovative activities of enterprises should exceed the growth of gross domestic product. According to the recommendations of the countries of the European Union, the share of spending on the implementation of scientific research in the GDP formed at the level of more than 2%.

The article assesses the development of the innovation potential of Ukrainian enterprises and

determines the share of expenditures allocated by the state for innovation in the structure of Ukraine's GDP for the period 2010–2021 (Figure 3).

The analysis proves that in the context of political, economic and institutional imbalances, low demand for innovation, in Ukraine there is an annual decrease in the share of costs for innovative development in GDP. In the period 2010–2021, the share of costs for implementing innovative developments in Ukraine's GDP will decrease almost threefold, from 0.75% in 2010 to 0.29% in 2021.

According to the data (Yevtushenko & Salo, 2021), the average share of innovation financing costs in the GDP of EU countries was 2.26%. It was higher than the average in Sweden – 3.35%, Belgium – 3.22%, Austria – 3.19%, Germany – 3.13%, Finland – 2.99%, Denmark – 2.81%, France – 2.21%; lower – in Romania, Malta, Latvia, Bulgaria and Cyprus (from 0.47% to 0.87%). Israel (5.56%) and South Korea (4.93%) have the highest values of this indicator, while China (3.78%), the United States (3.46%) and Japan (3.30%) have more than 3%.

The analysis of expenditures on fundamental, applied research and development in Ukraine for the period 2010–2021 is shown in Figure 4.

In the course of the research it was found out that the most important direction in terms of expenditures is scientific and technical (experimental) development, which on average accounts for almost 54.8% of the total expenditures on scientific research and development in Ukraine. In developed countries this figure reaches 70% (Paton, 2008). The volume of costs for the implementation of applied research has practically not changed during the period of analysis (on average – 21%).

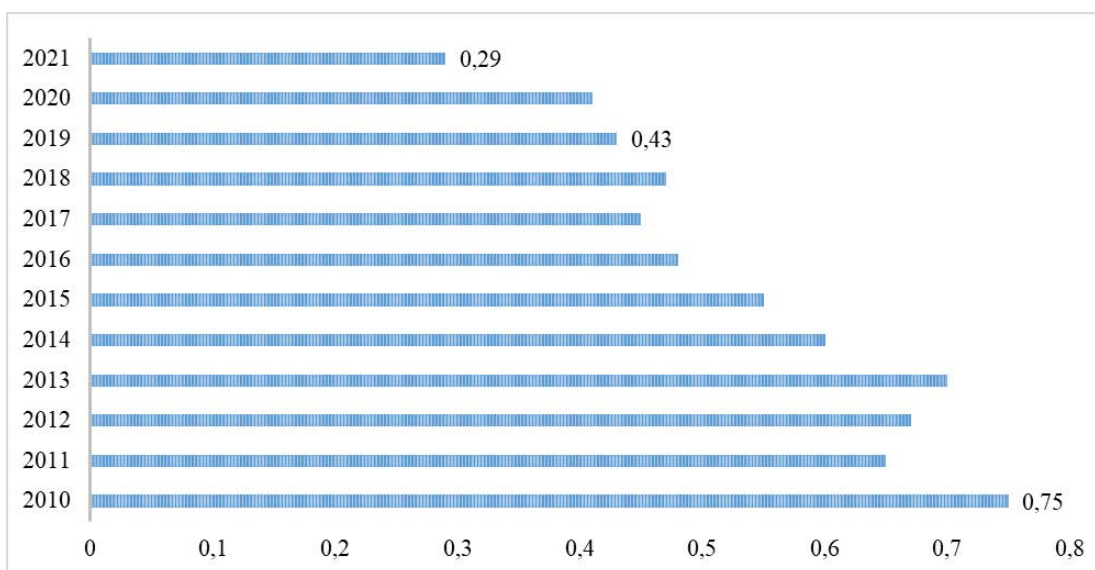


Figure 3. Share of R&D expenditures in Ukraine's GDP (2010–2021), %

Source: compiled by the authors on the basis of (Yevtushenko & Salo, 2021; State Statistics Service of Ukraine)

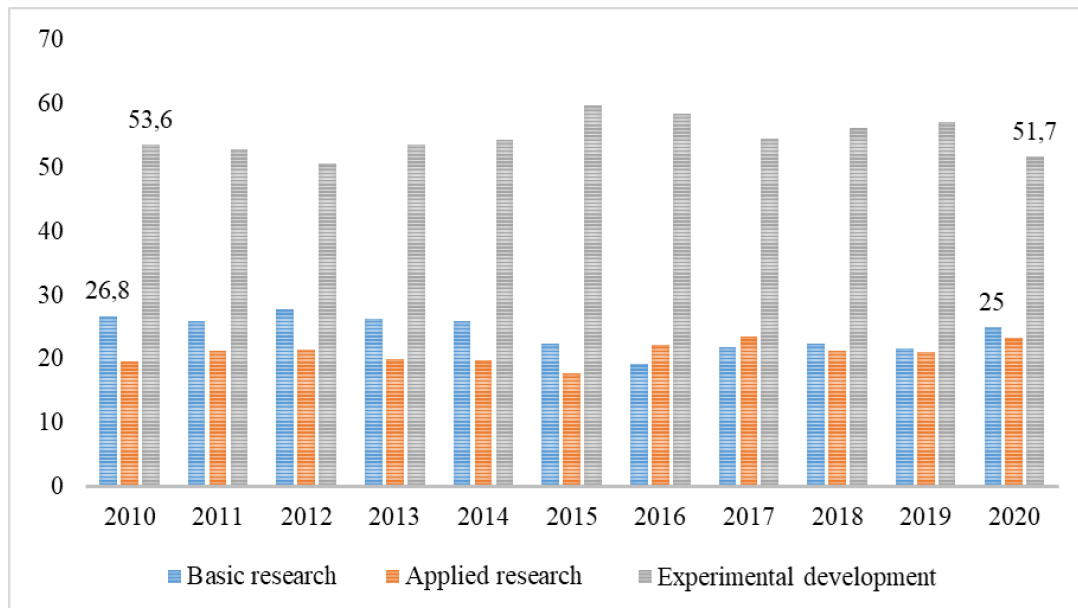


Figure 4. Dynamics of R&D expenditures in Ukraine (2010–2020), million UAH

Source: compiled by the authors on the basis of (Yevtushenko & Salo, 2021)

It is obvious that in modern conditions the development of innovative potential in Ukraine lies in restoring the technical, technological and production potential of domestic enterprises. It is advisable to ensure their further effective growth based on innovation through intellectualisation, individualisation, digitalisation of production, the foundations of smart production and Industry 4.0 technologies.

It is reasonable to conceptualise the current directions of innovation potential development in the context of digital transformation. In the new digital reality, businesses will not be able to operate according to the old model, with traditional processes and the same efficiency. The driver of change is the modern consumer and his or her attitude to the preferences and forms of consumption of goods and services.

Digitalisation (digitisation, automation), which transforms information, regardless of its form, into digital form, is currently in vogue. Digitalisation is a common way of storing information about many businesses around the world.

According to Gudz, Fediunin & Shcherbyna (2018), digitalisation is essential for businesses to optimise their business with the help of software and IT solutions. This will help to make it easier, more cost-effective and of higher quality in terms of providing services to customers and meeting their needs.

However, as pointed out by practitioners (Ryzhkov, 2019), "digital transformation" is different from the concept of "digitalisation". In fact, digitalisation means a method of transforming processes or objects into automated (digital) ones. Digital

transformation is the process of business adaptation to create an updated model, capable of operating effectively in the conditions of the digital technological cycle.

The global market is witnessing a rapid pace of digital transformations, which are primarily provided by IT companies. According to the research of O. Gudz and N. Yevtushenko (Gudz & Yevtushenko, 2021), it was found that in 2020 the size of the income of the global IT market increased on average by 2.2% in comparison with 2019. In 2021, changes in the activities of enterprises around the world under the influence of COVID-19 contributed to an increase in the volume of the IT market by an average of 9.2% compared to 2020. The main segments of the global IT market with real development prospects are "enterprise software" (from 2.10% in 2020 to 10.8% in 2021), "equipment and technology" (from 6.9% in 2020 to 14% in 2021) and "IT services" (from 1.8% in 2020 to 9.0% in 2021).

Ukraine uses less than 1% of its digital potential. Domestic companies do not properly evaluate such an indicator as the cost of the life cycle of purchases and equipment. They are often frightened by the prospect of IT and digital transformation, which requires investment in infrastructure renewal, technology parks, training and staff salaries. At the same time, there is no alternative to digital transformation. Technology is advancing rapidly, at a much higher rate than 30-40 years ago. The world is accelerating, and only those who are ready to adapt and transform now will be able to keep up.

5. Recommendations

Many enterprises in Ukraine are striving to increase their innovation potential and enter the world of digital transformation. Due to the lack of qualified personnel and financial resources in the conditions of a low level of innovation activity, only small parts of enterprises have strategic orientation. In these circumstances, a digital strategy or a digital transformation strategy becomes an effective tool for business management.

It has been noted (Panchuk & Malkova, 2021) that a digital strategy enables an organisation to adapt to digital changes occurring both outside and within the organisation. Given the frenetic pace of this change, such a strategy must keep up with the pace of digital technology and provide opportunities for the first time, as it is reviewed, iterated and adjusted much more frequently than strategies of the past.

Before formulating a digital transformation strategy, the company's management should consider several questions:

Does the company need changes related to digital transformation now?

Who is the consumer of the company's goods (services)?

What points of interaction has the company established with customers, partners and suppliers?

What data on the company's interaction with key stakeholders should be collected, how should it be stored and analysed?

What business model of digital transformation is required for a successful enterprise?

How much can and does the company invest in changes related to digital transformation?

Are employees ready for the changes associated with digital transformation?

Who will implement the digital transformation changes?

Taking into account the scientific achievements of O. Gudz in the field of digital transformation (Gudz & Makoviy, 2018), the stages of implementation of the digital transformation strategy will be presented:

The first stage is the creation of a vision for the entire digital transformation process.

The second stage is the definition of objectives, goals and targets for a successful digital transformation.

The third stage is a thorough audit and analysis of the company's strategic assets and competencies.

The fourth stage is an assessment of opportunities, time constraints, threats and risks.

The fifth stage is the development of new business process and communication models using all possible digital channels: email, web podcasts, CRM, video conferencing, etc.

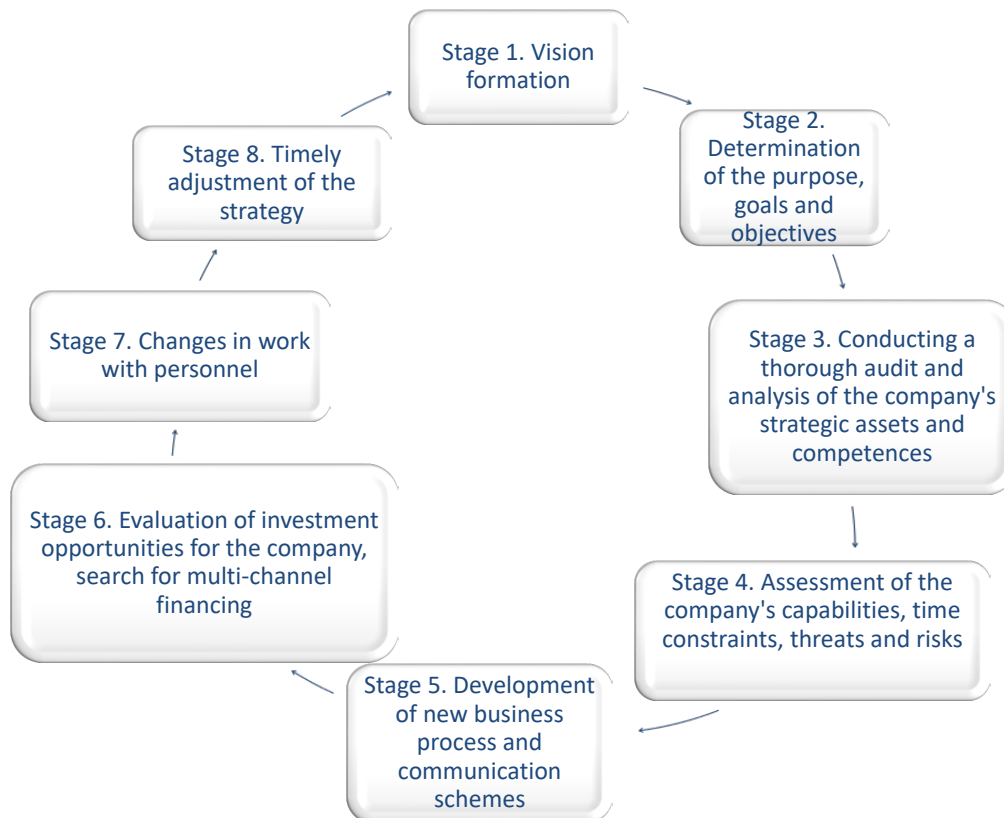


Figure 5. Stages of implementing a digital transformation strategy at an enterprise

Source: compiled by the authors

The sixth stage is the assessment of investment opportunities, the search for multi-channel financing.

The seventh stage is changes in human resources.

The eighth stage is the timely adjustment of the digital transformation strategy.

The stages of implementing a digital transformation strategy are shown in Figure 5.

The development of a digital transformation strategy involves the formation of the following modules: customer service (customer centricity); partnership and collaboration (partner centricity); working with data (data governance), where big data, artificial intelligence, neural networks should become working tools; implementation of innovative technologies (research and development); value (value); HR strategy and digital culture of innovation (digital culture).

6. Conclusions

Thus, the study conducted to assess the development of innovation potential in Ukraine confirms the decline in the level of innovation activity of Ukrainian enterprises, the passive role of the state and the country's further lagging behind the developed countries in technological development. At the same time, Ukraine has all the conditions for the so-called

digital leap and transition to a higher technological level of development, namely:

- The ability to produce and use information, communication and digital technologies, and the availability of professional staff. This is evidenced by the statistics of real successes of Ukrainian IT companies in international markets;
- access to relevant equipment, technologies, and dissemination of technologies among citizens and businesses;
- sufficient level of system integration of technological products and services – from design to integrated implementation of various technologies, software and hardware;
- creative culture and the ability to generate ideas, as evidenced by high scores in the Global Innovation Index.

The use of the digital transformation strategy in the activities of Ukrainian enterprises will allow building a qualitatively new management model based on modern digital technologies. This will ensure a transition from the cult of efficiency and rationality to a shift in emphasis to openness, democratisation, sociologisation, creativity of organisational processes, imbalance and non-linearity of management hierarchical chains, unpredictability and diversity of trajectories for successful development of enterprises.

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