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STRATEGIC GUIDELINES FOR THE DEVELOPMENT OF INNOVATIVE POTENTIAL OF INDUSTRIAL ENTERPRISES IN UKRAINE: FORCED AND INERTIA SCENARIOS

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СТРАТЕГІЧНІ ОРІЄНТИРИ РОЗВИТКУ ІННОВАЦІЙНОГО ПОТЕНЦІАЛУ ПРОМИСЛОВИХ
ПІДПРИЄМСТВ УКРАЇНИ: ФОРСОВАНИЙ ТА ІНЕРЦІЙНИЙ СЦЕНАРІЇ

The article explores the essence of the category of innovative potential development in industrial enterprises. It is substantiated that innovative development is a prerequisite for ensuring a high level of competitiveness of Ukraine's economy in the future, provided that the innovative potential of industrial production is fully realized. It is proven that, given the processes of European integration, increasing the efficiency of the realization of Ukraine's economic innovative potential is possible through the establishment of well-founded strategic guidelines. It is argued that the acceleration effect enables the manageability and acceleration of processes directed towards innovation-oriented development of industrial production. The methodology used to calculate the acceleration coefficient involves determining an integral indicator considering the multidirectional stimulating and de-stimulating influence of factors. It is substantiated that achieving the goals of progressive economic development is possible through the implementation of scenarios that differ in several parameters:

implementation period, level of managerial influence, financial support, etc. For the implementation of a forced innovation development scenario (active position), export orientation, resource conservation, and production digitalization are identified as priorities. The work presents a developed model of a forced innovation development scenario with target values for each priority, as well as a concept and conditions for the introduction of an inertial scenario. The forced scenario details the directions of targeted impulse changes, in contrast to the inertial scenario, which represents an evolutionary process of shifts. The result of the conducted research is a forecast assessment of the trend of the integral indicator of innovative development, which indicates a downward expected change in the absence of active targeted actions. It is noted that when forming the map of targeted changes, the forecast assessment data of changes for each vector should be taken into account: export-oriented vector, resource conservation, and digitalization. The target values of the indicator indicators for each target direction are substantiated.

У статті досліджено сутність категорії розвиток інноваційного потенціалу промислових підприємств. Обґрунтовано, що інноваційний розвиток є передумовою забезпечення високого рівня конкурентноспроможності економіки України в майбутньому за умов максимальної реалізації інноваційного потенціалу промислового виробництва. Доведено, що з огляду на процеси євроінтеграції підвищення ефективності реалізації інноваційного потенціалу економіки України є можливим при встановленні детально обґрунтованих стратегічних орієнтирів. Аргументовано, що ефект акселерації уможливорює керованість та прискорення процесів направленої інноваційно орієнтованого розвитку промислового виробництва. Методика, що була використана для розрахунку коефіцієнта акселерації: визначення інтегрального показника із врахуванням різноспрямованого стимулюючого та дестимулюючого впливу чинників. Обґрунтовано, що досягнення цілей прогресивного розвитку економіки є можливим при реалізації сценаріїв, що відрізняються рядом параметрів: термін реалізації, активність керівного впливу, фінансове забезпечення тощо. Для реалізації форсованого сценарію інноваційного розвитку (активна позиція) серед пріоритетів визначено експортну орієнтацію, ресурсозбереження та цифровізацію виробництва. У роботі представлена сформована модель форсованого сценарію інноваційного розвитку за пріоритетами з їх цільовими значеннями, а також надано концепт та умови запровадження інерційного сценарію. Форсований сценарій деталізує напрями направлених імпульсних змін, на противагу інерційному сценарію, що репрезентує еволюційний процес зрушень. Результатом проведеного дослідження є прогностична оцінка тренду інтегрального показника інноваційного розвитку, що свідчить про низхідну очікувану зміну за умов відсутності активних направлених дій. Відзначено, що при формуванні карти направлених змін слід враховувати дані прогностичних оцінок змін за кожним вектором: експортно-орієнтовний вектор, ресурсощадливість та цифровізація. Обґрунтовано цільові значення показників-індикаторів за кожним цільовим напрямом.

Key words: innovation, development, strategy, scenario, European integration vector.

Ключові слова: інновації, розвиток, стратегія, сценарій, євроінтеграційний вектор.

GENERAL STATEMENT OF THE PROBLEM AND ITS CONNECTION WITH IMPORTANT SCIENTIFIC OR PRACTICAL TASKS

Innovative development is one of the key factors for success of any economy, especially in the context of the modern global competitive environment. In the conditions of Ukraine's European integration, the implementation of a strategy for innovative development becomes a particularly relevant task.

In the current conditions of globalization and rapid technological changes, the importance of innovative development for economic growth and stability is undeniable. Ukraine, gradually deepening its ties within the framework of European integration, will have significant potential for the development of innovative technologies and increasing its competitiveness in the future. At present, in the post-industrial economy era, when the tertiary sector is considered one of the key sectors of the economy, there is a rapid development of information and

Table 1. The impact of factors of European integration on the development of the economy of Ukraine

A factor of European integration	The impact of factors of European integration on the development of the economy of Ukraine
Convergence of standards and regulations	Contributes to the opening of European markets for Ukrainian enterprises, stimulates adaptation to European quality and safety standards, which contributes to increasing competitiveness and export potential.
Investment attractiveness	Attracting foreign investment, technology and capital to develop infrastructure and support innovative projects that contribute to economic growth and the creation of new jobs.
Development of trade relations	Increasing trade volumes with the EU, expanding export markets for Ukrainian goods and services, which increases production volumes and ensures the development of export-oriented sectors of the economy.
Technological and innovative exchange	The transfer of technologies and best practices from EU countries contributes to the modernization of Ukrainian enterprises, increasing their efficiency and competitiveness, and also stimulates the development of innovative sectors of the economy.
Economic stability	Stabilization of the financial and economic situation, reduction of investment risks, increase of confidence in the Ukrainian economy, which contributes to investment attraction and business development.

Source: formed by the author based on the systematization of sources [3, 4, 5, 6].

communication technologies, and digitalization processes are affecting various sectors of the national economy. As a result, enterprises cannot do without innovation, and the maximum implementation of their innovation potential is a prerequisite for ensuring a high level of competitiveness of Ukraine's economy in the future. Despite the wartime context, while also focusing on the perspective, it can be noted that an innovation-oriented development of Ukraine's economy would be more expedient.

In the Global Innovation Index, the best position Ukraine occupied during 2016—2023 was 43rd place, while the worst was in 2022 — 57th place [1; 2]. The negative trend towards the end of the period is due to the full-scale invasion of Ukraine and the corresponding decline in innovation activity. Strategic guidelines for the development of Ukraine's enterprise innovation potential, taking into account the European integration vector, involve considering the impact of the European integration process on the innovation development of Ukrainian enterprises.

The object of the research is the processes of forming scenarios for the innovative development of the industry. The subject of the research is the information-analytical support for the formation of scenarios for the innovative development of the industry.

ANALYSIS OF RECENT STUDIES AND PUBLICATIONS

The analysis of scientific literature and practices regarding the impact of economic European integration indicates that it is a very broad and comprehensive process that produces promising positive and problematic processes for the economy of Ukraine (Table 1).

The research results indicate the diversity and multifaceted nature of researchers' approaches to assessing innovation potential. This diversity is manifested in the definition of goals and evaluation directions, the methods used, the depth of analysis, the

choice of indicators, and other aspects of the research.

According to S.M. Ilyashenko's methodology, the calculation of enterprises' innovation potential was carried out based on such elements as intellectual, personnel, technological, scientific-research, interface, informational, and market potentials. The purpose of the assessment was to determine the sufficiency of the enterprise's innovation potential for achieving strategic goals. The resulting indicator is the integral indicator as a weighted average of components. The advantages of this method of assessing enterprises' innovation potential are simplicity, comprehensiveness, and flexibility of the evaluation procedure [7].

According to A.A. Tryfilov and V.G. Chaban's methodology, the calculation of enterprises' innovation potential was conducted based on elements such as financial resources and the opportunities of the enterprise to attract them. The purpose of the assessment was to analyze the economic opportunities of

the enterprise. The advantages of this method are the simplicity of calculations, availability of input information, and practical applicability [8].

According to N. Chukhray and R. Patora's methodology, the calculation of enterprises' innovation potential was carried out based on elements such as the innovation potential of material resources and intellectual potential. The purpose of this calculation method is to determine the main deviations of the enterprise's innovation potential from desirable positions. The advantages are simplicity and practicality of use [9].

FORMULATION OF THE OBJECTIVES OF THE ARTICLE (TASK STATEMENT)

The aim of the study is to develop a methodological toolkit for establishing strategic guidelines to enhance the effectiveness of implementing Ukraine's economic innovation potential in view of the European integration processes. Research objectives: 1. To investigate the essence and peculiarities of innovative development of the industry based on the comparison of scholars' views; 2.

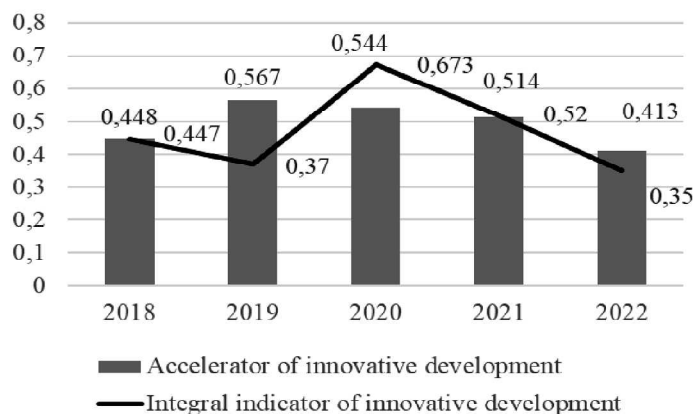


Fig. 1. Dynamics of the accelerator of innovative development

Source: calculated by the authors based on data from the source [2].

Table 2. Assessment of the dynamics of innovative development of Ukraine taking into account the target guidelines

Indicators	2018	2019	2020	2021	2022	max	min	max-min	2018	2019	2020	2021	2022
Index of growth of the innovative products sold, coef.	1,026	1,062	1,433	1,001	1,000	1,433	1,000	0,433	0,060	0,143	1,000	0,002	0,000
Index of growth of costs for innovation, coef.	1,254	1,029	0,987	1,229	0,818	1,254	0,818	0,436	1,000	0,483	0,387	0,944	0,000
The index of growth of the number of employees involved in scientific research and development, coef.	0,935	0,899	0,995	0,868	0,777	0,995	0,777	0,218	0,724	0,561	1,000	0,420	0,000
The index of growth of innovatively active enterprises, coef.	0,19	1,00	1,00	1,00	1,00	1,000	0,190	0,810	0,000	1,000	1,000	1,000	1,000
Index of growth of types of innovative products (goods, services) introduced by enterprises in the reporting year, coef.	1,610	0,559	1,893	1,003	0,846	1,893	0,559	1,334	0,788	0,000	1,000	0,333	0,215
The share of the volume of sold innovative products (goods, services) in the total volume of sold products (goods, services) of industrial enterprises, %	0,800	1,300	1,900	1,300	1,500	1,900	0,800	1,100	0,000	0,455	1,000	0,455	0,636
Share of the number of innovatively active enterprises in the total number of industrial enterprises, %	28,058	13,500	8,487	8,600	8,500	28,058	8,487	19,571	1,000	0,256	0,000	0,006	0,001
Innovation implementation efficiency, %	0,581	1,609	0,526	19,216	18,240	19,216	0,526	18,690	0,003	0,058	0,000	1,000	0,948
Integral indicator of innovative development													
I Export-oriented vector	2018	2019	2020	2021	2022	max	min	max-min	2018	2019	2020	2021	2022
Global Innovation Index, %	1,008	0,884	1,066	0,980	0,871	1,066	0,871	0,195	0,705	0,070	1,000	0,560	0,000
Export orientation, dollar units	0,312	0,240	0,199	0,144	0,136	0,312	0,136	0,176	1,000	0,588	0,357	0,045	0,000
Index of growth of exports of goods and services	0,452	0,412	0,390	0,041	0,355	0,452	0,041	0,411	1,000	0,902	0,850	0,000	0,763
The index of growth of the specific weight of exports of goods in GDP	0,911	0,948	0,105	8,615	0,000	8,615	0,000	8,615	0,106	0,110	0,012	1,000	0,000
Export/import ratio	0,840	0,840	0,974	0,098	0,679	0,974	0,098	0,875	0,847	0,847	1,000	0,000	0,663
Comprehensive assessment of development according to vector 1													
II Resource saving vector	2018	2019	2020	2021	2022	max	min	max-min	2018	2019	2020	2021	2022
Energy intensity of GDP	1,005	0,930	1,005	0,996	0,986	1,005	0,930	0,076	0,000	1,000	0,010	0,129	0,249
Material capacity of GDP	0,990	0,107	9,606	1,083	0,873	9,606	0,107	9,499	0,907	1,000	0,000	0,897	0,919
Carbon capacity of GDP	0,804	0,985	0,930	0,935	0,992	0,992	0,804	0,187	1,000	0,038	0,332	0,305	0,000
Water capacity of GDP	1,037	0,963	1,028	0,821	0,777	1,037	0,777	0,260	0,000	0,285	0,033	0,834	1,000
Waste capacity of GDP	0,931	1,214	1,089	1,031	0,989	1,214	0,931	0,283	1,000	0,000	0,442	0,645	0,793
The share of employees employed at enterprises belonging to the high- and medium-high-tech sectors of the processing industry, %	21,6	21,5	20,5	20,1	19,8	21,600	19,800	1,800	0,000	0,056	0,611	0,833	1,000
Comprehensive assessment of development according to vector 2													
III Vector of digitization of production	2018	2019	2020	2021	2022	max	min	max-min	2018	2019	2020	2021	2022
Digitization growth index	0,967	1,034	1,000	0,983	0,983	1,034	0,967	0,068	0,000	1,000	0,492	0,246	0,242
Digitization growth index/Knowledge	0,867	1,026	1,025	0,976	0,975	1,026	0,867	0,159	0,000	1,000	0,996	0,685	0,681
Digitization growth index/Technological environment	0,984	1,000	1,000	1,000	0,984	1,000	0,984	0,016	0,016	1,000	1,000	1,000	0,000
Digitization growth index/Openness to the future	1,000	1,016	0,984	1,000	1,000	1,016	0,984	0,033	0,496	1,000	0,000	0,496	0,496
Comprehensive assessment of development according to vector 3													
Accelerator of innovative development	2018	2019	2020	2021	2022	max	min	max-min	2018	2019	2020	2021	2022
	0,485	0,396	0,238	0,607	0,660	0,660	0,485	0,175	0,448	0,567	0,544	0,514	0,413

Source: calculated by the authors based on data from the source [2].

To conduct research on establishing strategic guidelines to enhance the effectiveness of implementing Ukraine's economic innovation potential in view of the European integration processes; 3. To formulate a map of directed vectors of change under two different scenarios — inertia (evolutionary) and target (forced).

SUMMARY OF THE MAIN RESEARCH MATERIAL

The analysis of the dynamics of Ukraine's innovation development was conducted for the period 2018—2022 based on primary and specific indicators [2]. Specific indicators were distributed into groups representing shifts in specific target directions: export-oriented vector, resource-saving vector, and digitalization vector of production [10; 11; 12; 13].

The methodology used for the calculation: determination of the integral indicator, taking into account the multidirectional stimulating and de-stimulating impact. All indicators, except for group II (Vector of resource saving) were classified as stimulating indicators (Fig. 1, Table 2).

According to the Harrington scale throughout the period, the accelerator of innovative development has a low level. And its negative dynamics are observed.

Thus, the growth index of the innovative products sold for 2018—2022 had a peak value of 1.433 in 2020 and rapidly decreased in the following 2021—2022. The index of changes in innovation costs gradually decreased from 1.254 in 2018 to, unfortunately, the lowest value during the research period at 0.818 units in 2022.

There is also an outflow of workers from fields related to scientific research and development, which affected the corresponding quantitative indicator (0.777 at the end of 2022).

The predictive assessment of the trend of the integral indicator of innovative development (Fig. 2) indicates a downward expected change in the absence of active directed actions.

Optimistic assessment scenarios are illustrated in fig. 3—5. Thus, the forecast assessment of changes according to the export reference vector is presented in Fig. 3. The predictive assessment of changes in the vector of resource saving also illustrates optimistic expectations in the implementation of resource saving programs (forecast with an interval for 2 periods — Fig. 4).

Analysis of actual indicators for the export-oriented vector of development indicates a decrease in the index of change in the export of goods and services to 0.355 compared to the maximum value during the research period of 0.452 at the end of 2018. Additionally, the export/import ratio, which characterizes the country's dependency level on imports (negative balance), appears negative,

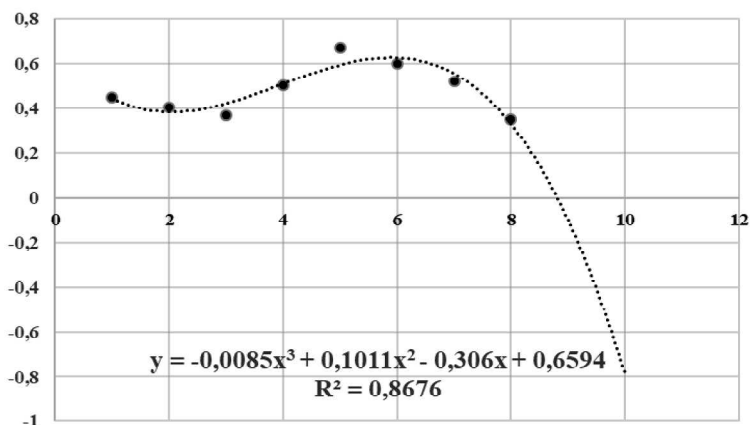


Fig. 2. Predictive assessment of the trend of the integral indicator of innovative development

Source: calculated by the authors based on data from the source [2].

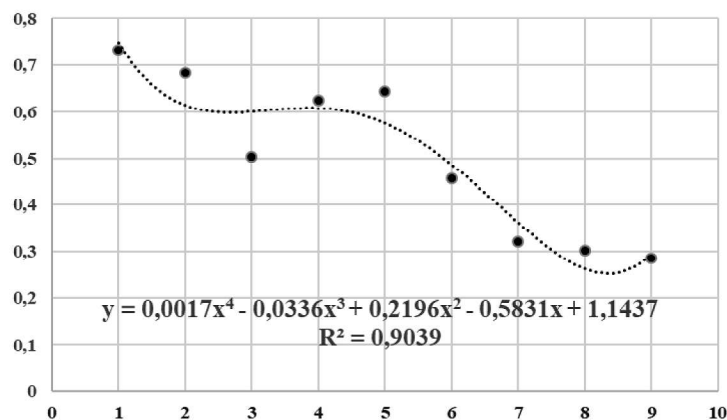


Fig. 3. Predictive assessment of changes according to the export reference vector

Source: calculated by the authors based on data from the source [2].

indicating low competitiveness of goods in the global market.

The analysis of indicators according to the vector of resource saving shows the growth of material intensity of GDP during 2019—2022, primarily due to energy intensity. At the same time, the gradual growth of the waste capacity

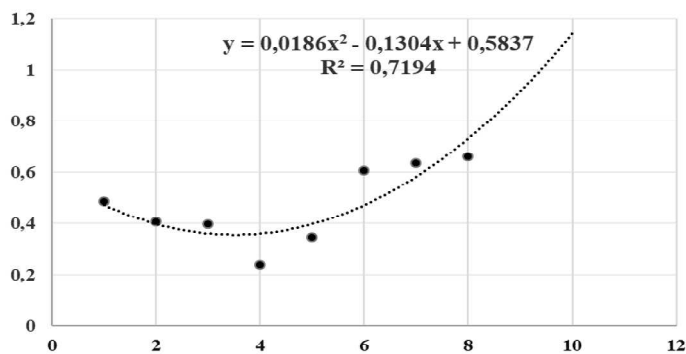


Fig. 4. Predictive assessment of changes according to the vector of resource saving

Source: calculated by the authors based on data from the source [2].

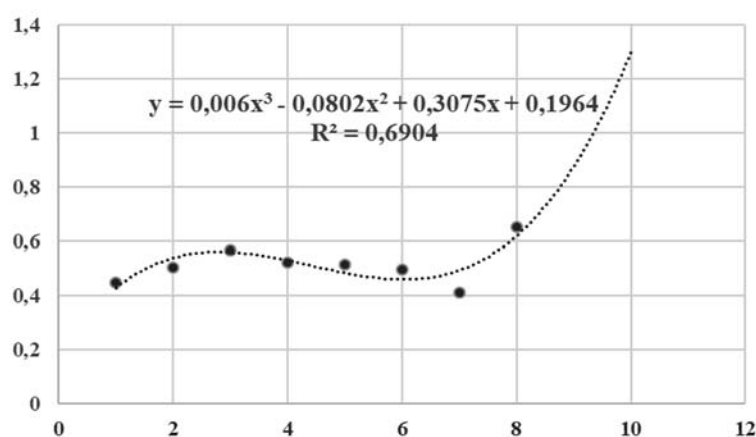


Fig. 5. Predictive assessment of changes according to the vector of digitization of production

Source: calculated by the authors based on data from the source [2].

of GDP (from 103.9% compared to 2015 as the base year to 141.6% in 2021) is a negative tendency.

The predictive assessment of changes in the vector of digitization of production under the conditions of implementation of the optimistic scenario is presented in fig. 5.

The dynamics of the level of digitalization in Ukraine, assessed on the basis of a set of key indicators, reflects an upward trend, but, at the same time, the pace of change does not correspond to modern world indicators [14]. Therefore, when forming a map of directional changes, the data of predictive estimates of changes for each vector should be taken into account.

The analysis of changes in the innovation development accelerator was conducted using two scenarios: inertia (evolutionary) and targeted (forced). Both scenarios have

specific conditions and mechanisms of application. Despite the forced scenario being more progressive, in certain cases, the inertia scenario may prove to be more practical. The inertia scenario, based on the natural course of events without active interventions, may be ineffective when rapid changes need to be achieved, crises need to be addressed, or competition needs to be faced in saturated markets, where speed and adaptability are crucial. Implementing the inertia scenario in the Ukrainian economy can lead to negative consequences such as labor migration and the non-competitiveness of Ukrainian products in foreign markets. On the other hand, the forced scenario entails active change management and strategic intervention to achieve specific goals. This approach may be

appropriate in situations where strategic changes need to be implemented, problems need to be solved, or new opportunities need to be created in a particular area [10; 11].

The forced scenario of innovation development with the aforementioned priorities involves directing efforts towards achieving specific goals related to export, resource efficiency, and digitalization of production. Let's consider each of these priorities:

1. Export-oriented vector:

1. This priority involves an active development strategy aimed at expanding companies' export opportunities for products or services.

2. Measures such as developing international partnerships, expanding marketing and sales networks, adapting products to international standards, and studying the

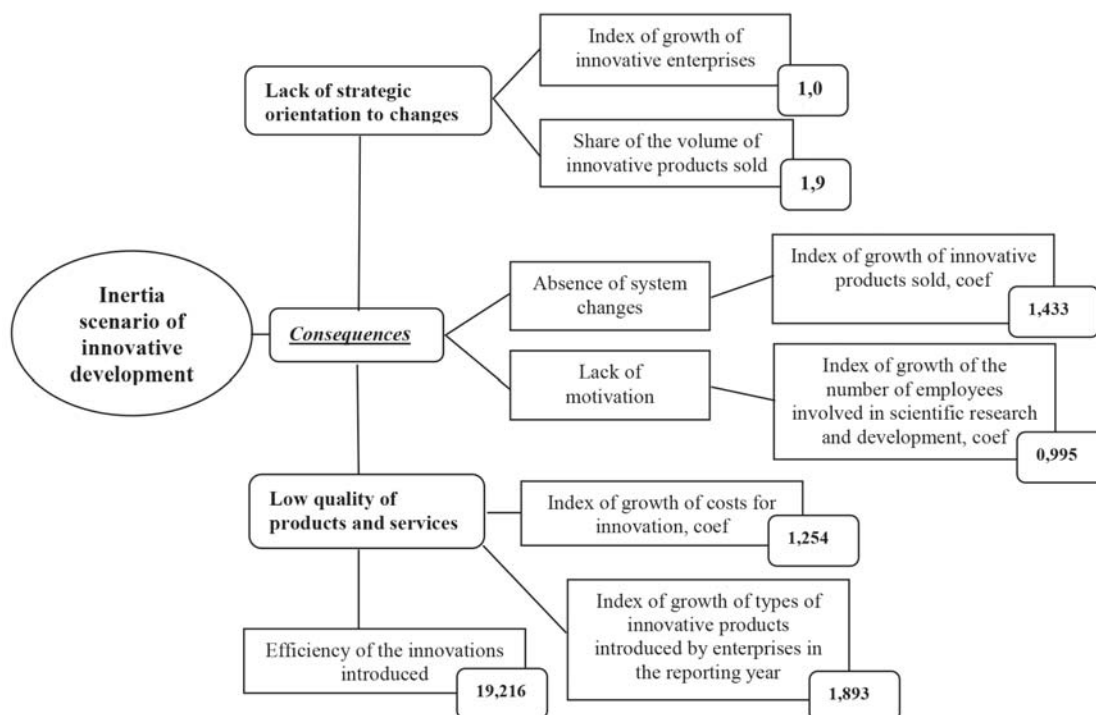


Fig. 6. Scheme of the inertial scenario of innovative development by priorities with their maximum values

Source: developed by authors.

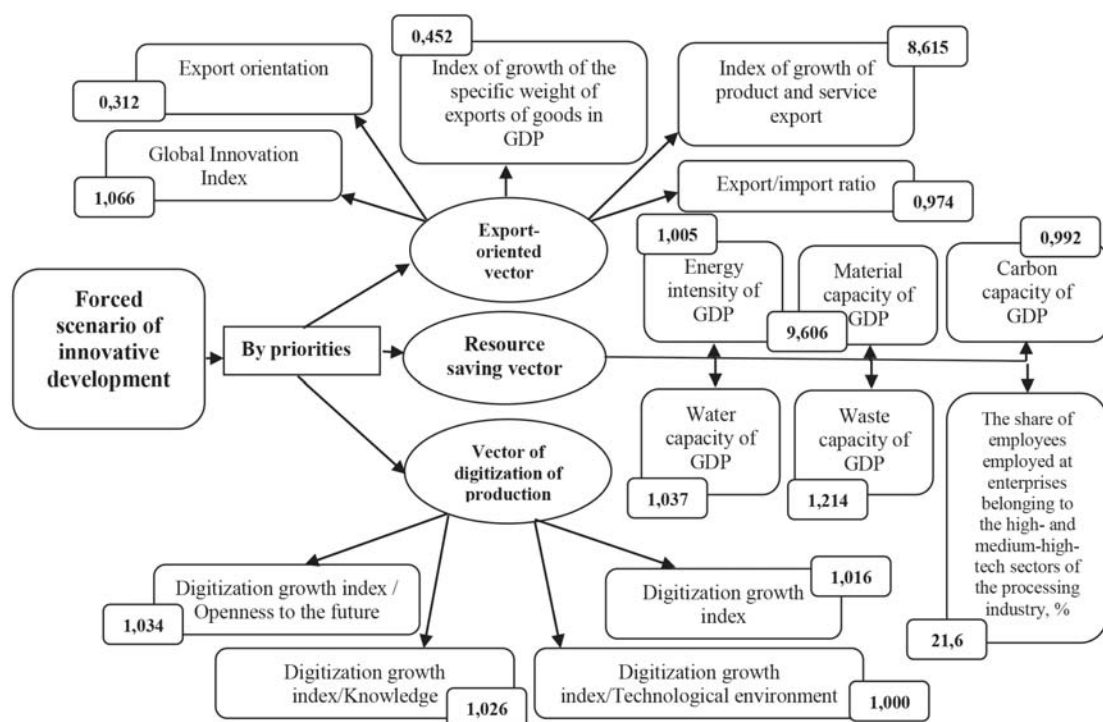


Fig. 7. Scheme of the forced scenario of innovative development by priorities with target indicators of directed changes

Source: developed by authors.

economic and trade needs of different markets may be important for achieving this goal.

II. Resource efficiency vector:

1. This priority involves reducing the use of resources such as energy, materials, and time in production or service provision.

2. New technologies, optimization processes, the use of secondary resources, or the implementation of the "green" initiatives may be employed to achieve this.

III. Digitalization of production vector:

1. This priority involves the implementation of digital technologies and innovations in production processes to increase efficiency, quality, and competitiveness.

The inertia scenario (Fig. 6), which is based on the natural course of events without active interventions, may be ineffective when rapid changes need to be achieved, crises need to be addressed, or competition needs to be faced in saturated markets, where speed and adaptability are crucial. Implementing the inertia scenario in the Ukrainian economy can lead to negative consequences such as labor migration and the non-competitiveness of Ukrainian products in foreign markets.

In the course of the work, a model of the forced scenario of innovative development by priorities with their target values was also formed (presented in fig. 7).

Using the acceleration effect establishes a basis for effectively managing the development process, focusing efforts on key directions to achieve faster and more significant results [13]. For example, the forced scenario of innovation development with the specified priorities entails actively directing efforts towards achieving goals related to export orientation, resource efficiency, and digitalization of production.

For instance, one of the quantitative benchmarks within the framework of digital economy development

should be the increase in the share of IT services in Ukraine's GDP to 15% by the end of 2025. This corresponds to a substantial leap of 73% by the end of 2024 compared to 2021 (2.7%) and a further 50% increase by the end of 2025 relative to 2024. Plans for business and industrial digitization (by 2030) [14] also include a forced increase in the number of companies (by over 20 times) producing smart (digital) products, as well as an increase in the share of high-tech exports (up to 50% of the total volume).

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH IN THIS AREA

The analysis indicates that the forced scenario of innovation potential development of Ukrainian enterprises is more effective compared to the inertia scenario. Approaching the priorities, it was found that this contributes to active innovation implementation, efficient resource utilization, and digital technology development, providing enterprises with competitive advantages and stable growth. Using the acceleration effect establishes a basis for effectively managing the development process, focusing efforts on key directions to achieve faster and more significant results. For example, the forced scenario of innovation development with the specified priorities entails actively directing efforts towards achieving goals related to export orientation, resource efficiency, and digitalization of production.

Future research should focus on developing advanced strategies aimed at the forced development of Ukraine's innovation potential, taking into account the European integration vector. Such an approach will not only strengthen the country's position in the global market but also ensure sustainable economic growth, improve living standards, and foster overall societal development.

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