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INNOVATIVE DEVELOPMENT OF THE COUNTRY DURING THE WAR AND POST-WAR PERIOD

Abstract. The article provides the position of Ukraine in international ratings of innovative development, indicates a complex of innovations during the war period, which today remain a decisive driver of national defense and further development of the country's economy. The main drivers of innovative development in the history of mankind, during the war and post-war period are indicated.

It is noted that innovations are a key factor in the economic development of countries, which contribute to the growth of macroeconomic indicators of the development of countries and the world economy as a whole. It was today that Ukraine showed the strength of its innovative potential and international faith in a peaceful society. The article provides examples in studies of the innovative development of countries that influenced the development of specific world economies and their opportunities for growth and

competitiveness, especially during crises and wars. The author states that it is in the conditions of crisis and conflict that innovations for sustainable development can become the most important resource for survival and overcoming crisis phenomena.

Keywords: innovations, sustainable development, innovativeness index.

Formulation of the problem. Innovation is a decisive driver of development for the development of the country's economy. As the history of mankind shows, in the period of war, new properties of the socio-economic system are activated for the development of innovative solutions and technologies, especially in the sectors related to the defense and security of the country. The use of innovation in the context of sustainable development plays a crucial role in the defense of a country in times of war, the well-being of its population and overall security.

Innovations are a key factor in the economic development of countries, which contribute to the growth of macroeconomic indicators of the development of countries and the world economy as a whole. Research on the innovation development of countries can help reveal how innovation affects specific world economies and their opportunities for growth and competitiveness, especially during crises and wars. In times of crisis and conflict, innovation for sustainable development can become the most important resource for survival and overcoming crisis phenomena.

Formulation of the goals of the article. The purpose of the article is to highlight the positions of Ukraine in the rating of innovative development and systematization of key innovations in defense security during the Russian-Ukrainian war.

Presenting main material. The mechanism of development of an industrial enterprise is carried out on the basis of innovation and characterizes a complex process that brings the internal capabilities of the enterprise into compliance with external ones on the basis of constant search and use of new areas and methods of realization of existing and promising opportunities. The effective response of an industrial enterprise to the emerging threats activates the non-additive (emergent) properties of the economic system at the micro- or macro-levels. Such a reaction can be instantaneous (anti-crisis management) or permanent (system of economic security) [1].

The history of innovation during the Second World War showed examples for future generations: atomic energy, the development of radar technology, the first electronic computers, the development of rocket technology, plastic surgery, and the development of processes for coding and decoding secret messages that helped to reveal and prevent the plans of the enemy.

The innovations of the Second World War influenced the further technological development of the world and the field of defense.

Today, Ukraine is in a state of war, but this has not affected the innovative potential of the country. The overall innovative development of Ukraine continues and the country firmly holds its place in the ranking of innovations for the period 2021-2023. The innovative index of Ukraine makes it possible to systematically establish quantitative and qualitative dependencies between individual elements of the potential, the level of its

development and competitiveness, and on the basis of this, justifies and characterizes management decisions. So, let us present the innovative potential of Ukraine according to the innovativeness index (Table 1).

Table 1. Innovative potential of Ukraine in the context of the first five innovative countries.

Economy / GII rank	Institutions		Human capital and research		Infrastructure		Market sophistication		Business sophistication		Knowledge and technology outputs		Creative outputs	
	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
Ukraine 57 (2022) 55 (2023)	97	100	49	47	82	77	102	104	48	48	36	45	63	37

Source: compiled by the author based on data [2, 3]

In terms of sub-indices, we see that the strengths of Ukraine are knowledge and technology, business experience, results of creative activity and human capital and research, but the infrastructure and institutional environment are at a low level, which restrains the development of innovation in our country.

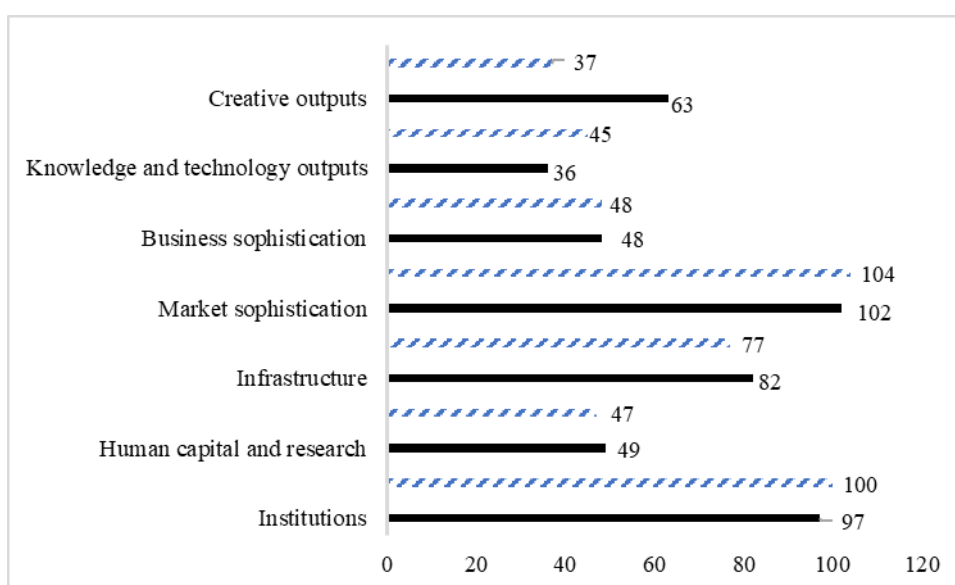


Figure 1 - Square of innovative potential of Ukraine, 2022, 2023.

Source: compiled by the author based on data [2,3]

Despite the war, Ukraine entered the Top 3 most innovative economies in the world, according to the Global Innovation Index 2023, in the group of countries with lower-middle incomes (we are in this group, even taking into account the war).

Table 2. Top three innovation economies by income group, 2023.

№	High-income	Upper middle-income	Lower middle-income	Low-income
1	Switzerland	China	India	Rwanda
2	Sweden ↑	Malaysia ↑	Viet Nam	Madagascar
3	United States ↓	Bulgaria ↓	Ukraine*	Togo*

Source: Global Innovation Index Database, WIPO, 2023 [3]

* Indicates a new entrant into the top three in 2023.

Ukraine's strengths are the level of state funding of secondary schools per student, the ratio of the number of students to teachers, the employment of women with higher education, and the export of IT services.

Our weaknesses: business stability (thanks to the aggressor), level of investment, access to credit, stagnation of labor productivity.

Thanks to international assistance, Ukraine is implementing eight technologies of modern warfare [4]: satellite communications, drones, situational awareness systems, naval drones, the use of artificial intelligence, robotics and electronic warfare, and innovative systems that allow responding to sound using radars and leading automatically.

Significant international support and the transfer of technology and military equipment to Ukraine significantly strengthens the country's defense potential. The country's military-industrial complex has the ability to develop and produce modern military equipment and weapons.

In the field of defense and security, a reform is being carried out, which is aimed at improving the organization and management of the troops, as well as increasing the professionalism of the military.

Ukraine is actively working to improve its defense capabilities and uses innovative technologies to protect its sovereignty. International support and technology transfer play an important role in this process, but the challenges remain serious, especially in the context of military conflict and hybrid threats.

Conclusions. It is impressive that Ukraine achieved a high rating in the Global Innovation Index 2023, despite the challenges of the war. Ukraine's ability to maintain a strong position in innovation is evidence of significant international support, national resilience and creativity of the population.

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