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STRATEGY AND MECHANISM OF ENTERPRISES FINANCIAL AND ECONOMIC SECURITY MANAGEMENT IN THE CONDITIONS OF WAR, INDUSTRY 4.0 AND BANI WORLD

ABSTRACT

The purpose of the research is to establish the characteristic features and signs, the inherent mechanism and strategies of managing financial and economic security, which should be used by domestic enterprises in the war period and in the post-war recovery period in the conditions of the development of Industry 4.0 trends in the realities of the BANI world. Defects in the organization and functioning of the financial and economic security management mechanism were identified, which began to be clearly investigated during the work of business entities in wartime conditions. Additional elements of the financial and economic security management mechanism of the enterprise in the conditions of Industry 4.0 and BANI World are proposed. The peculiarities of the strategy and mechanism of managing the financial and economic security of enterprises in various models of the world system are specified. The outline of the GUARDIAN strategy for the implementation of the tasks of strategic management of the financial and economic security of enterprises was developed and the expediency of its use in the realities of Industry 4.0 and BANI World was substantiated.

The development of a new paradigm of strategic management of financial and economic security for the post-war recovery of business entities in the conditions of BANI World, taking into account the trends of the Fourth Industrial Revolution, allows expanding the limits of the application of the tools of effective security-oriented management. In order to successfully optimize traditional approaches to financial and economic security management in the post-war period, it is necessary to transform the financial and economic security management mechanism to ensure its readiness to counteract the impact on the enterprise's corporate resources from the threat of military aggression, global pandemics, the development of the trend of Industry 4.0 and BANI world.

Keywords: management, financial and economic security, mechanism, strategy, Fourth Industrial Revolution, Industry 4.0, BANI World

JEL Classification: D21, L20, M10, M21

INTRODUCTION

The circumstances in which Ukraine now finds itself are non-trivial and without exaggeration – critical and destructive both for the state of financial and economic security of economic entities, and for the state of national security of the state and its economic component. Never before have our state, its economic agents, its people been under the influence of so many threatening factors at once: war, global pandemic, economic and social chaos, change of industrial paradigm, new world perception model and so on. Therefore, in the scientific field, scientists should as soon as possible start looking for ways to minimize the impact of all the listed circumstances on the implementation of business processes in a situation where the physical condition and the state of financial and economic security of critical infrastructure objects and many business structures in the territories of military operations need to be restored, and in the rest of the regions – urgent functional adaptation to the realities of the Fourth Industrial Revolution and new business conditions, which are characteristic of the new model of the world, named BANI World.

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Awareness of the fact that in the context of the adaptation of domestic enterprises to the features of Industry 4.0, their attempts to survive physically and economically in the realities of wartime and the need in the near future to adapt to the BANI World model, traditional and classic approaches to security-oriented business management processes are unlikely to be able to guarantee the achievement by enterprises, institutions and organizations of their tactical and strategic goals, points to the need to identify the sources of a possible transformation of strategies and the mechanism of managing the financial and economic security of business entities under the risks and needs of the economy of Ukraine in mid-2022.

LITERATURE REVIEW

For a long period of time, the authors of this study have been trying to find ways to ensure the financial and economic security of business entities [1], including taking into account the realities of the advent of the BANI world [2]. Recently, the issue of economic security has been studied by domestic scientists from the standpoint of a management approach [3] - for example, the issue of synergistic management of the economic security of an enterprise is raised [4, 5, 6], and security priorities in evaluating the effectiveness of domestic enterprises are also specified [7, 8]. Mazaraki T., Zubko T. link the state of economic security of the enterprise with the stability of its functioning [9]. The Fourth Industrial Revolution became the source of a large number of risks for the state of financial and economic security of economic entities. Despite the fact that the first publications devoted to the features of the onset of Industry 4.0 appeared in the domestic professional literature in 2016-2017, the monograph "The Fourth Industrial Revolution: Changing the Direction of International Investment Flows" can be considered a thorough and fundamental work in this context [10]. The interest in this topic does not decrease, because the change of business concepts takes time, during which new challenges appear, which require responses in both scientific and applied fields. And for now, experts are making assumptions about what the economy and production still need to expect from the spread of Industry 4.0 trends [11, 12]. Numerous publications of domestic scientists [13-16] and foreign researchers [16, 17] raise the issues of digital transformation and digitalization of the economy, related risks, opportunities to use foreign experience in industrial enterprises of Ukraine, priorities for the formation of scientifically based industrial policy and readiness enterprises until the effective completion of this process. At the same time, comprehensive research on the management of financial and economic security in the realities of the Fourth Industrial Revolution is still lacking for the formation of a complete picture of conducting business according to the security-oriented paradigm in the trends of Industry 4.0. The war requires consideration of additional vectors of change in economic systems under the influence of destruction and catastrophic disruptions in the functioning of critical infrastructure, which will require restoration. Thus, Borodina O. identified the basic trends of the post-war transformation of the economy of Ukraine, such as budget decentralization, Industry 4.0, and regional energy management [21]. Returning to the issues of ensuring economic security of business in the realities of BANI World chosen for further research, it is worth taking into account the publication of Chalyuk YU.O., dedicated to global socio-economic development in the conditions of VUCA, SPOD, DEST AND BANI world [22]. A general idea of the characteristics of the BANI world can be found in the source [23]. It is obvious that there is a need to prepare the personnel potential of business entities for effective work in the conditions of BANI World [24].

AIMS AND OBJECTIVES

The purpose of the article is to establish the characteristic features and characteristics inherent in the mechanism and strategy of managing financial and economic security, which should be used by domestic enterprises in the wartime period and in the period of post-war recovery in the conditions of the spread of the trends of the Fourth Industrial Revolution in the realities of the BANI world. To achieve the set goal, it is necessary to perform a number of tasks: to determine whether there are defects in the organization and functioning of mechanisms for managing the financial and economic security of enterprises that appeared in wartime conditions; to propose directions for updating the mechanism of managing the financial and economic security of the enterprise in the conditions of Industry 4.0 and BANI World; to specify the features of the strategy and mechanism of managing the financial and economic security of enterprises in the realities of the BANI world; to develop the foundations of a modern strategy for managing financial and economic security during the Fourth Industrial Revolution and the spread of BANI World.

METHODS

Methods used in the research are the method of content analysis, which was used to determine the vision of scientists regarding modern directions for solving the problems of ensuring financial and economic security; the method of generalization during the systematization of the defects in the organization and functioning of mechanisms for managing the financial and economic security of enterprises that appeared in wartime conditions during the Fourth Industrial Revolution and the spread of BANI World; a graphic method for visualizing the author's proposals for optimizing the process of managing the financial and economic security of economic entities in the conditions of the spread of Industry 4.0 in the realities of the BANI world.

RESULTS

Economists began to call the current state of society the Fourth Industrial Revolution or Industry 4.0 since 2016 [10, c.6]. However, there is an opinion that this term came into use as early as 2011 in Europe (in Germany). At the same time, the preparation of the industry of various countries of the world for the necessary transformations, which began from the moment of awareness of the change in the model of industrial structures, has not yet been completed in some places, and in Ukraine, its pace has significantly slowed down during the hostilities. However, in order to achieve economic and social convergence with the countries of Europe, the domestic economy needs to recover in the post-war period immediately in a form that is suitable for effective functioning in the conditions of Industry 4.0.

For ten years now, the world industry has been actively adapting to the needs and standards of the Fourth Industrial Revolution. Its leading feature has become the digitization of most business processes, and in some places - the emergence of completely digital analogues of classic products and services and their production and implementation mechanisms. Technical equipment is becoming faster, and the content used to make management decisions is more sophisticated. Devices used in production processes, for work and learning are becoming more powerful, more convenient, more efficient and combine more and more functions, one of which is usually communication. The Internet has become portable and involved in all spheres of life without exception and has taken the form of the Internet of Things, the Internet of Data, the Internet of Services, and the Internet of People. Information is now device and software independent and can be accessed instantly around the world. This opens up new opportunities for business entities and forms Industry 4.0 as an environment for the functioning and development of modern business [25, p.3].

"Industry 4.0 is the next stage of digital transformation of manufacturing enterprises, which is accompanied by the accelerated implementation of technologies such as the industrial Internet of Things, big data analytics, artificial intelligence, a new generation of robots, augmented reality, etc. Together, this will lead to the better synergy of IT and OT, change of business models and significant acceleration of innovative development" [26, p.4].

In December 2018, the Industry 4.0 National Strategy Project was developed by expert groups. In it, the target strategic guidelines for the formation of Industry 4.0 in Ukraine for the period until 2021 were defined, such as the institutionalization of the development of industrial high-tech segments at the state level, creation of an innovative ecosystem of industrial high-tech, acceleration of clustering in the field of 4.0 at the regional and national levels, full-scale digitization of key sectors of industry, energy and infrastructure, maximum integration of 4.0 innovations in the country's defence complex and security strategy, the launch of export programs for industrial high-tech sectors, internationalization and integration into the world space 4.0 [27]. An important role in the implementation of the proposed strategy was given to the Ministry of Strategic Industries of Ukraine.

However, the declared goals were not achieved. Although strategic guidelines for the transition to Industry 4.0 have been established at the state level in various industries, lack of state support, inability to establish forms and mechanisms of public-private partnership, disruption of networks and chains of institutions and organizations that should be integrated into this process, for example, such as higher education institutions, business incubators, fundraising platforms, startups, professional associations, investment companies, IT clusters, various categories of stakeholders of entrepreneurial structures, state authorities, etc., have led to a significant slowdown, and in some cases to a halt the process of adaptation of domestic business entities to the realities of Industry 4.0. Since 2016, when was the beginning of understanding the onset of the Fourth Industrial Revolution in Ukraine, the innovative activity of industrial enterprises, which is the basis of transformation to effective work in the conditions of Industry 4.0, has been at a low level (Fig. 1).

For comparison, in Canada as of 2018, 79.76% of firms could be characterized as innovative; in Great Britain – 43.44%, in Japan – 33.04%, in Turkey – 29.92%, in Poland – 21.93% [28]. Thus, the level of innovative activity of enterprises in Ukraine is extremely low. This is explained by the fact that the main source of funding for research and development is

the company's own capital - in 2015, this indicator was 97.2%, and in 2020 - 85.4%. Therefore, only a small part of the financing of enterprises innovations is obtained from external sources, which again brings us back to the problem of intensifying cooperation between the state and business. It is not only a matter of obtaining state funding for innovations – in the conditions of war, but such an opportunity is also illusory; however, it is easier for the management of an enterprise that fulfils state orders, for example, for the production of scientific products, to convince investors that there are guarantees of the return of their funds and the successful completion of the started projects.

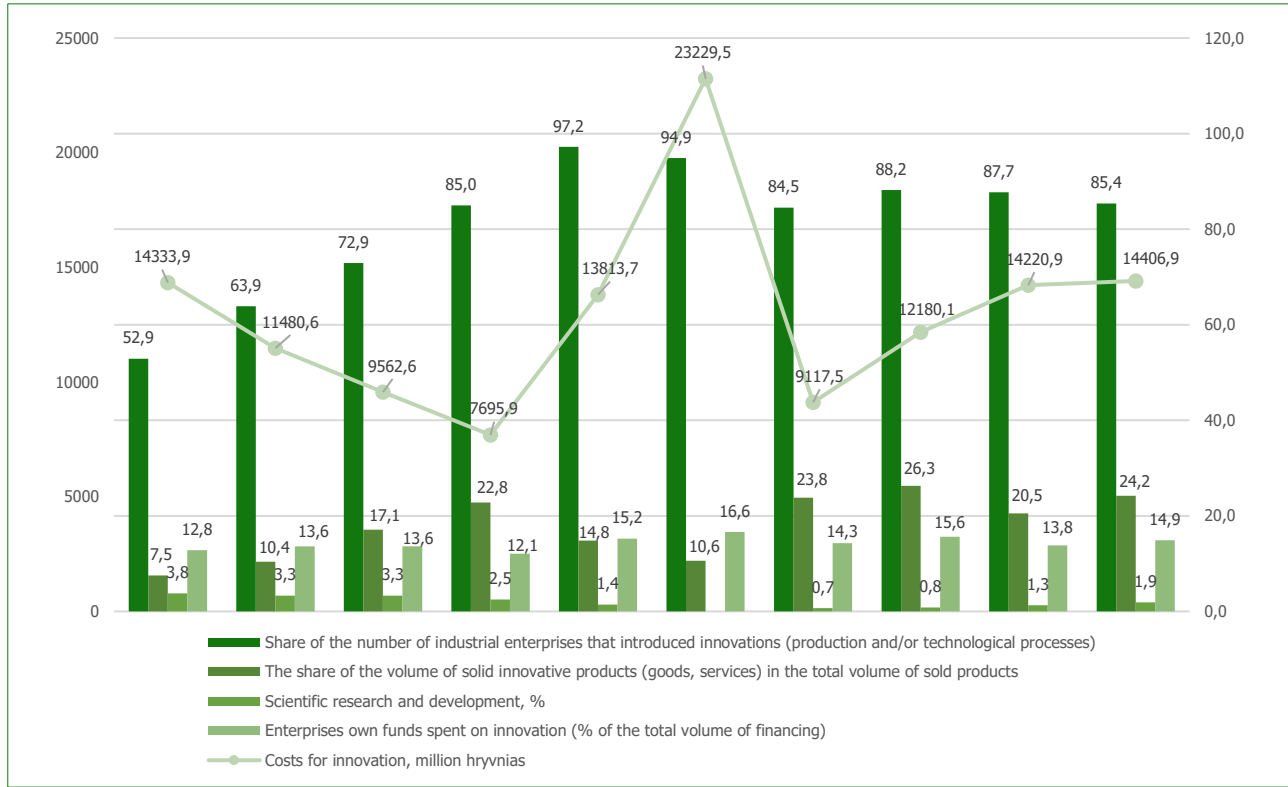


Figure 1. Innovative activity of enterprises as a condition for entering Industry 4.0.

At the same time, new business conditions are traditionally a source of innovative risks that affect the functional capacity and performance of enterprises, and therefore often have negative consequences for the state of financial and economic security of the business entity. In most cases, their action is the cause of financial losses; in the worst case, it is the loss of assets, and sometimes even the ability to continue financial and economic activity due to the financial aspect (bankruptcy and liquidation) or the lack of entrepreneurial potential (the appearance of new technologies, goods, services that can make the basic idea of business functioning irrelevant and unnecessary for consumers).

The available statistical data show that the adaptation of domestic subjects of economic activity to the realities of the Fourth Industrial Revolution is still ahead. Therefore, the modernization of the financial and economic security management mechanism should take place right now, in order to ensure the readiness of enterprises to counter the risks of Industry 4.0.

As Korchevska L.O. points out: "the essence of the mechanism is the internal construction of the system of functioning of the activity or process of any sphere, which determines the order of relationships and their sequence" [5, p.28]. Her approach to distinguishing adaptive and bifurcation strategies for managing the economic security of the enterprise becomes especially relevant in the model of the new world order, which was named BANI World.

The military actions that began on February 24, 2022, on the territory of Ukraine, and their consequences in a number of regions, revealed defects in the functioning of mechanisms for managing the financial and economic security of economic entities (Fig. 2).

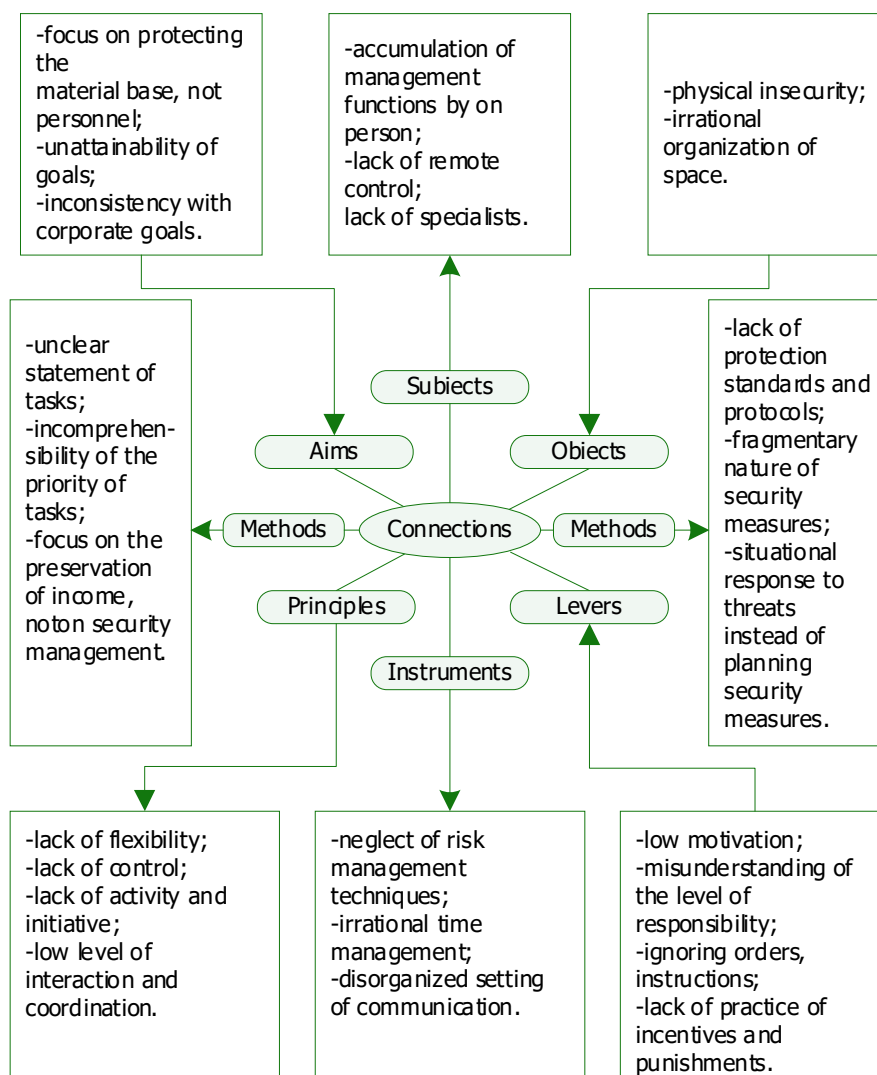


Figure 2. Disadvantages of the traditional mechanism for managing financial and economic security in the context of military operations.

The identified shortcomings were characteristic of most enterprises even in the pre-war period. However, the military actions made them obvious and such that they cannot be ignored, as they have a destructive effect on the financial and economic security management mechanism and become an obstacle to the successful implementation in practice of its goal – to achieve and maintain a high level of economic security of the enterprise in the process of its activity as an economic agent in the system of the national economy.

Due to the low level of functional capacity of the financial and economic security management mechanism, non-compliance with the principle of continuity of its application at the enterprise, and financing of its needs according to the residual principle, the economic basis of doing business was destroyed even in those regions where it was not physically destroyed during the war. Communications were not established in publicly available channels, there was no timely redistribution of responsibilities for the protection and preservation of enterprise assets; there were stoppages of business processes due to a lack of resources, which were not replenished due to the lack of even a minimal amount of stocks and total dependence on one or two suppliers, which turned out to be logistically disconnected from the customer. Savings on the creation of a personnel reserve, which is the task of the subsystem of intellectual and personnel security, led to the fact that the internal transfer or departure abroad of even one key employee involved in ensuring financial and economic security led to the shutdown of the mechanism of its management.

Therefore, the constituent elements that should contain the financial and economic security management mechanism of an industrial enterprise that plans to operate profitably and maintain a sufficient level of competitiveness in the market should be integrated into its traditional architecture as follows (Fig. 3).

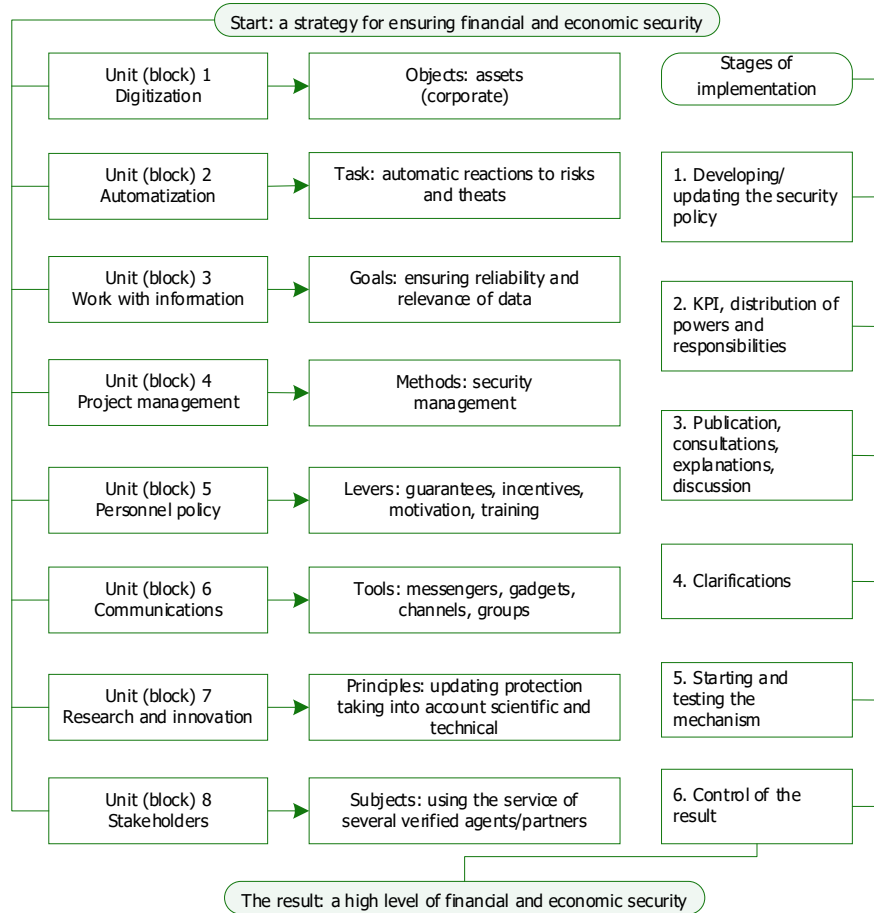


Figure 3. Elements of the mechanism of managing the financial and economic security of the enterprise in the conditions of the Fourth Industrial Revolution and BANI World.

The proposed figure shows how the elements of the financial and economic security management mechanism of enterprises should be formed taking into account the characteristics of the BANI world.

Table 1 summarizes the features of the strategy and mechanism of managing the financial and economic security of enterprises in various models of the world.

Table 1. Features of the strategy and mechanism of managing the financial and economic security of enterprises in different models of the world.

Parameters	SPOD World	VUCA World	BANI World
Characteristics	S steady, P predictable O ordinary, D definite	V volatility, U uncertainty, C complexity, A ambiguity	B brittle, A anxious, N nonlinear, I incomprehensible
Time horizon	10 or more years	5 years	Up to 5 years with constant review
Possibilities of changes and transformations	There is no need for changes	Periodic changes in accordance with the events that have occurred	It is necessary to develop several alternative options for the predicted changes
Response to risks and threats	Forecasting and risk management	Preliminary development of risk response scenarios	Responding to risk upon its occurrence
Staff support	Own employees from different departments, often on terms of combining positions	Specialists are invited, not always with specialized education or our own employees with the most experience	Professionals with the necessary education, on the terms of an employment contract
Closedness/openness	Closed managed systems	Open managed system	Both the controlling and controlled systems are open
Complexity/ fragmentation	Fragmentary security system	Comprehensive security system	A comprehensive security system, however, some elements may have a fragmentary structure, given the speed of their updates

(continued on next page)

Table 1. (continued)

Parameters	SPOD World	VUCA World	BANI World
Digitization	Absent	Partial	Full
Communication	Episodic, as needed	Periodic	Constant, through several channels at once
The role of information/information openness	Only the necessary information is used, the amount of which is limited; limited access to data	A large amount of information that is organized and stored; moderate information openness	A large amount of information is used, which requires constant checking and updating; arrangement is not particularly important due to the constant change of the resource; maximum information openness
Standards and algorithms	There are no standards, but there are established traditions	Standards and algorithms exist but are quickly losing relevance	There is a need to develop standards; algorithms and protocols are used for a number of activities
Planning (foresight)	Mandatory plan development, specific foresight	Short-term planning, conditional (tentative) foresight	Planning is approximate, based on forecasts and assumptions
Assessment	Absent or partial	Comprehensive, with a large number of indicators	Several specific KPIs, the target values of which are constantly reviewed
Control	Control of the final result	Control of intermediate results for their adjustment	Control of all stages of the business process

Therefore, the characteristic features of the strategy of managing financial and economic security in the conditions of martial law, the spread of influence on the sphere of entrepreneurship of the Fourth Industrial Revolution and the realities of BANI World should become the following.

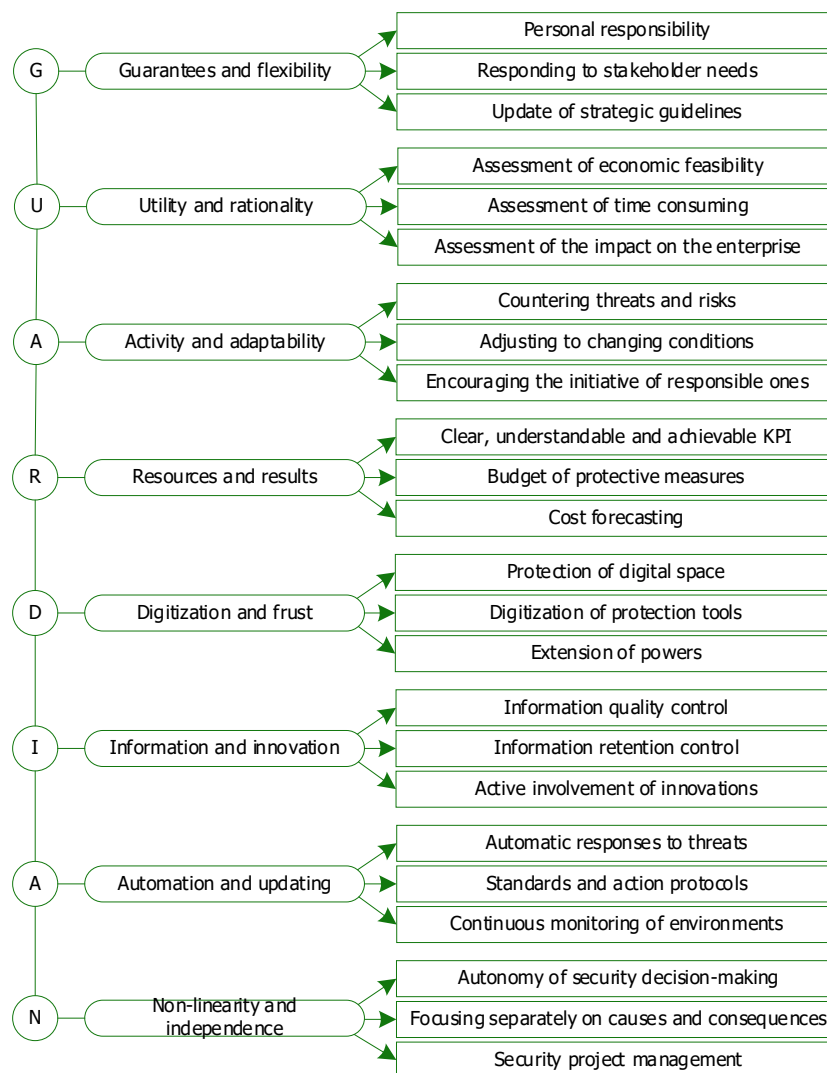


Figure 4. The canvas of the GUARDIAN strategy for the strategic management of the financial and economic security of enterprises in the realities of Industry 4.0 and BANI World.

The economic security management strategy should be developed on the basis of the enterprise's corporate strategy, and not contradict its main goals; at the same time, its time horizon, taking into account the variability of the surrounding environment, should be moderate – roughly three years. Of course, this goes against the traditions of strategic planning. However, a similar combination of operating conditions of business entities that we observe today in Ukraine – war, global pandemic, financial dependence on foreign capital, high level of competition with foreign companies, etc. – was not observed in the developed countries of the world. Therefore, it is worth talking about the possibility of changing the classic postulates of developing strategies for domestic enterprises, taking into account the influence of negative factors in the external environment.

According to Chalyuk Yu. O.: "scientists predict that by 2030, the VUCA method will be replaced by DEST, which will characterize: disorder – a society dominated by disorder, chaos; egocentric – egocentricity of the authorities; suppression – the silencing of information, suppression of the will of the people; turbulent – a turbulent business environment" [22]. We consider such a forecast too pessimistic, however, a rational step in the management plane may be the development of a strategy to ensure financial and economic security, the pessimistic scenario of which will be built on the assumption that another transformation will take place, and domestic enterprises will function in DEST World conditions.

DISCUSSION

In wartime conditions, ensuring financial and economic security at all levels of social and economic systems should rightfully be considered a priority on the economic front. There is no conceptual approach to the strategic management of the system of financial and economic security of business structures in the conditions of post-war recovery. Until recently, the management of critical infrastructure objects used two tools in the fight against risks – insurance and regulatory norms (at the enterprise level – safety norms, regulations, instructions). At the moment, such measures are not enough: business conditions are constantly changing, transforming, and adjusting, reputational risk is growing, and the responsibility of the management of business entities for making managerial decisions at the micro level, and of civil servants at the national level, is increasing.

The development of a new paradigm of strategic management of financial and economic security for the post-war recovery of critical infrastructure enterprises and other economic entities in the conditions of BANI World will allow expanding the limits of application of the tools of effective security-oriented management. In order to successfully optimize traditional approaches to financial and economic security management in the post-war period, it is necessary to transform the mechanism of financial and economic security management to ensure its readiness to counteract the impact on the enterprise's corporate resources of threats of military aggression, global pandemics, the spread of the Industry 4.0 trend and realities models of the BANI world.

Fragility, as a characteristic of the modern world, leads to the fact that the strategy of managing financial and economic security must be constantly reviewed and updated. Its time horizon cannot be more than 5 years, it is advisable to recommend a three-year period, taking into account the variability of the circumstances of the external environment. Another acceptable option is the development of a 5-year strategy with an annual evaluation of intermediate indicators of achieving the desired results and making adjustments. The concern largely concerns personnel involved in safety-oriented management. Uncertainty in one's own future negatively affects the level of productivity, loyalty, and a manifestation of leadership qualities and initiative. Therefore, it is expedient to offer specialists in the management of financial and economic security to formalize long-term employment relations, taking into account the significance of their work for the general financial and economic condition and profitability of the enterprise. Non-linearity is manifested in the absence of direct connections between an event and a consequence that can be clearly and quickly traced: for example, the impact of a risk may not be manifested in the loss of assets, but, for example, lead to the deterioration of business reputation, which will later become the reason for non-receipt investment. This tendency does not allow to identify all risks in advance, and to plan the budget for compensation of their consequences, since they can be different, including intangible ones. Ambiguity is reflected in the processes of establishing target guidelines for ensuring financial and economic security, as some innovations, and modernized business processes remain unclear to managers, as well as certain stages of production processes, work with information, interaction with suppliers, etc. Therefore, it is advisable to involve highly specialized specialists in certain stages of the process of managing financial and economic security and strategic planning of the security-oriented functioning and development of the enterprise.

CONCLUSIONS

Certain flaws in the mechanism of managing the financial and economic security of enterprises, which became noticeable to managers in wartime conditions, are characteristic of all its elements, such as objects, subjects, aims, tasks, methods, levers, tools, and principles. Directions for updating the financial and economic security management mechanism of the enterprise in the conditions of Industry 4.0 and BANI World must take them into account. The elements of the financial and economic security management mechanism of the enterprise in the conditions of the Fourth Industrial Revolution and BANI World must be updated in accordance with eight blocks of transformations: digitization, automation, work with information, project management, personnel policy, communications, research and innovation, stakeholders.

The main characteristics, which, in our opinion, should correspond to a modern strategy for managing financial and economic security, are recorded in the GUARDIAN model (by the first letters of the proposed characteristics). Their list includes guarantees and flexibility, activity and adaptability, resources and results, digitalization and trust, information and innovation, automation and actualization, nonlinearity and independence.

Prospects for further research are seen in the development of the GUARDIAN strategy in the form of a completed document that can be presented to the stakeholders of enterprises for discussion and as a basis for information support for the long-term functioning of the mechanism for managing the financial and economic security of domestic economic entities during the post-war recovery of the economy of Ukraine.

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СТРАТЕГІЯ ТА МЕХАНІЗМ УПРАВЛІННЯ ФІНАНСОВО-ЕКОНОМІЧНОЮ БЕЗПЕКОЮ ПІДПРИЄМСТВ В УМОВАХ ВІЙНИ, ІНДУСТРІЇ 4.0 ТА СВІТУ BANI

Метою статті є встановлення характерних рис і ознак, притаманних механізму та стратегії управління фінансово-економічною безпекою, які мають використовуватись вітчизняними підприємствами у воєнний період та в період післявоєнного відновлення в умовах поширення тенденцій Індустрії 4.0 у реаліях світу BANI. Установлено вади організації та функціонування механізму управління фінансово-економічною безпекою, що почали чітко простежуватися під час роботи суб'єктів господарювання в умовах воєнного часу. Запропоновано додаткові елементи механізму управління фінансово-економічною безпекою підприємства в умовах Індустрії 4.0 та BANI World. Конкретизовано особливості стратегії та механізму управління фінансово-економічною безпекою підприємств у різних моделях світоустрою. Розроблено канву стратегії ГАРДІАН для реалізації завдань стратегічного управління фінансово-економічною безпекою підприємств та обґрунтовано доцільність її використання в реаліях Індустрії 4.0 та BANI World.

Розробка нової парадигми стратегічного управління фінансово-економічною безпекою для післявоєнного відновлення суб'єктів господарської діяльності в умовах BANI World з урахуванням трендів Четвертої промислової революції дозволить розширити межі застосування інструментарію ефективного безпекоорієнтованого менеджменту. Для успішної оптимізації традиційних підходів до управління фінансово-економічною безпекою в післявоєнний час необхідно трансформувати механізм управління фінансово-економічною безпекою для забезпечення його готовності до протидії впливу на корпоративні ресурси підприємства загроз військової агресії, глобальної пандемії, поширення тенденції Індустрії 4.0 та реалій моделі світу BANI.

Ключові слова: управління, фінансово-економічна безпека, механізм, стратегія, Четверта промислова революція, Індустрія 4.0, ризик, BANI World

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