

Information Security in Project Management for the Financial and Budgetary Capacity of the National Economy

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Abstract

This publication is devoted to substantiating the feasibility of introducing information security into the organizational and economic mechanism of project management to ensure the financial and budgetary capacity of the national economy through the filling of the state budget. The relevance of the chosen topic for research is determined by the complex conditions of uncertainty and risk in which the countries of the world find themselves at the present stage of transition to the digital economy and the active introduction of information technologies, which are accompanied by danger and can lead to irreversible consequences. For Ukraine's economy under martial law, the introduction, implementation, and subsequent management of high-performance projects will contribute to the growth of state budget revenues. We have identified the centers for the formation and implementation of information security as a mandatory component of the organizational and economic mechanism for effective project management through the introduction of information technology in the following instruments: administrative, financial, credit, market, innovation, and investment. It is established that since information security has a high level of intensity, systemic, and direct impact on the project management process, it should be ensured at all stages of project development, which affects its effectiveness and the efficiency of business structures. The conceptual model of the national economy recovery developed by us can be used at the macro level (when substantiating the directions of state policy) and at the micro level (when developing methodological approaches to strategic planning of business structures based on the introduction of information security policy in all its spheres).

Keywords

Information security, project management, financial and budgetary capacity.

1. Introduction

When planning the structure of this study, we proceed from the fact that the process of restoring the country's economy and ensuring its financial and budgetary capacity is impossible without the introduction of innovative projects in the organizational, managerial, production, sales, financial and banking, and other areas. Managing such projects at the new digital stage of technological development requires mandatory information security, as information security is the basis for the competitiveness of business structures. Currently, the supply of innovative projects in highly developed countries is growing, which

is due to the continuity of the research and development process. In some countries, the supply of innovative projects can significantly exceed all other projects combined. Therefore, there is a kind of international specialization in certain types of projects, which, by the way, are not always implemented in their territory. Instead, such projects can be initially focused on other countries with appropriate conditions: favorable regulatory framework, availability of interested business structures for implementation, market readiness for a new offer, etc. The latter plays a crucial role, as it indicates the possibility of practical implementation of innovations at the level of individual business structures, regional

CPITS-2023-II: Cybersecurity Providing in Information and Telecommunication Systems, October 26, 2023, Kyiv, Ukraine

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CEUR Workshop Proceedings (CEUR-WS.org)

markets, and the national economy as a whole. It is worth noting that successful projects sometimes stop at the macro level and do not encourage developers to continue research or improve it. It is commonly believed that the reason is the lack of experience, and professional education of employees, and the lack of desire of management personnel to find new ways of development [1–2]. In our opinion, the situation is not unambiguous. Statistics show that the procedure for implementing an innovative project takes from one month to one year, and requires preparation of the project at the stage of stagnation of the previous project, the involvement of additional specialists, scientists, and even public figures. Overestimation of own development capabilities without periodic implementation of innovative projects, while underestimating proposals from specialized companies, also hinders further development of business structures. In addition, additional costs are required to protect the main idea, project details, and implementation procedures, which can be used by competitors for their business purposes or to deteriorate the manufacturer's reputation in the market. Most of these problems can be avoided by paying attention to information security measures at the organizational preparatory and other stages of project management.

It is necessary to pay attention to the administrative and financial responsibility of specialists for non-compliance with internal regulations and information security. This determines the relevance of our study and its timeliness.

The results of scientific research on information security in project management under conditions of uncertainty and risk, as well as further prospects for its development, will be useful for ensuring the balance of sectors of the national economy and eliminating structural imbalances. This will contribute to the development of socio-economic relations, taking into account the peculiarities of the national economic system, and will allow us to follow a sound economic policy, the main focus of which is the development of the business environment and ensuring the country's investment attractiveness at the global level.

2. Problem Formulation

The introduction of innovative projects for the modernization of traditional industries and the development of new types of entrepreneurship helps to ensure the country's financial and budgetary capacity, and gradually transform the economy to the principles of energy and resource conservation, digital technologies, and new methods of business organization and management and ensure territorial development [3]. Thus, certain industries are being revitalized, and imbalances in sectoral and regional revenues to the state budget are being balanced. However, the complexity of economic and financial security, which requires the introduction of specific cybersecurity and information security measures at the level of business structures, provokes additional difficulties not only because of the limited specialized knowledge of employees. This often occurs in business structures with a high level of personnel policy, where, instead, insufficient attention is paid to the security component at the level of the organizational and economic mechanism of enterprise and project management. The reason may also be the action of external factors, which determines the cyclical dynamics of territorial development [4]. We believe that an effective organizational and economic mechanism of project management aimed at implementing innovative production and sales relations, extending the life cycle of goods/business will allow combining the economic and social components and implementing competitive business ideas to meet the social needs of the population.

In our scientific hypothesis, we assume that there is a close effective link between an effective organizational and economic mechanism of project management with mandatory information security and the mechanism of forming the state budget of the country, and its financial and budgetary capacity. In this publication, we plan to prove the hypothesis, analyze the links between the mechanisms, and justify the feasibility of implementing an information security policy in business structures.

3. Analysis of Research and Publications

The following scholars have studied project management issues over the years: O. Zachko [5], N. Krasnokutska, T. Osetrova [6], J. Zhigalkevych, V. Chukhlib [7], and others. However, they paid attention to more general issues of project management, focusing on the stages of management, specific methods, and tools. Instead, the information component was often overlooked, despite the high rate of digitalization of the national economy and the impact of cyber threats on the functioning of business structures. Ensuring the information security of management and technological processes, keeping trade secrets of interaction between business structures and the market environment, etc. remains relevant. The analysis of the results of the study of information security issues shows that the range of interconnections at the micro level and their sectoral focus is limited. Thus, I.O. Bashynska and A.V. Khristova insist on the mandatory introduction of information systems into project management processes and indicate that they will require changes in such processes and the structure of the enterprise and the functions of its divisions. They emphasize the systematic approach that we will use in the future when determining the degree of influence of information security policy on management [8]. A. Aseva A. and O. Shushura study the risks of confidentiality in information security [9], and N. Kukharska and O. Polotai established the connection between the continuity of information security and the continuity of the organization's activities [10]. In previous years, we have also studied the characteristics of the security environment for microbiological objects [11], the security of biotechnological processes [12], and economic security at the macro level through the massive introduction of innovative technologies in the functioning of business structures in the agricultural sector of the economy [13]. However, these publications only confirm the sectoral limitations of our research and require the search for methodological solutions to implement information security in the management of any project without specifying the industry, type of activity, implementation period, etc.

4. Methodology of the Information Security in Project Management for the Financial and Budgetary Capacity

4.1. Interrelation of the Project Management Mechanism and the Mechanism of Filling the State Budget

The functioning of these mechanisms is undoubtedly important for the successful socio-economic development of the region and the country as a whole and, as a result, for increasing tax revenues to the state budget and the country's financial and budgetary capacity. Given the lack of a unified approach to the interpretation of the concept of "financial and budgetary capacity of the country," we offer our formulation based on the concepts of "financial capacity" and "budgetary capacity." Considering capacity as the ability to do something or the possibility or availability of favorable conditions for something, the financial and budgetary capacity of a country logically means its ability to ensure the necessary financial conditions, to form and use its budget [14]. Thus, financial and budgetary capacity is linked to the country's economic security through its components: financial (including budgetary) and information security. Thus, an effective interconnection of mechanisms will improve the business climate in the country; combine the interests of business structures and government institutions; stimulate business initiatives using available and available resources; and ensure productive employment of the population through the creation of new jobs or self-employment. The mechanism for the formation and use of state budget funds, its structural elements, and the types of links between them must meet the conditions in which the country is located, adapt to changes, and solve its tasks. This issue is extremely relevant to the Ukrainian economy, and its solution requires the accumulation and use of all resources, including intellectual ones. An interesting example is the example of countries that have implemented projects that can provide significant revenues in the short term, such as real estate transactions, and new types of trade operations (flip, carsharing, dropshipping, etc.).

4.2. Information Security in the Structure of the Organizational and Economic Mechanism of Project Management

We believe that the interconnection and interdependence between the effective implementation of innovative projects and the recovery and further development of the national economy in the difficult conditions of the economic crisis is best demonstrated. In the context of military aggression, destruction of production and trade enterprises, development of international economic integration, activation of economic reforms in Ukraine, and the changes in its supply chains, the importance of interaction between business, government, and science is growing. The latter offers solutions that provide quick and long-term results today.

Traditionally, a project is understood as a

specific task that has input data and expected results, which are interconnected by certain ways of achieving them, and project management are considered to be its effective implementation under certain conditions, including resource and time constraints. Analyzing the processes of project implementation in practice and methods of project management at the micro and macro levels, we have determined their continuous nature and are limited only by the terms of economic and social feasibility. However, some projects operate for a long time, finding reserves to extend their life cycle. Therefore, the mechanism should contain effective project management methods, and efficient fiscal tools, and take into account changes in the political situation and the environment that ensure balance in the socio-economic and environmental spheres of public life, despite the uncertainty of conditions and sometimes turbulence of economic processes (Fig. 1).

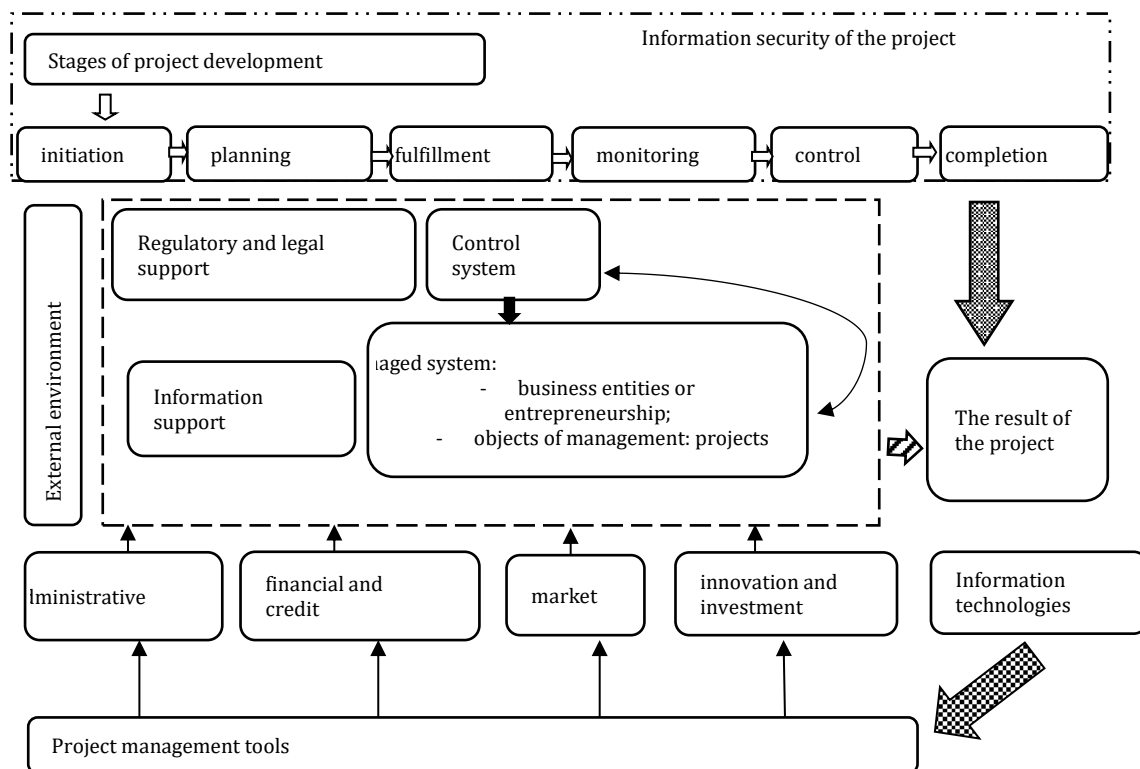


Figure 1: Organizational and economic mechanism of project management (developed by the authors)

Undoubtedly, effective project management allows for balancing the state budget and the budgetary potential of the regions, strengthening the interaction between state/local authorities and businesses, finding new sources of income and methods of control over the implementation of the revenue and expenditure side of the budget [15].

The mechanism, which is the interdependence of the managing and managed systems, is influenced by the external environment, which is limited by the action of administrative, financial, and credit instruments, market, and innovation - investment character based on modern information technologies. Information

technologies allow to creation of conditions for the information security of the project at all its stages from initiation to completion and determination of the result. The functioning of such a mechanism requires the formation of an internal company policy, which must include an information security policy that is integrated into other types of business policies: management, production, commercial, financial and budgetary, personnel, environmental, etc. [16]. Given the multifactorial nature of the organizational and economic mechanism, dependence on the external environment, and project results, we consider it appropriate to consider the impact of environmental factors in terms of intensity, systematicity, and indirectness (Table 1).

Table 1
Factors of environmental influence on project management (compiled by the authors)

Factors	Criteria for the influence of factors					
	Intensity		Systematic formation and influence		Indirectness of formation and influence	
	active	passive	systemic	stochastic	straight	indirect
Socio-cultural environment						
Economic	+		+		+	
Demographics		+	+			+
Educational	+		+		+	
Ethnicity		+	+		+	
Ethics		+		+		+
Religious		+		+		+
International political environment						
Laws and customs	+		+		+	
Political situation	+		+		+	
Organizational environment						
Organizational culture		+	+		+	
State standards	+		+		+	
Infrastructure	+		+		+	
Human resources and management	+		+		+	
technology						
Corporate information and analytical system		+		+	+	
Information security policy	+		+		+	
Market conditions	+			+	+	
Communication channels in business structures						

Thus, the external environment of the project is represented by a combination of sociocultural, international political, and organizational environments. We believe that information security and cybersecurity belong to the organizational environment and are assessed by the criteria of influence as an active or intense factor that has a systemic direct impact on the process of project management, which accordingly affects the mechanism of national economic recovery and its financial and budgetary capacity. In the future, we have the opportunity to move on to the definition of marker indicators for assessing the probability of the risk of an information threat to the implementation of projects [17].

4.3. Conceptual Model of National Economic Recovery through Effective Project Management

Thus, we are gradually moving on to substantiate our proposed conceptual model of national economic recovery through effective project management (Fig. 2). When building the conceptual model, we used the developments of E.V. Kolesnikova et al. on the model of the project management subject area. Such a model consists of a system of indicators of project value created, a database of existing similar projects, a database of experience gained, tools to influence the external environment, namely: incentives, regulators, and restrictions; as well as the unique components proposed by them for the first time—the model of system change and the basic project [18]. Some components of this model were taken into account earlier when developing the organizational and economic mechanism of project management (Fig. 2).

4.4. Mechanism of Budget Policy Implementation

We consider the budget mechanism to be an intermediate component of the model (Fig. 3), which is a set of specific forms of budgetary relations, ways, and methods of mobilizing and spending budgetary funds [12]. The structure of the budget mechanism includes the following components: forms of budget provision, methods and tools budget regulation, budget incentives and sanctions, and organizational forms. The functioning of the budget mechanism affects the implementation of

budget policy as a set of measures aimed at attracting, distributing, and using state budget funds [19–20].

Thus, the goals of the budget policy are to ensure the development of a competitive national economy; the gradual increase of

social standards to overcome poverty and bring them closer to European standards; ensure budget balance, and implement a balanced debt policy, which is influenced by external and internal factors (Fig. 3).

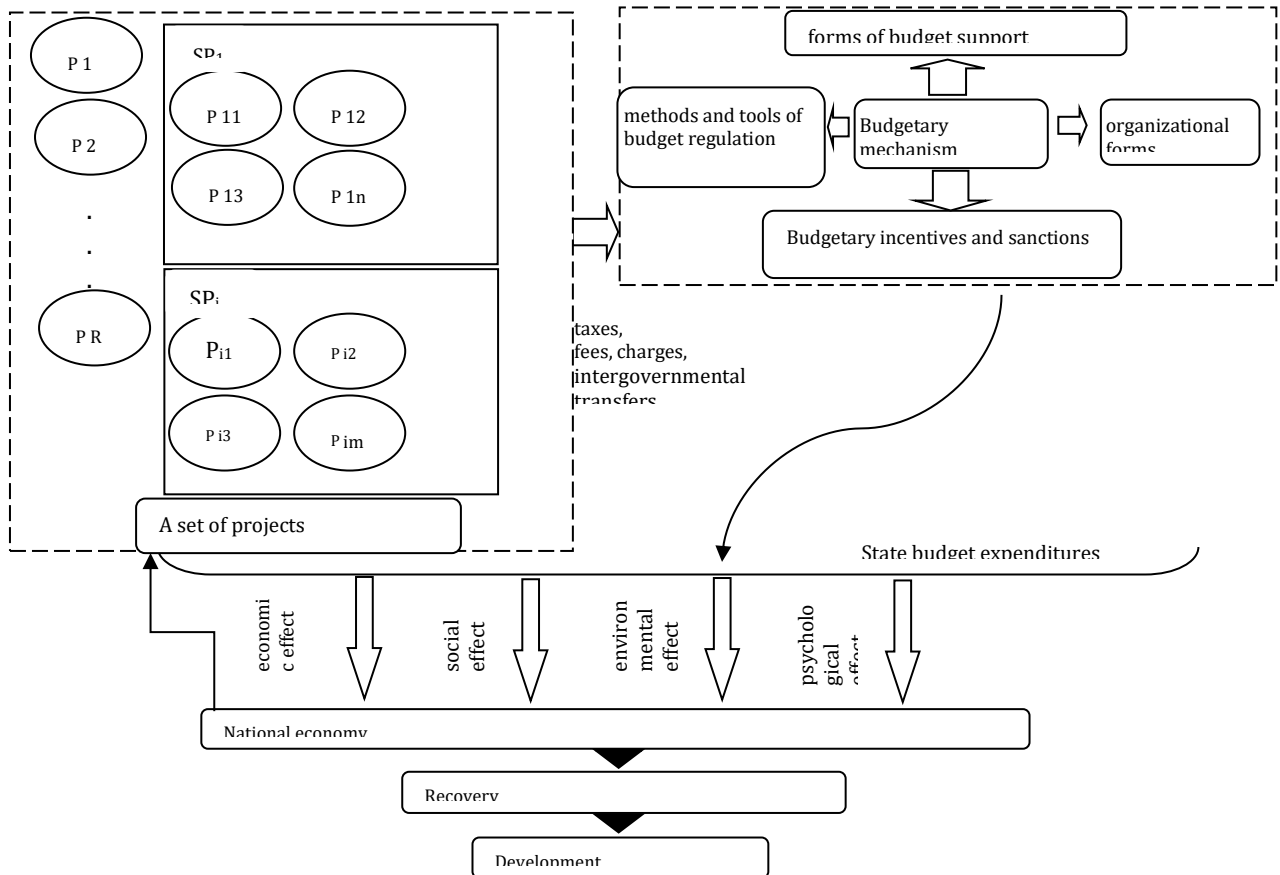


Figure 2: Conceptual model of national economic recovery through effective project management

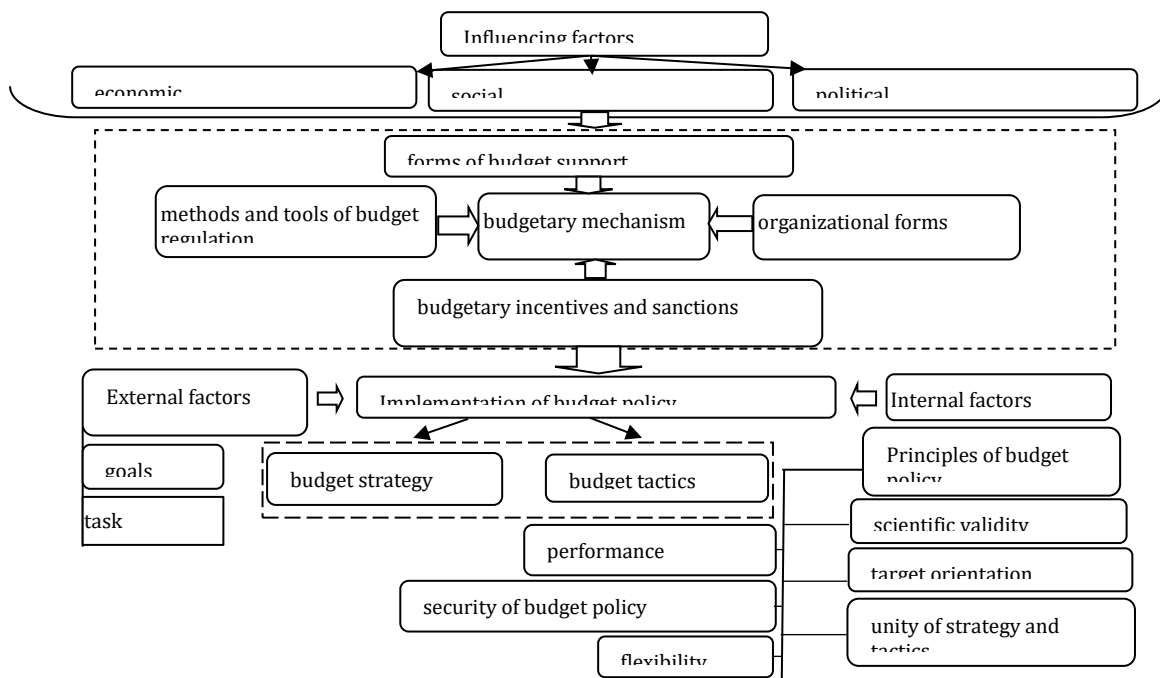


Figure 3: The mechanism of budget policy implementation

External factors include the state's dependence on the system of international economic relations, its integration into regional associations, and the world economic system [21]. Internal factors include the state of development of the national economy, its social sphere, organization of money circulation, stability of the national currency, the method of its conversion, and the national system of financial, economic, and credit relations. Depending on the timing and nature of the tasks, budget policy activates budget strategy or budget tactics. The result of the effective implementation of the budget policy and the functioning of the budget mechanism is a set of effects: economic, social, environmental, and psychological on the principles of systematicity and synergy (Fig. 3) [22]. Thus, the result of the implementation of individual projects and their portfolios is the filling of the state budget through taxes, fees, and intergovernmental transfers [23–24].

5. Conclusion

Thus, we have formulated and proved in a formalized manner the mandatory nature of information security as a component of the organizational and economic mechanism for effective project management at the present stage. The centers for the formation and implementation of information security through the introduction of information technologies in the following instruments are identified: administrative, financial, credit, market, innovation, and investment [25–26]. It has been established that information security should be ensured at all stages of project development, which affects the effectiveness and efficiency of business structures. The thesis about the multifactorial nature of the organizational and economic mechanism of project management and its dependence on the external environment, represented by a combination of sociocultural, international political, and organizational sub-environment, allowed to analyze the influence of factors by the following indicators: intensity, systematicity, indirectness of influence. It is concluded that the information security and cybersecurity factors belong to the organizational environment, and have a high level of intensity, systematic, and direct impact on the project management process.

The proposed conceptual model of national

economic recovery is based on the hypothesis that it is interconnected with the organizational and economic mechanism of project management (project portfolio) and the mechanism of implementation of budget policy.

Such a model can be used to substantiate the directions of the state policy of restoration and development of the national economy and to develop methodological approaches to strategic planning of the functioning of business structures based on the introduction of information security in all its spheres.

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