

## CORPORATE RESOURCE MANAGEMENT SYSTEM OF BUSINESS PROJECTS UNDER THE SUSTAINABLE DEVELOPMENT CONDITIONS

**Oksana Zybareva<sup>1</sup>, Pavlo Shylepnytskyi<sup>2</sup>, Svitlana Belei<sup>3</sup>, Nataliia Korzhenivska<sup>4</sup>, Iryna Kravchuk<sup>5</sup>**

<sup>1</sup> Dr. Sc. Prof., Yuriy Fedkovych Chernivtsi National University, Kotsyubinsky str. 2, Chernivtsi, Ukraine, E-mail address: [o.zybareva@chnu.edu.ua](mailto:o.zybareva@chnu.edu.ua)

<sup>2</sup> Dr. Sc. Prof., Yuriy Fedkovych Chernivtsi National University, Kotsyubinsky str. 2, Chernivtsi, Ukraine, E-mail address: [p.shylepnytskii@chnu.edu.ua](mailto:p.shylepnytskii@chnu.edu.ua)

<sup>3</sup> PhD, Assoc. Prof., Yuriy Fedkovych Chernivtsi National University, Kotsyubinsky str. 2, Chernivtsi, Ukraine, E-mail address: [s.belei@chnu.edu.ua](mailto:s.belei@chnu.edu.ua)

<sup>4</sup> Dr. Sc. Prof., Educational and Scientific Institute of Business and Finance Podillia State University, Shevchenko str. 12, Kamianets-Podilsky, Ukraine, E-mail address: [korzhenivskanl@pdatu.edu.ua](mailto:korzhenivskanl@pdatu.edu.ua)

<sup>5</sup> PhD, Assist. Prof., Yuriy Fedkovych Chernivtsi National University, Kotsyubinsky str. 2, Chernivtsi, Ukraine, E-mail address: [i.kravchuk@chnu.edu.ua](mailto:i.kravchuk@chnu.edu.ua)

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### Abstract

In the article, the main theoretical aspects of the functioning of the corporate resource management system of business projects under the conditions of sustainable development are examined. The purpose of the article is to improve the existing approaches to the project resource management based on sustainable development in the conditions of the formation and functioning of the corporate project management system. The main approaches to the implementation of the corporate resource management system of business projects are considered. The stages of development of the corporate project resource management system have been determined. The main components of the corporate resource management system of business projects are substantiated. The task of integrating the methodology of the project management and the sustainable development concept at the level of business structures was determined, the consideration of the sustainable development aspects in the existing standards of the project management was investigated. The components of the project resource management system that require adaptation to the sustainable development goals are highlighted. To assess the economic, social and environmental efficiency of business projects in the context of the sustainable development principles, a system of the project selection criteria is proposed. The method of evaluation and selection of a rational business project based on the sustainable development principles is proposed.

**Keywords:** *business structure, corporate management system, project, project management, sustainable development.*

**JEL Codes:** *K22; L20; M14; M21; O10; O44; Q01*

### Introduction

Sustainable development is one of the most important concepts of modern times, the implementation of which takes place at all levels of management, since its main tasks include achieving the well-being of the population without harming future generations, economical use of natural resource potential, compliance with environmental norms and standards, social and cultural development. In corporate management, the implementation of the sustainable development principles covers the development of directions for the company's

strategic development, the development of a system of indicators by functions and business processes, as well as the transformation of the project management in accordance with the requirements of the concept. Acting as an integral part of the implementation of the company's strategy, management of the business project resources must be aligned with the values and goals of the company, which determines the need for the formation of the project management methodology capable of forming clear, measurable requirements in view of the sustainable development goals.

The purpose of the article is to improve project resource management approaches based on sustainable development in the conditions of the formation and functioning of the corporate project management system.

### **Literature review**

The issue of improving the theoretical and methodological foundations of the project management, introduction of the project management approaches into the functioning of enterprises, as well as the corporate resource management system of business projects are in the center of attention of many scientists.

Scientists Abloushi B. et al. (2023) devoted their research to the study of the role of green innovations in the corporate sustainable development of manufacturing companies. Within the scope of scientific results Cnen, Zhong (2021), the features of environmental management in the sustainability context of the company's development are revealed. The purpose of research Hekmatsyar D. et al. (2023) is to develop business processes for sustainable procurement based on the identification of political and institutional factors.

Within the framework of the article of Liu Yiyang et al. (2023), the corporate sustainable development through social responsibility, environmental activities and stakeholder management are demonstrated. Scientists Marhasova V. et al. (2023), Nikiforov P. et al. (2022) investigated the impact of digitalization on sustainable development of Ukraine with an emphasis on the educational component, and also analyzed the conceptual principles of regulating the state policy of the development of public-private partnerships. The result of research by Milošević I. et al. (2023) is an analysis of business changes and benefits for project-oriented companies in the context of corporate

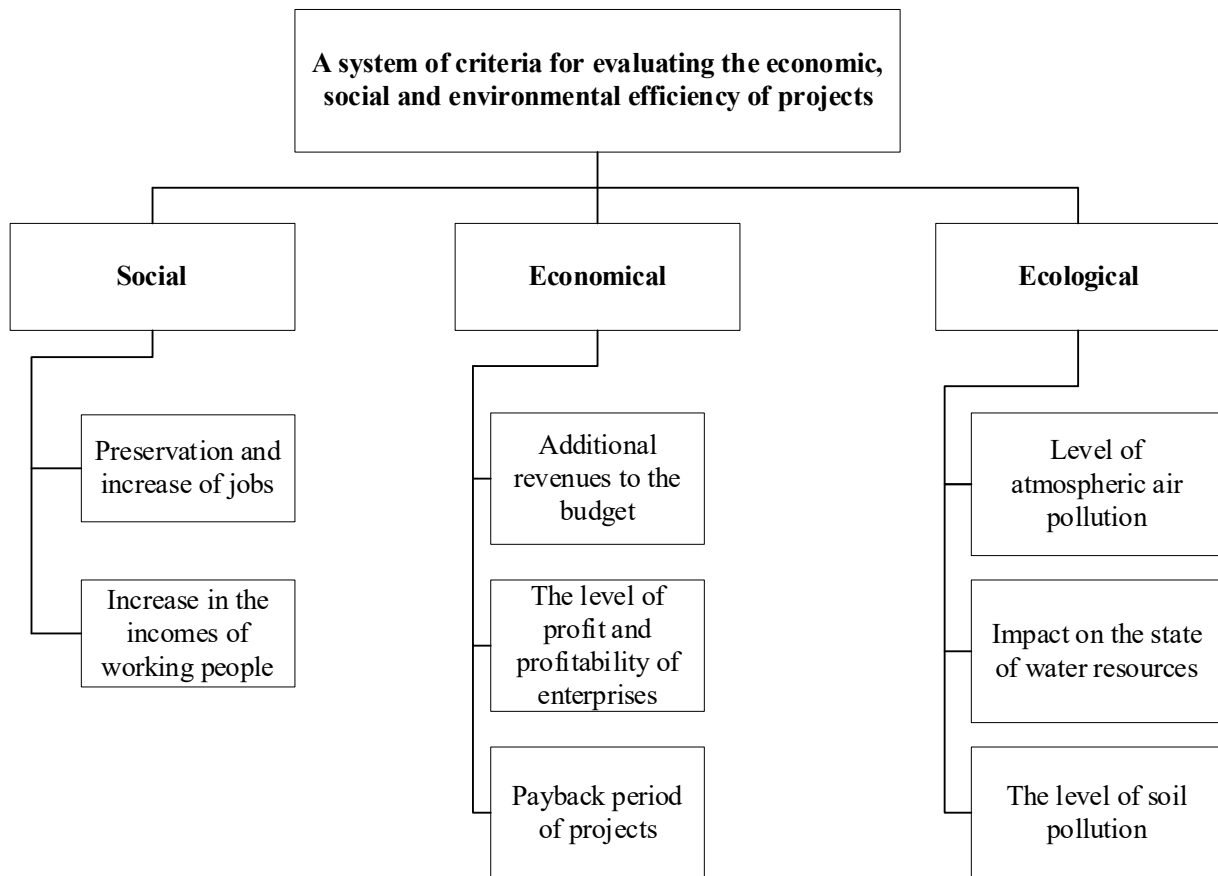
social responsibility, the rise of the circular economy and the implementation of the sustainable development concept.

Research by Rendtorff Jacob (2023), which examines the corporate social responsibility and social entrepreneurship in the context of creating a socially responsible innovation, is of practical importance. Scientists Su Kun et al. (2024) are investigating the optimization of the corporate social responsibility management system based on service-oriented architecture based on sustainability. Article Widyanti Rahmi et al. (2024) examines the role of green knowledge management for achieving corporate sustainable development. Scientific work Yang Mei (2024) is devoted to determining the influence of the corporate financial accounting management system on corporate innovations within the framework of sustainable development strategy.

However, globalization processes in the economy have caused the development of corporate business structures, and the implementation of a project-oriented approach to corporate management is a widespread trend among enterprises and organizations. This determines the importance of improving existing approaches to the formation of a corporate project resource management system, taking into account the SDGs.

### **Methodical approach**

An important component of the corporate project management is determining the effectiveness of projects for project selection according to the preliminary assessment. To assess the economic, social and environmental efficiency of business projects in the context of the sustainable development principles, we propose the following system of criteria for their selection (Figure 1).



**Figure 1. System of the project selection criteria**

\*Source: developed by the authors.

In view of the above, the best option for a business project can be selected as follows. For comparison, we provide options  $s_1, s_2, \dots, s_n$ , where  $n > 2$ , characterized by indicators  $X_1, X_2, \dots, X_m$ , where  $m > 2$ . We propose to choose the best option from the  $n$  evaluated ones, which provides the minimum deviation of  $R_j(p_i)$  from the optimal values for all indicators, i.e.

$$\sum_{j=1}^m R_j(s_i) \rightarrow \min \tag{1}$$

For each indicator, their weighting factors are determined. If the indicators are equivalent, that is, their weighting factors are the same, the compromise option  $s$  will be the project with the minimum relative losses  $R_j(s,)$ , expressed by the ratio;

- for normal indicators, among which preference is given to the maximum value:

$$R_j(s_i) = \frac{x_j^0 - x_{ij}(s_i)}{x_{j\max} - x_j^0}, \tag{2}$$

- for inverse indicators, among which preference is given to the minimum values:

$$R_j(s_i) = \frac{x_{ij}(s_i) - x_j^0}{x_{j\max} - x_j^0}, \tag{3}$$

where  $x_j$  - the optimal value of the  $j$ -ro indicator;

$x_{j\min}, x_{j\max}$  - respectively, the worst and the best value of the indicator from the entire number of selected ones.

The selection of the optimal value of indicators  $x$  can be carried out in two ways. With the first of them,  $x_j^0 = x_j$ , where  $x_j$  is the specified (ideal) value of the  $j$ - indicator. With the second method, which in practice gives

more reliable results, the best indicator on a given set of options is taken as optimal (respectively  $x_{j\max}$ ,  $x_{j\min}$ ). Then formulas (2) and (3) will have the form:

- for normal indicators:

$$R_j(s_i) = \frac{x_{j\max} - x_{ij}(s_i)}{x_{j\max} - x_{j\min}} \quad (4)$$

- for inverse exponents:

$$R_j(s_i) = \frac{x_{ij}(s_i) - x_{j\min}}{x_{j\max} - x_{j\min}} \quad (5)$$

Accordingly, the final (compromise) option is determined according to the generalized criterion:

$$R_j(s_i) = \sum_{j=1}^{m_1} Y_j \frac{x_j^0 - x_{ij}(s_i)}{x_j^0 - x_{j\min}} + \sum_{j=m_1+1}^m Y_j \frac{x_{ij}(s_i) - x_{j^0}}{x_{j\max} - x_j^0} \quad (6)$$

where  $m_i$  – the number of normal indicators.

The following is proposed as a selection criterion:

$$P_i = f(O_i) \rightarrow \max, \quad (7)$$

where P – accuracy of the result;

O – expert assessment of the indicator;

i – number of experts.

## Results

The modern trend in the corporate management development is characterized by the implementation of a project-oriented approach to the formation of business systems. The initial stage of the formation of the

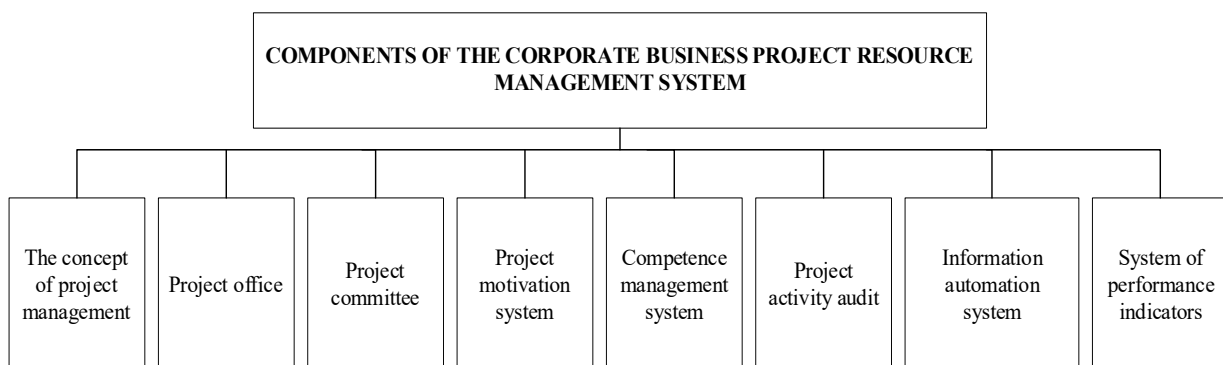
business structure involves the formation of the corporate project management system, the purpose of which is the effective management of innovation and investment projects implemented in the company. As noted by the majority of leading scientists, the corporate project resource management system performs the function of the organizational, economic and information management support aimed at the effective implementation of project activities of the enterprise.

The implementation of the corporate resource management system for business projects is usually based on two approaches:

- revolutionary, when all divisions of the business structure develop simultaneously; implies the presence of serious support from top management to overcome organizational resistance to change;

- evolutionary, when the development of the project management system covers selective units of the organization. This approach is characterized by a lower degree of organizational resistance, but in the future, greater changes in the elements of the organizational structure are possible. The choice of a specific approach depends on the specifics of the industry to which the enterprise belongs, the development level of the business process management system, the organizational culture and the management's policy on supporting changes.

Let's define the main components of the corporate resource management system of business projects (Figure 2).



**Figure 2. Components of the corporate resource management system of business projects**

*\*Source: generated by the authors.*

A significant role in the implementation of the corporate project resource management system is played by the corporate culture of the enterprise, the influence of which is manifested when forming the need to implement project changes, as well as the atmosphere of trust in the project management team and in the interaction between management and team members. The formation based on the developed corporate culture of the project management office will contribute to the structuring of information in a single database.

The organizational component is one of the main parts of the corporate project resource management system. However, the organizational and legal mechanism, on the basis of which the roles and requirements for project office participants are regulated, is important in the corporate resources management. Training and education should be based on the understanding that personnel must be competent in performing the planned work, which involves the formation of technical and social competencies. Technical competence is a set of existing theoretical knowledge in the project management, while social competence is characterized by the presence of skills and approaches to the formation of an effective communication system between employees and structural units by distributing and using financial, material and information resources.

In the process of development, the corporate project resource management system goes through certain stages, each of which is characterized by its own strategic directions of development, management and decision-making technology, and the level of qualification of the project team members. The transition to the next stage of development ensures the increased competitiveness of the corporate project management system, optimal allocation of resources and adaptation to market conditions. The process of establishing the corporate business project management system depends on the existing maturity model

that describes organizational development. Depending on the defined maturity model of the industry, it becomes possible to purposefully achieve the set goals and the planned level of efficiency in project management. The purpose of the maturity model is to provide a methodology for assessing the capabilities of the corporate project management system and improving maturity in the project management.

The formation of a corporate project resource management system includes:

- changes in the organizational structure of the company;

- development and formation of the organizational structure of the project management, which ensures the implementation of all stages of the project management, performs the functions of coordination and control over compliance with project deadlines, the use of budgets of all levels, and also allows to control the process of project implementation at all key points;

- formation of the project management information system, the purpose of which is the information exchange and consolidation of data on the implementation of project management works at all levels.

- development of the unified corporate project management methodology.

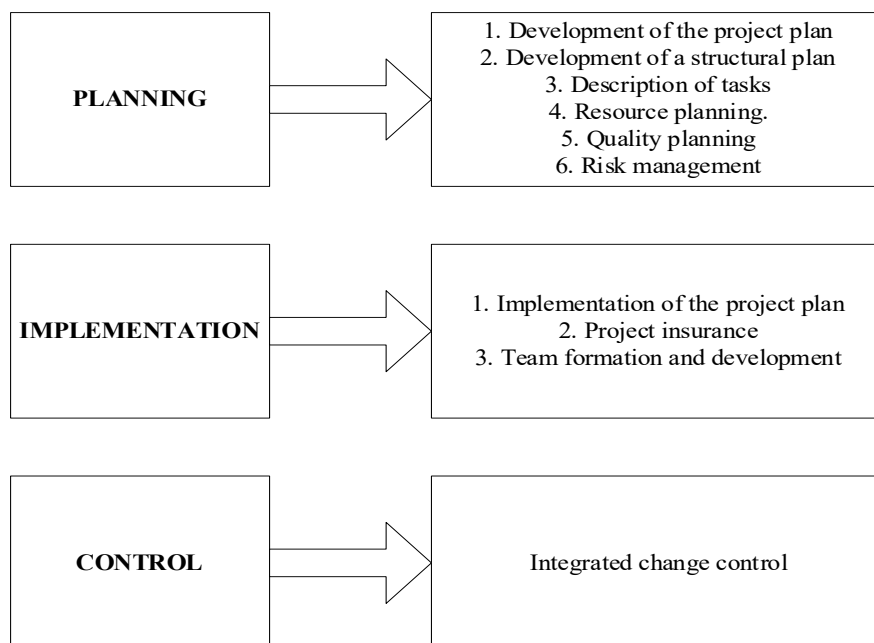
The general sequence of stages of the implementation of the corporate project resource management system is as follows:

- 1) allocation in the organizational structure of the project office management and ensuring its integration with the internal environment;

- 2) definition of templates and the project management methodology, formation of a list of priority projects;

- 3) monitoring with reporting for the enterprise management.

Based on the classic sequence of project management stages, we have identified the main components that require adaptation to the sustainable development principles (Figure 3).



**Figure 3. Components that require adaptation to the sustainable development principles**

*\*Source: compiled by the authors.*

Let's consider the application of the proposed methodology on the example of PJSC “Pozhmashina” to select one of the innovative projects to be implemented at the

enterprise. We will form a system of the project efficiency indicators according to the criteria of economic, social and environmental efficiency (Table 1).

**Table 1. Assessment indicators of the project efficiency**

Indicator	Projects		
	Project 1	Project 2	Project 3
Increase in the number of jobs,%	5	2	2
Increase in incomes of working people, %	10	8	8
Payback period, years.	3	3.5	2
Average rate of income	0.54	0.48	0.6
Net present value, thousand USD	86	124	94
Internal rate of return, %	48.7	42.3	38.4
Degree of atmospheric air pollution, %	-	-	-
Impact on the state of water resources, %	1	0,5	0,5
Impact on the state of land resources,%	0.5	-	-

*\*Source: generated by the authors.*

From the given system of indicators, the payback period and environmental impact indicators are inverse, all others are normal. We will determine the worst and best value of each indicator using the method of expert

evaluations, the essence of which is a set of points of view of qualified specialists (experts), formulated in the form of evaluations of the object in a meaningful, qualitative or quantitative form (Table 2).

**Table 2. Value  $x_{j \min}$ ,  $x_{j \max}$  and weighting factors**

Indicator	The best value	The worst value	Weight factor
Payback period	1	4	0.2
Average rate of income	1	0.1	0.1
Net present value	80% of the average annual discounted income	0	0.2
Internal rate of return, %	50	30	0.1
Increase in the number of jobs, %	10	0	0.15
Increase in the incomes of working people, %	15	0	0.1
Degree of atmospheric air pollution, %	0	10	0.05
Impact on the state of water resources, %	0	10	0.05
Changes in the state of land resources, %	0	10	0.05

*\*Source: compiled by the authors.*

The results of calculations carried out using the MS Excel program, according to formulas 1-6, are presented in Table 3.

**Table 3. Results of the calculation of the minimum deviation  $R_j(s_i)$  for the PJSC “Pozhmashina” projects**

Indicator	Project		
	Project 1	Project 2	Project 3
Increase in the number of jobs, %	0.3	0.5	0.68
Increase in incomes of working people, %	0.45	0.34	0.51
Payback period, years	0.6	0.83	0.33
Average rate of income	0.51	0.58	0.44
Net present value, USD	3.84	2.3	1.5
Internal rate of return, %	0.08	0.385	0.58
Degree of atmospheric air pollution, %	-	-	-
Impact on the state of water resources, %	0.1	0.08	0.02
Impact on the state of land resources, %	0.15	-	-

*\*Source: compiled by the authors.*

Using formula (6) and having performed the required calculations, it was determined that the optimal of the proposed projects is Project 1.

Thus, the above method of evaluating and choosing a rational project is a scientifically based tool that allows you to both manage the resources of a business project and take into account the main principles of the sustainable development concept when calculating the efficiency.

### Conclusions

Actualization of the global environmental and humanitarian problems and efforts to solve them on the part of society and the state lead to

the fact that the development of corporate management based on sustainable development is under close attention, and the criteria for evaluating the effectiveness of the project management need to be strengthened. Thus, companies are gradually moving to a new concept of the project management based on the modernization of existing tools and approaches in the context of sustainability principles.

Adherence to the ecological principles of sustainable development makes it possible to determine how actively the company carries out the environmental protection measures and how it can reduce environmental damage. The social principles of sustainable development reflect

the company's attitude towards employees, customers, suppliers and consumers. Management principles relate to the quality of corporate management, namely relations with partners, the level of development of organizational culture, transparency of relations, and anti-corruption policy. Due to the fact that the main changes in companies are

implemented with the help of projects, taking into account the sustainable development principles in the management of the project activity resources is one of the main development scenarios for enterprises trying to ensure the market success and investment attractiveness in the future.

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