

Methods of Effective Value-oriented Management of Construction Projects: A new Approach

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Abstract

A construction project is a complex task that involves many stages and participants, from project developers to construction workers. Success of such a project depends on value-oriented management of the project. This study investigates the methods that can help achieve more effective management of construction projects taking into account the interests of all project participants.

The research utilizes document analysis, content and comparative analysis, risk assessment, synthesis, stakeholder evaluation, innovation assessment, and ethical scrutiny to study project implementation, supporting informed decision-making and effective communication.

The paper unravels the use of a value-oriented approach and the decomposition of works as important aspects of the construction projects. To improve project content management, a new approach is proposed that takes into account the values and requirements of all stakeholders. This allows the project manager and the team to more effectively manage project risks and create values, taking into account the interests of all stakeholders.

It argues that achieving the goals of owners and users is the most important factor in creating values through a project. In order to achieve the maximum efficiency, it is necessary to take into account the values of the users and integrate them into the strategies of the project owner, the content of the project and control throughout the life cycle of the project.

Keywords: High-quality standards, Work breakdown, Planning process, Stakeholders, Work quality.

Introduction

Effective value-oriented management of construction projects is an approach that aims to optimize the value of a construction project while minimizing its cost. The background of this issue can be traced back to the need for a more comprehensive approach to project management that takes into account the entire process of project management for constructed facilities, rather than just the historical roles of various specialists such as planners, architects, engineering designers, constructors, fabricators, material suppliers, financial analysts, and others (Li *et al.*, 2023). By adopting the viewpoint of the owners, specialists can respond more effectively to the owner's desires for their services, in marketing their specialties, and in improving the productivity and quality of their work.

Value management is an organized effort to analyse functions, value, costs, and sustainability. It can address critical obstacles in the implementation of value management of construction projects by enhancing the value of construction projects based on the level of knowledge and experience of the stakeholders involved (Li *et al.*, 2022). However, there are barriers to the implementation of value management in the construction industry, such as a lack of awareness, knowledge, and skills, as well as resistance to change.

Effective value-oriented management of construction project is necessary for several reasons. Construction projects are complex and multidisciplinary tasks that require the interaction of various project participants. Such projects often have significant financial costs, and effective management of projects is a key success factor (Patynska-Popeta and Zinchuk, 2022). In the increasingly competitive market of construction services, companies able to effectively manage the projects have significant advantages. In addition, the need for effective value-oriented management of the construction project is also due to risks associated with possible problems in the process of project implementation (Tlessova *et al.*, 2016). These involve changes in the customer's requirements, non-compliance with quality standards, problems with financing, and violation of work deadlines.

Developing effective methods of managing projects can significantly reduce the likelihood of such risks and ensure a more successful implementation of the project. Thus, there is a need to develop and analyse methods that will allow effective value-oriented management of the construction projects, taking into account all factors, including the needs and values of interested parties, as well as ensuring monitoring and control at all stages of the project life cycle.

Learning how to effectively value-based construction project content management, discovered through analysing the relevant literature sources presented in the paper below, is essential to achieving successful project management outcomes. Understanding how to define and manage project values and how to align them with stakeholder needs and expectations will help improve project performance. Mastering project content management techniques will enable effective organisation of work, assigning responsibilities, estimating costs and creating a reporting system (Shults *et al.*, 2023). The purpose of this research is to explore and analyse the methods that can be used to better manage the content of a value-based construction project.

In this context, this paper examines the value-oriented management of construction projects, with a focus on incorporating the interests and values of all project participants.

Its aim is to enhance the efficiency and quality of construction project management by integrating stakeholder values and needs into project content and control throughout the project life cycle.

Its objectives are:

1. To investigate and analyse methods for achieving more effective management of construction projects, with a particular emphasis on value-oriented approaches.
2. To propose a new approach that considers the values and requirements of all stakeholders in project content management, ultimately leading to improved risk management and value creation.

Theoretical Framework

Value management is an organized effort to analyse functions, value, costs, and sustainability in construction projects. It is a technique concerned with defining, maximizing, and achieving value for money. The theory of value management originated from the U.S. manufacturing industries in the 1940s and extended to construction design in the 1960s. Over the past half-century, value engineering (VE) has emerged as an effective tool to manage time, costs, and quality with an aim to maximize value (Kushniruk, 2022).

The effective collaboration and participation of all value management participants are essential for successful value management practice in construction projects. The benefits of value management in construction projects range from cost optimization and improved efficiency to enhanced functionality, innovation, and sustainability. The process of value management in construction projects involves defining, optimizing, and meeting value for money in any construction project (Alshehri, 2020). The effective management of construction projects requires strategic planning, which is the most important aspect of successful construction project management. The planning process involves developing deliverables, defining goals, and establishing project milestones. The successful completion of a construction project is accomplished through effective project management (Kerimkhulle *et al.*, 2023).

Effective value-oriented management of construction projects involves various methods that aim to maximize value while minimizing costs and ensuring sustainability. These methods include the value-based approach, agile value management, solid management strategies, value engineering, and value management (Lalevée *et al.*, 2020). The value-based approach focuses on delivering value to clients while minimizing costs and waste. Agile value management involves iterative planning, execution, and feedback to ensure that the project meets the client's needs. Solid management strategies in construction management add value that can be measured in terms of reduced costs, time, lower risk, and higher quality (Koval *et al.*, 2022). Value engineering is a methodology that involves developing alternative solutions for delivering necessary building functions. Value management in construction projects involves analysing functions, value, costs, and sustainability in construction projects to maximize value while minimizing costs (Bissenov *et al.*, 2014; Panov, 2023).

Construction management is undergoing a significant transformation worldwide. The industry is increasingly embracing technology, with Building Information Modelling (BIM), drones, virtual reality, and project management software becoming essential for more efficient project planning and execution. Sustainability is a growing priority, with an emphasis on eco-friendly materials and energy-efficient designs (United Nations, 2022). Digital transformation is reshaping processes through automation and data analytics, including the use of IoT devices for real-time site monitoring (Lysenko *et al.*, 2022). Projects are growing in complexity, requiring effective project management and risk mitigation. Labour shortages are a concern in many regions, leading to competition for skilled workers and higher labour costs (Lakomý and Alvarez-Galvez, 2022). Safety regulations are a focus for reducing accidents, and the COVID-19 pandemic has highlighted the importance of remote work and digital collaboration. Infrastructure investment, supply chain disruptions, and innovative construction methods are also shaping the industry's trajectory (The current state..., 2020).

Ukraine is in the process of rebuilding its infrastructure, which has been described as "the world's largest construction site" (Cohen and Alderman, 2023). More than 300 companies from 22 countries have signed up for a Rebuild Ukraine trade exhibition and conference. AECOM, a global infrastructure consulting firm, has signed a deal to provide program management advisory and technical advisory support to help Ukraine rebuild its infrastructure. The conflict between Russia and Ukraine has significantly increased costs to operate for construction companies, with record fuel prices and increased material costs (Strupp, 2023). However, Ukraine has made clear that there will be rewards for early investors when it comes to post-war reconstruction (Stoutzenberger, 2023). The USAID is also soliciting for a Project Management Specialist (Infrastructure) position in Ukraine. The International Republican Institute is working on a project to build a network of reconstruction managers at the local level throughout the country.

Review of Literature

There is an abundance of literature that examine the issue of effective project management. For example, Tytok *et al.* (2022) come to the conclusion that for a successful implementation of projects, it is important to apply the knowledge and processes of project management in various fields. Project content management is one of the key areas inextricably linked with other areas of knowledge. However, without managing the content of the project, it is impossible to achieve effective project management in general. After all, the content of the project covers all its aspects, from defining goals and objectives to planning, control and evaluation of results. Therefore, effective management of project content is a necessary condition for achieving success in project management. According to Bushuyev and Puziichuk (2019), successful implementation of projects requires the use of knowledge and methods of project management in various fields. Effective management of project content is one of the most important areas in construction project management, as it is closely related to other fields of knowledge. Without effective management of project content, project management may not be effective enough.

According to Vornichesku and Shatrova (2022), managing the content of the project in the context of redevelopment includes the analysis of the interests of stakeholders and the definition of criteria that must be followed when choosing a project product. The process of multi-criteria designation of the project product is carried out taking into account the interests of stakeholders. According to Boyko (2016), the work breakdown structure is one of the main tools for creating a project management system. It helps to solve many tasks, such as work organization, responsibility distribution, cost estimation, and creating a reporting system. Effective use of this tool allows managing the project more effectively and achieve the set goal.

Ryzhakova *et al.* (2018) point out that the implementation of a value-oriented approach to the management of the content of a construction project can become the basis for creating a new component of the content management methodology. This component includes recommendations and relevant documents that allow focusing on key values for the successful implementation of the project. In addition, this approach provides monitoring and control over the content of the project at all stages of its life cycle, which guarantees maximum transparency. According to Ryzhakova *et al.* (2019), construction project management consists in meeting the needs and expectations of interested parties (stakeholders) in order to achieve value. Effective value creation of a construction project requires alignment of user value and owner strategy. These elements must be identified in order to understand the value of the project and generate ideas aimed at meeting needs and achieving strategic goals.

According to Alkaissy *et al.* (2020), construction project management involves the planning, scheduling, building, resources, and reporting associated with construction projects. It is a mission-based form of project management that has a clearly defined beginning and end point with constraints on time, resources, manpower, weather, and many other factors. In turn, Wang and Chen (2023) decided that effective management requires the use of proven time management strategies, such as keeping the project schedule at the forefront, prioritizing task lists, delegating tasks as needed, conducting actionable meetings, and using construction management software to provide a central resource for project information and communication.

By a construction project, Kiani Mavi *et al.* (2021) understand the complex of planning and scheduling. They are highlighted are many obstacles that project managers may face, such as poor communication, lack of accountability, and undefined goals. To overcome these obstacles, project managers should optimize resources for a more efficient project delivery, prevent, mitigate, and manage risks in the construction process, and build safe and better structures (Machado *et al.*, 2023).

To effectively manage construction management projects, according to Klitgaard and Gottlieb (2019), project managers must represent the team, agree on details and discuss site-related issues, all without missing a beat, thanks to a defined list of talking points. According to Chbaly and Brunet (2023), project managers should also debrief with clients, construction teams, and management personnel to go over the project's success as well as how any setbacks were handled and ways to improve on the process in the future. This is also a good time to

finalize project documentation, close out contracts, and review any other project control processes implemented during construction.

Construction project management software can benefit construction firms in several ways, including improved accountability, document control capabilities, and centralized repository with tracking and version control, so all parties know when something is added or updated.

Research Methods

The construction activity report on the example of “Platinumbud” LLC (Kushniruk, 2022), and the Order of the State Committee for Construction, Architecture and Housing Policy of Ukraine No. 51 “On approval of the rules for organising the comprehensive state expertise of investment programmes and construction projects” (1999) were of great value to investors and stakeholders as materials reflecting the implementation of a value-oriented approach in their projects. These documents were carefully selected for analysis to explore strategic direction, goals, and approaches to success. The report on construction activities allowed the authors to analyse and define the basics of management accounting, reporting and internal quality control of construction activities. The state investment program of the construction project provided information on the attraction of resources, the financial plan and the implementation of innovative technologies in projects. These materials created an opportunity to compare the results of different companies and identify leaders in the use of a value-oriented approach. Risk assessment and risk management measures were also an important component of these documents.

They provided a wide range of information that allowed to evaluate the various practices used in different projects. These materials were important for effective communication with investors and stakeholders, as they detailed the strategic goals, progress, and achievements of the projects. The analysis of these two documents helped to understand how a value-oriented approach has been implemented in Ukraine. It is noted that key elements and success criteria were determined, strategies and plans were developed, and stakeholders’ interests were taken into account in order to achieve the maximum value of the project. In addition, these materials also demonstrated the implementation of ethical principles and sustainable development of companies, reflecting their efforts in the direction of social responsibility and environmental protection.

Methods of effective value-oriented management of the content of the construction project is a multifaceted and complex process that requires the use of various scientific and practical approaches. Scientific articles and studies were used (Ryzhakova *et al.*, 2019; Weber-Leverentz, 2021, 2022; Fan and Yin, 2020; Weber-Lewerenz, 2021), which helped to determine the main aspects and principles of project management in construction, taking into account the values of interested parties (Tregua *et al.*, 2022; Zuzek *et al.*, 2022; Trzeciak *et al.*, 2022; Goel *et al.*, 2020). The latest developments and trends in the construction industry were reviewed, as well as statistics and reports that helped assess the current situation in different regions and countries. All these materials made it possible to highlight the main methods and tools of effective value-oriented management of the content of the construction project, which can be used in practice to achieve the best results. Ukrainian researchers point to an ambiguous interpretation of the concept of value-oriented management, which came from English-speaking countries (Tytok *et al.*, 2022; Bushuyev and Puziichuk, 2019; Vornichesku and Shatrova, 2022; Boyko, 2016; Ryzhakova *et al.*, 2018; Ryzhakova *et al.*, 2018).

Methods of effective value-oriented management of the content of the construction project included various aspects aimed at achieving the maximum value of the project. The analysis was one of the key stages, as it allowed thoroughly analysing the existing content of the project. This included the following.

1. identifying key elements;
2. determining their impact on overall value;
3. understanding the customer’s needs.

Based on the analysis, strategies, and plans were developed to achieve the project goals. Synthesis, in turn, covered the process of creating new content that met the requirements of the project and the chosen values. This included the development of new concepts, ideas, alternative solutions and strategies. The comparison was an important stage for determining the most effective options for the content of the project. It helped to evaluate various alternatives, and compare them according to key criteria such as cost, quality and delivery time.

Analogies and Modelling

The method of analogies was based on the use of knowledge and experience from previous projects to develop new content. This made it possible to use successful practices and solutions that had already been implemented.

Modelling played an important role in the process of managing the content of the construction project. In the course of researching a new approach to Effective Management of Construction Projects, modelling allowed us to create a virtual copy of the project and run various scenarios to determine its value potential. Modelling helped to refine and test solutions before their physical implementation.

Findings

Value-oriented Management

In the English language, the terms “cost” and “value” are used in different contexts, which led to the emergence of two approaches in value-oriented management. The first approach is known as Value-Based Management, aimed at maximizing the value of the business for its shareholders. The second approach, based on the theory of interested parties (Stakeholder Theory), states that a business should benefit not only its owners, but also all stakeholders, including society, consumers, partners, Nature, and even future generations. In this connection, there is a need to research and analyse methods that allow to achieve more effective value-oriented management of the content of the construction project. With this approach, the company’s objective function is multifactorial, and the range of interested parties tends to infinity, which makes prioritizing their interests difficult.

Work Decomposition in Project Management

Work decomposition, is a method that allows breaking a project into smaller, manageable elements. This allows project managers to more effectively manage a project, determine the time frame and resources needed to complete each job. Taking into account the needs and values of interested parties, this method allows taking into account the interests of all project participants, determining their needs and values, and including them in the formation of the project content. Integrating value aspects into project content formation, this method allows users’ values to be taken into account and included in the project owner’s strategies and project content (Order of the State Committee..., 1999).

Monitoring and controlling at all stages of the project life cycle, this method allows project managers to identify problems and disagreements in project implementation at early stages and take the necessary measures to solve them (Kushniruk, 2022).

A Value-oriented Approach

This approach allows focusing on important goals and values, which helps project managers determine priorities and ensure that desired results are achieved. In addition, it can be noted that the use of these methods allows reducing the possible risks of the project, contributes to the effective management of the content of the construction project and the introduction of new technologies and innovations into it. In addition, this approach increases the level of customer satisfaction and ensures high quality housing, which in turn positively affects the reputation and competitiveness of the construction company. Using the above-mentioned methods can significantly increase the efficiency and quality of construction projects and help ensure quality and affordable housing in Ukraine (Kushniruk, 2022).

To solve the tasks, it is necessary to define the key terms firstly. In this study, the term “project stakeholders” refers to the people, groups of people and organizations that can affect the course of the project throughout its life cycle, as well as those that can be affected by the project (Weber-Leverentz, 2022). Interests of stakeholders may be related to economic, social, psychological, resource and other benefits expected from the project. The assessment of the value of the project will depend on the extent to which the results of the project correspond to the interests of its stakeholders. With the help of Figure 1, it is possible to determine who should be engaged in value-oriented management of housing projects throughout the life cycle, as well as establishing and controlling the balance of stakeholder interests.



Fig. 1: Interactions between the participants of the investment and construction project
Source: Authors.

Fig. 1 clearly demonstrates that builders, designers and operating organizations, being project stakeholders, are unable to fully manage value creation at all stages, as they interact with it only at certain stages. The investor, who often acts as the initiator of the project, determines the characteristics of the value of the results at the stage of the investment idea, but is usually interested only in the stage of return on investment, which occurs before the stage of operation.

According to Fan and Yin (2020) value-oriented management can be implemented most promisingly with developers. Developers are companies that combine functions related to planning, construction, operation, project management and real estate, and are the main parties that can be the object of value management. They are able to effectively solve all the problems related not only to residential real estate, but also to any other objects throughout their entire life cycle. Therefore, their interests lie in ensuring the maximum value of the project at all stages and maintaining a balance of interests of all interested parties. According to the diagram shown in Fig. 2, value-oriented management in the creation of residential objects based on a stakeholder approach is the general principle of development companies.

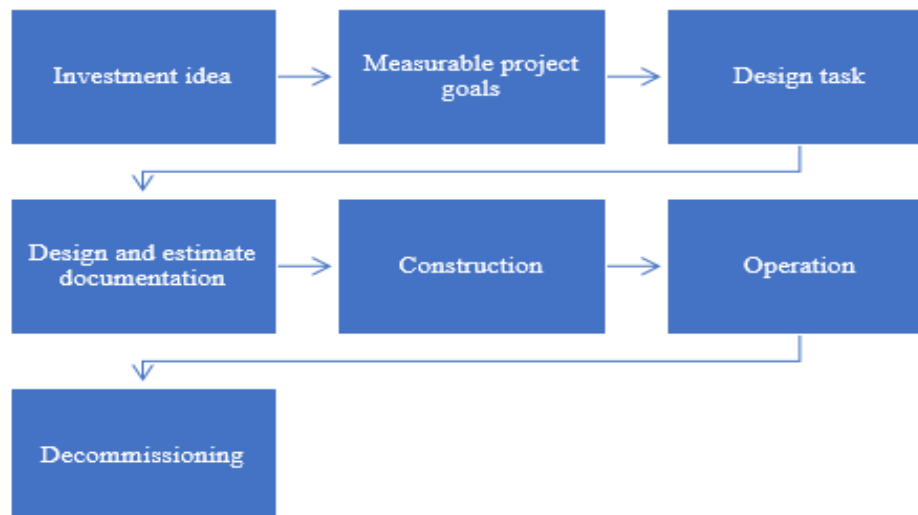


Fig. 2. The cycle of value-oriented management of an investment-construction project based on a stakeholder approach

Source: compiled by the author based on Vuorinen and Marinsuo, 2019

Fig. 2 shows that the proposed concept by Vuorinen and Marinsuo (2019) takes into account the interests of all interested parties even at the stage of development of the investment project. Based on these interests, the ultimate goals of the project are determined. In existing construction practice, project goals are formulated by the investor and designer based on their own understanding of the interests of future residents. Then, the goals are fixed in the design task, according to which the design documentation and estimate are developed. After that, construction begins on the basis of approved documentation, in the process of which it is important to control the interests of all interested parties, especially those whose interests may change under the influence of external factors. If necessary, changes can be made to the project. After the completion of construction, the operational stage begins, which can last up to 100 years according to regulatory documents (Weber-Leverentz, 2021). During this time, it is necessary to continue to monitor the interests of stakeholders. In the event that the building does not meet the interests of the interested parties, two options are possible. If the interested party makes more serious demands, for example, to convert residential premises into office or retail on the first two floors of the building, then this requires a reconstruction, which is essentially a new project. In this case, the cycle of design and construction of the building is repeated. From the point of view of the S-shaped development curve, this point corresponds to the completion of the previous cycle and the transition to a new one.

At an early stage of a project, the developer may not know all the potential stakeholders that will be affected by the project during its life cycle. In addition, stakeholders may change over time as flat owners, laws, regulations, and local authorities may change. In this regard, it is extremely difficult to establish specific value characteristics. The expert evaluation method can be used to determine the value characteristics of the project, taking into account forecasts made by qualified specialists. This method consists of two stages: identification of possible variants of the state of the forecasting object and evaluation of these variants (Tregua *et al.*, 2022).

Methods of expert assessment can be divided into two groups: methods of collective work of an expert group and methods of obtaining individual opinions. Each of these methods has its advantages and disadvantages (Zuzek *et al.*, 2020). The methods of collective work allow for a comprehensive analysis of problems, but require a complex procedure for obtaining information and forming a group opinion, and may also be subject to pressure from authorities in the group. Methods of obtaining an individual opinion, such as questionnaires, interviews, and the Delphi method (Zuzek *et al.*, 2020), are more efficient and allow full use of the expert's individual abilities, but may have a high level of subjectivity due to the limited knowledge of one expert.

When using methods of managing investment and construction of projects in practice, there is a risk of encountering additional problems, both technical, related to the search and involvement of specialists from various fields, and fundamental issues of information processing and combining the opinions of experts with opposing points of view. Using the expert evaluation method to analyse the interests of stakeholders and formulate project goals in construction requires a special approach. Such evaluations are usually aimed at solving a specific problem in the industry, but in the case of housing construction, questions arise from various directions that require expert evaluation. It is not possible to have an expert with full knowledge of all issues, so expert evaluations may be needed to identify areas that require expertise and the involvement of specialists (Levchenko *et al.*, 2023).

For this, it is possible to use the "snowball" method. Analysis of the results of such assessments should be carried out within the relevant industries. The method of analysis and reduction of estimates to the most optimal value characteristics of the project will be described below.

The expert evaluation method can be used for planning housing projects in order to solve such problems as identifying project stakeholders, determining key project indicators that may arouse interest among different groups of stakeholders, evaluating the position of each stakeholder group regarding these project indicators, assessing their impact on the project, assessment of the stability of their position and readiness for cooperation and communication

(Trzeciak *et al.*, 2022). To achieve this goal, it is possible to conduct complex surveys or a series of separate studies. It is worth noting that none of the methods used to obtain expert evaluations or select experts can guarantee an accurate and successful result. Currently, there is no universal scientific classification of expert evaluation methods, and there are no standard recommendations for their use (Goel *et al.*, 2020). However, in order to formalize the process of stakeholder analysis, it is necessary to choose certain methods of expert evaluations for solving specific tasks. After the identification stage of project stakeholders, a list of individuals interested parties or main groups, which are united on the basis of common interests in the project, will be created. For each group of stakeholders, it is necessary to define project indicators that reflect their interests in this project.

Mathematical processing of the results of expert assessments is used to check the consistency of expert assessments and to average opinions within the group regarding stakeholders and key parameters of the project. Categorical statistics methods are used to process such assessments, as experts usually express their responses in the form of categorical variables. The representative measurement theory is used to analyse expert evaluations regarding the attitude of stakeholders to project indicators, which establishes relationships between real objects and their characteristics as relationships between numbers. In case of lack of consistency in expert assessments, they can be divided into separate groups. In addition, the final evaluations of experts are considered within the framework of a separate expert field, for example, using the “Kemeny median” method (Fadeyi, 2021), which allows finding the average evaluation of experts by solving the optimization problem of minimizing the distance from the average sought value to other evaluations of experts.

It is necessary to pay attention to checking the reliability of the obtained results (Fadeyi, 2021). To achieve this goal, it is recommended to attract a sufficient number of experts, evaluate their competence and mutual evaluation, as well as analyse formal indicators, such as the presence of a qualification certificate, work experience and experience in participating in similar examinations. However, the assessment of experts’ competence due to the deviation from the average collective value may be ineffective and negatively affect the results obtained. To increase the accuracy of the results, multiple surveys can be conducted or repeated several times, but this leads to additional research costs, which are already lacking in the construction industry. In addition, no measures can guarantee an absolutely successful result, as already mentioned (Goel *et al.*, 2020). The method of expert evaluations should be considered as a means of gathering information for the decision-maker, and not as a tool for transferring responsibility for decisions to experts.

A stakeholder analysis using expert opinions was presented by M. Sarhadi *et al.* (2021). The decided that in public construction projects, stakeholders play a crucial role in determining resource allocation. Through the lens of structuration theory, their study found that challenges arise from multiple interconnected factors, resulting in improper participation as a broader structural issue. At the agency level, this manifests as power-oriented interactions among stakeholders. On this basis, Figure 3 highlights the key stakeholder analysis tools.

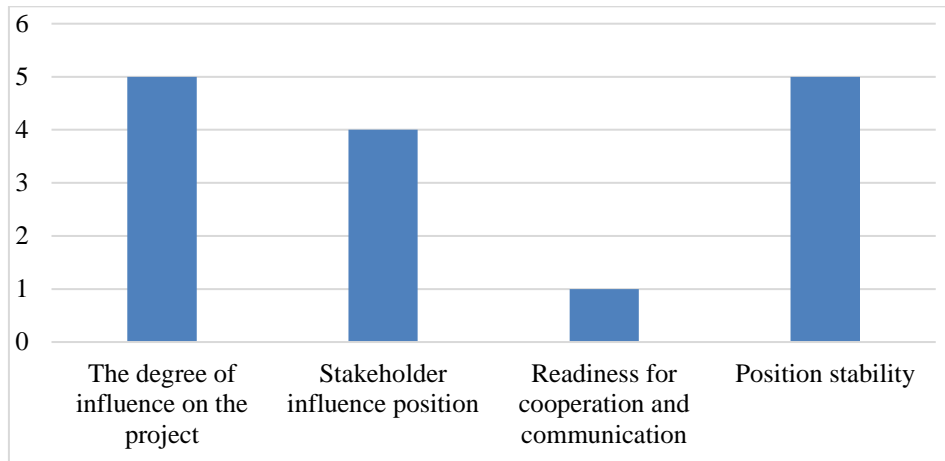


Fig. 3. Stakeholder analysis tool

Source: Authors

Stakeholder Analysis Petal Chart, sector 1 represents a critical area in which a stakeholder not only does not support the project's performance, but also has significant influence over it. Sector 2 represents the area in which the stakeholder does not support the project and does not interact with the project team. After the stakeholder zones are identified in step 2, the next step, as shown in Fig. 3, is to select a strategy for engaging with each zone according to their needs. This means that for supportive stakeholders, a partnership strategy of cooperation can be chosen, while for influential stakeholders who oppose the project, a strategy of changing the project indicators at their request can be chosen. However, if a change in project metrics results in a conflict of interest, project goals should be defined that are measured according to the proposed value model. Let $S_1 \dots S_2 S_n$, be project stakeholders (1):

$$S = (S_1, S_2, \dots S_n). \quad (1)$$

Project indicators P_m reflect the interests of stakeholders, and the maximum value of the project Z_m for each of these indicators can be defined as the product of the stakeholder influence coefficient A_m on his position regarding the project B_m (2):

$$Z_m = A_1 * B_1 + A_2 * A_2 + A_n * B_n, \quad (2)$$

where: $A_n > 0$.

The maximum value of the entire project Z_{pr} can be expressed as the sum of the products of the influence coefficient of each stakeholder A_m on his supporting position B_m regarding each of the project indicators P_m (3):

$$Z_{pr} = \sum_{m=1}^i Z_m. \quad (3)$$

For this model, it is assumed that the influence of stakeholders on the project remains unchanged during its implementation. Comparison of the actual value of the project, based on the actual values of the positions and the influence of stakeholders, with the maximum value of Z_{pr} when indicators change, P_m this will allow finding the optimal combination of project indicators, which will satisfy the interests of stakeholders as much as possible and ensure the optimal result of the project (Table 1).

Table 1. Risks associated with the deviation ΔZ between the maximum and actual value of the project
Source: Authors.

Size deviation ΔZ	Level of risk IR
1	2
$\Delta Z < 20\%$	There are small opportunities onset risks
$20\% \leq \Delta Z < 50\%$	Level risk average
$50\% \leq \Delta Z < 90\%$	There are significant and important risks
$\Delta Z \geq 90\%$	Probability of unsuccessful completion of the project is very high, risk maximum

Failure to achieve performance that satisfies all project stakeholders can result in a difference between the project's maximum value and its actual value, denoted as ΔZ . To determine the amount of the deviation, the method of expert assessments can be used, which allows dividing the deviations into several groups with different levels of risk, as shown in Table 1. This deviation can lead to risks associated with the inconsistency of project results with the interests of stakeholders.

Discussion

Developers are promising subjects for value-oriented management of residential real estate projects. They combine many functions related to the creation and management of residential objects at all stages of the life cycle. At the same time, their interests lie in maximizing the value of the project and satisfying the interests of all interested parties, which is most consistent with the principles of value-oriented management. They can cooperate with other organizations and investors who also have interests in the project and can influence its results. Therefore, it is important not only to identify the most promising subjects for value-oriented management, but also to take into account the interests of all interested parties when developing and implementing residential real estate projects (Shalbolova and Kenzhagaliyeva, 2018). The method of expert evaluations can be a useful tool for determining the value characteristics of a project.

Checking the reliability of the obtained results is an important step in the expert evaluation process. For this, it is necessary to pay attention to the quality and competence of experts, as well as the use of a sufficient number of experts. The competence of experts can be assessed according to various parameters, such as a qualification certificate, work experience, experience of participating in similar examinations and other formal indicators. Assessing the competence of experts due to the deviation from the average collective value may be ineffective, as it may lead to distortion of the results. For example, if one expert differs greatly from the average value, then his opinion may be underestimated or overestimated. Therefore, in addition to formal indicators, it is important to consider other factors, such as experience in the field and industry, the availability of recommendations from other experts and clients. The method of expert evaluations should be considered as one of the tools that help to make informed decisions, and not as a means of transferring responsibility for decisions to experts (Ostapenko and Bryantsev, 2023). To achieve the best results, it is necessary to assess the competence of experts, check the reliability of the results and take into account the possible limitations of the method. Thus, the results of this study indicate the importance of taking into account the interests of all stakeholders during the management of investment and construction of housing projects on the territory of Ukraine. This can lead to a more sustainable development of the construction industry and increase the quality of housing, which is an urgent problem for Ukraine.

According to the results of BuHamdan *et al.* (2020), the management of the content of construction projects is an important stage in construction, because it allows to ensure the effectiveness of the project in accordance with the needs and expectations of stakeholders. In order to achieve this efficiency, management based on the value orientations of stakeholders

and in accordance with the conceptual model is necessary. However, existing methodologies for managing the content of construction projects do not always allow achieving these goals, so they need to be improved. This allows for a more accurate definition of the needs of stakeholders and the effectiveness of the project. New methodologies should be aimed at improving the processes of managing the content of projects and taking into account the needs of stakeholders to ensure the effectiveness and success of the project (Klendii *et al.*, 2022).

Turning to the definition of (2020), the main idea of project activity is indeed to create value, but to achieve the success of the project, it is also necessary to take into account not only the fact of value creation, but also how much this value is needed and demanded. To do this, it is necessary to determine the goals of the project and assess how well these goals meet the needs and interests of the interested parties. It is important to determine how timely this value will be created, as many projects require fast and efficient solutions. As a result, in order to successfully implement the project, it is necessary to balance between the creation of value, its necessity and the timeliness of its appearance.

Researchers Uzakova *et al.* (2021) determined that in order to achieve the goal, it is necessary to pay attention to the process of identifying the values of interested parties and establishing metrics that reflect these values. It is then necessary to formulate specific goals and expectations for the project and develop measures of success that can be used to evaluate the achievement of these goals. Evaluation of project success should be conducted throughout the project implementation process to ensure timely identification of problems and adjustments to plans. It is necessary to pay attention to the fact that the assessment of the project's success should be objective and based on facts and data, and not on subjective assessments. For this, various assessment methods can be used, such as surveys, data analysis, focus groups. Overall, project success assessment is a key aspect of project management and should be implemented at all levels of project management.

Kovács (2020) determined that the work breakdown structure is an important project management tool. It allows breaking down the project into smaller and manageable elements, works. This approach helps improve project planning and cost estimation, as well as assign responsibility for each job. The work breakdown structure allows creating a reporting system that helps track project progress and identify problems in a timely manner. It also allows clarifying project requirements and ensure more effective risk management. In general, work breakdown is an important means of creating a project management system and ensuring effective project execution. Alaqad *et al.* (2020) showed that the method of supporting the innovation of content management is a tool for improving the efficiency of project management. It is aimed at improving the process of reducing the impact of incomplete project product information on planned costs. The essence of the method is to create a support system that ensures proper processing and analysis of project product data.

The method of supporting the innovation of content management allows reducing the risks associated with incomplete information and reducing the probability of unexpected project costs. This approach also ensures better coordination of work between project participants and helps to achieve more accurate results within the established deadlines and budget. Amoah *et al.* (2021) determined that project content management plays an important role in project success. It allows taking into account the interests of all stakeholders and maximizing their satisfaction with the project results. Multi-criteria designation of the project product is one of the tools for managing the project content and allows determining the most important criteria for stakeholders and directing resources to achieve these criteria. This allows reducing the time and costs of the project, increasing its efficiency and reducing the probability of failure. In addition, project content management allows effective risk management and project adaptation to changing market conditions and stakeholder requirements.

Conclusions

In conclusion, the adoption of value-oriented construction project content management processes represents a pivotal advancement in enhancing project management within the construction industry. The stakeholder approach, analogies, modelling methods, work

decomposition, and a value-oriented approach collectively represent a multifaceted framework for enhancing construction project content management. Analogies, rooted in past experience and knowledge, offer valuable insights for informed decision-making, enabling the incorporation of successful practices from previous projects. Modelling, as a dynamic tool, plays a pivotal role in content management by creating virtual project replicas and enabling scenario analysis, facilitating the exploration of value potential and the refinement of solutions before physical implementation. Value-oriented management, with its dichotomy of cost and value, underscores the need to balance shareholder interests with those of all stakeholders, emphasizing broader societal, environmental, and future considerations.

Work decomposition provides a structured approach to project management, aligning stakeholder needs and values with project content, ensuring their inclusion and integration throughout the project lifecycle. This approach allows for efficient resource allocation, risk mitigation, and the integration of innovation and technology. Overall, these methodologies contribute to enhanced construction project efficiency and quality, fostering customer satisfaction, boosting company reputation, and supporting sustainable development by considering social, economic, and environmental dimensions.

The development of value-oriented construction project content management processes marks a significant stride toward improving project management within the construction industry, offering tools to align interests and values, and future research endeavours promise even more refined methods for optimizing resource utilization, elevating quality, and expediting project execution.

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