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THE CONCEPTUAL MODEL OF THE CONSTRUCTION PROJECT TAKING INTO ACCOUNT THE INTERESTS OF STAKEHOLDERS

The **subject matter** of the article components of the scope of investment and construction projects and the interests of its stakeholders. The **goal** of the article is to develop the concept of application of the value approach while forming construction projects. The article deals with the following **tasks**: the impact of the factors of the external and internal situation of the construction project on the process of its management is analyzed, unsolved methodological problems in the field of scope management reviewed, the conceptual model of the construction project is developed taking into account socio-cultural factors. The following **methods** are used: the methodology of project management, the theory of stakeholders, axiological and system approaches. The following **results** are obtained: the structure of elements of the scope of the conceptual model of the construction project is developed, taking into account the interests of the stakeholders; the influence of various factors on the scope of the construction project is considered; the environment of the construction project is systematized, numerous factors are classified as external and internal, stable and variable one; the impact of social and cultural factors on the construction project is analyzed; a set of stakeholders in investment and construction projects was defined, this set is divided into groups of direct and indirect impact on the project scope. From the point of view of the degree of the impact of stakeholders on the project and its objectives, indicators according to which stakeholders have their own interests are determined. The scheme is constructed that shows the correspondence of stakeholders to the areas of project interest. Stakeholder interests are suggested to be considered during the full life cycle of the investment and construction project. The scheme of the spheres of the interests of participants in the investment and construction project at separate stages of its life cycle is constructed. **Conclusions**: When forming the scope of investment and construction projects, the axiological approach should be applied, that is, to take into account the interests of stakeholders that affect the performance of the project during the whole period of the life cycle.

Keywords: social and cultural factors; construction project; project value; the interests of the project stakeholders; life cycle.

Introduction

Modern society increasingly requires that professionals in the development of construction projects be guided by their decisions, taking into account the social and cultural factors and the psychology of a consumer. This involves the fact that, first, the designer should know the possibilities of architectural and construction design in the context of modern scientific and technological achievements and the development of world culture and practice. Second, the designer should know not only the object of their activity but also the design process as a whole as well as the issues of further construction and operation of the created object. Also, the designer should understand that a project is a social demand that bases on human demands. The consumer of the project product is a specific subject a residential, production or leisure environment is created for. In addition, the change in the social situation in our country affected the scope of architectural and construction design

Social and cultural factors of the external environment should be taken into account to ensure the unique architectural integrity of new construction and the existing one. Therefore, social and cultural problems are the key factors of the external environment of project implementation. However, at the moment there are no means of assessing and analyzing the impact of these factors on the scope of new construction projects and there are no actual methods and mechanisms for managing them to achieve the most acceptable result from the implementation of the construction project.

The analysis of the problem and available methods

Construction in Ukraine is characterized by significant risks of investment due to the fact that legislation is imperfect, the participants of the process are engaged in investing to a limited extent, construction deadlines are failed to be met and so on. The modern sphere of construction, in particular, the industrial one, is regulated by a significant number of legislative acts which are rather scattered and contradictory. Most management theorists in the field of construction projects focused on the goal-setting, the improvement of production processes and the quality control of their implementation [1, 2] but the key problem of research has recently become the social and humanitarian component in the project management. Sociological achievements have shown an increased interest in the human factor [3].

To assess potential conflicts of interest, the assessment of stakeholder loyalty is conducted [4]. Stakeholder management is carried out on the basis of an iterative procedure [5]. The issues of managing the project implementation, its dynamics taking into account the project stakeholders, are displayed in the 4R & WS model [6].

Theoretical studies of stakeholders focus mainly on identifying stakeholders in accordance with their objectives and interests in the project or business and discussing methods for achieving such goals [7].

When forming construction projects, the system integration of existing standards and methods of project

management is carried out. To regulate a set of processes of the corresponding phase or sub-phase of the construction object within its life cycle, technological features of the project implementation, the specificity of the working environment, the degree of uncertainty, the level of criticality of changes and the features of interactions among other phases are taken into account [8].

Using project management tools, the theory of stakeholder, evolutionary value theory, new methods of managing investment and construction projects should be developed. The satisfaction with the results of construction projects by all its stakeholders should be increased. The principle of balance of interests of all stakeholders should be applied both within the framework of a separate construction project and within the framework of the whole city.

A significant problem is the limited number of areas suitable for industrial development. There is a lack of necessary energy, water and other resources and infrastructure. For example, the construction of infrastructure maintenance facilities requires vacant areas, which are few. Industrial enterprises can hinder the expansion of urban areas, in addition, require certain sanitary protection zones. Placing them outside the residential area is often a too expensive alternative.

Consequently, the management of investment and construction projects in the field of industrial construction in Ukraine faces today many difficulties.

The goal of the article is to develop the concept of applying the axiological approach while forming construction projects.

The article deals with the following tasks:

- a conceptual model of a construction project taking into account the interests of stakeholders is developed,
- the environment of a construction project, stakeholders and their interests are systematized,
- the role of stakeholders at certain stages of the project life cycle is determined.

Task solution

The project activity for creating real estate objects, which is called the investment and construction activities, includes the concept of capitalization of investments and meeting the needs of consumers in real estate objects implemented via capital construction as well as meeting the needs and expectations of all project participants. So, the article deals with investment and construction projects, which are an investment company limited by time and aimed at creating a new unique real estate object, which should be available and used to make a project valuable [9].

To build a conceptual model of a construction project, a value-oriented approach should be used, this approach involves identifying the interests of the project stakeholders. The value of the project results should be defined as the correspondence of these results to the interests of those for whom these results are intended - for project stakeholders. Therefore, the goal of the value-oriented project management is to ensure the maximum value of the project results for its stakeholders. The basic

components of the conceptual model of a construction project are presented in Fig. 1.

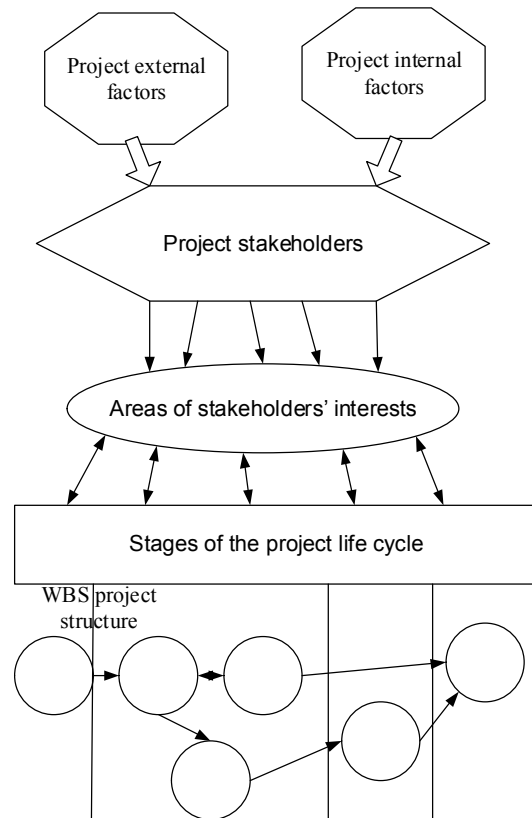


Fig. 1. The components of the conceptual model of a construction project

Let us consider the stated components. Numerous project factors can be grouped into external and internal ones. проекту поділяється на зовнішні та внутрішні. The impact of various factors on the project scope is presented in Fig. 2. Also, the stated factors should be distinguished as stable and variable ones.

The stable factors include:

1. Natural and climatic factors:
 - landscape geographical and geological conditions;
 - sanitary and ecological factors.
2. Social and cultural factors:
 - religion;
 - the population homogeneity;
 - the importance of cultural values, national traditions and heritage;
 - subculture.
3. Conditions of the construction site;
4. Town planning restrictions.

The variable factors comprise:

1. Technological:
 - the degree of novelty of technologies and materials;
 - constructive systems and methods.
2. Architectural and artistic:
 - experience of other projects;
 - the level of urbanization;
 - composition and artistic features of the surrounding building area;
 - homogeneity of development.

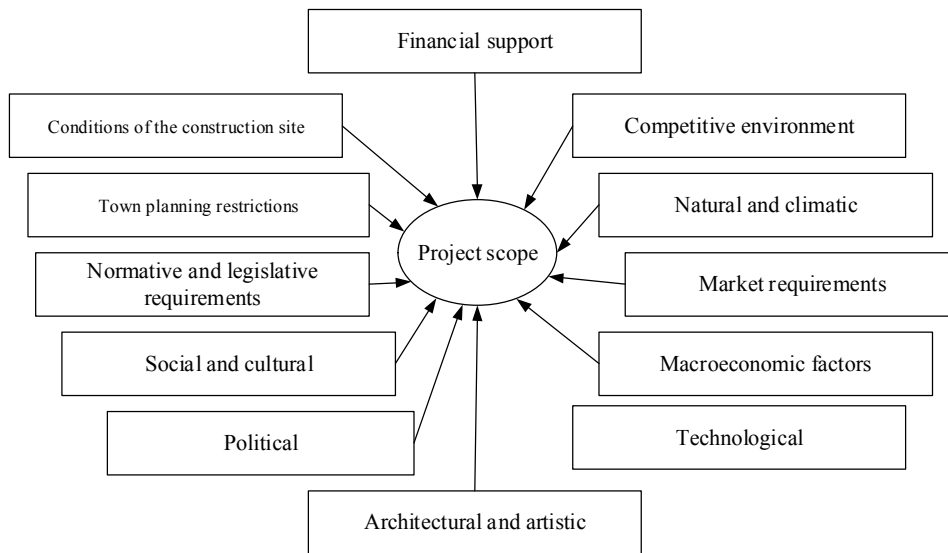


Fig. 2. The impact of external and internal factors on the project scope

- 3. Financial and economic:
 - financial support;
 - macroeconomic factors.

4. Political.

Market and competitive requirements.

It is especially important that some very significant factors can be finally determined only much later, after the goal-setting and business planning phase. These factors are:

- town planning restrictions;
- normative and legislative requirements;
- special conditions of the construction site.

In addition to these factors, the impact of social and cultural factors on the scope of a construction project should be taken into account (Table 1).

In the project management, the process of goal-setting is extremely important and represents the formation of the project objectives - determining, clarifying and agreeing to objectives of all project participants [10].

The goal-setting process results in the unified definition of goals that are understood by the project participants. It is the interests of stakeholders that are formed under the influence of the above factors.

Table 1. The impact of social and cultural factors on the scope of a construction project

Factors	Impact
Historical factor	Creates a favourable "zone" for reproducing and developing traditional culture.
Artistic factor	Inspires aesthetic perception. Restores local traditions in construction projects.
Spiritual and moral factor	Promotes the satisfaction of the spiritual and moral needs of various groups of the population (disabled, elderly, unemployed).
Political factor	Creates a favourable or unfavourable situation with respect to investors. Aimed at enhancing the social and political life and increasing the level of the competence of citizens in social and political issues. Involves the general public in the process of local self-government to develop various ideas and concepts.
Natural and climatic factor	Helps to avoid bad errors in aesthetic, functional and economic errors in the construction projects.
Ecological factor	Aimed at eliminating gaps between the man and nature.

Project stakeholders are understood as an individual or a group of individuals, organizations that are capable to affect the implementation of the project within its life cycle or the project can affect them [11]. While building, the interests of certain stakeholders should be taken into account and these interests cannot be expressed economically. The interest of stakeholders should be considered as economic, social, psychological, resource and any other benefits they expect from the project. The Standard for Project Management PRINCE 2 (PROjects IN CONTROLLED ENVIRONMENTS) focuses on satisfying a consumer and involving them in managing the project.

Stakeholders as the subjects of construction projects can be grouped as follows [12]:

1. Direct participation in the investment and construction activities (they are the factors of the internal environment):

- investors, developers, banking institutions;
- customers;
- builders;
- sellers, suppliers, contractors;
- designers;
- the project team.

2. Indirect participation in the investment and construction activities (they are the factors of the external environment):

- participants of the market infrastructure that serve the main subjects of the investment construction activities (insurance, realtor, consulting, intermediary

companies), supervisory services and licensing authorities (territorial authorities, local government, fire administration, sanitary services, etc.)

- public organizations and public hearings (including self-government organizations, environmental organizations);

- mass media;
- consumers of construction products;
- owners of adjacent territories;
- competitors.

Considering the impact of stakeholders on the project and its objectives, the indicators by which stakeholders have their own interests should be determined.

Among the interests there may be:

- financial indicators (cost per square meter, the form of financing, the possibility of attracting loans, state funds, etc.)

- space planning;
- engineering (energy saving, air conditioning, protection against flooding, earthquakes, etc.)

- linked with the building location (transport, insolation, climatic, etc.)

- legal (insurance, ownership of land, etc.);
- organizational (construction time, queueing and start-up facilities, the choice of contractor, etc.) and so on.

The relationship between the individual stakeholders of the project and their interests is conditionally presented in Fig. 3.

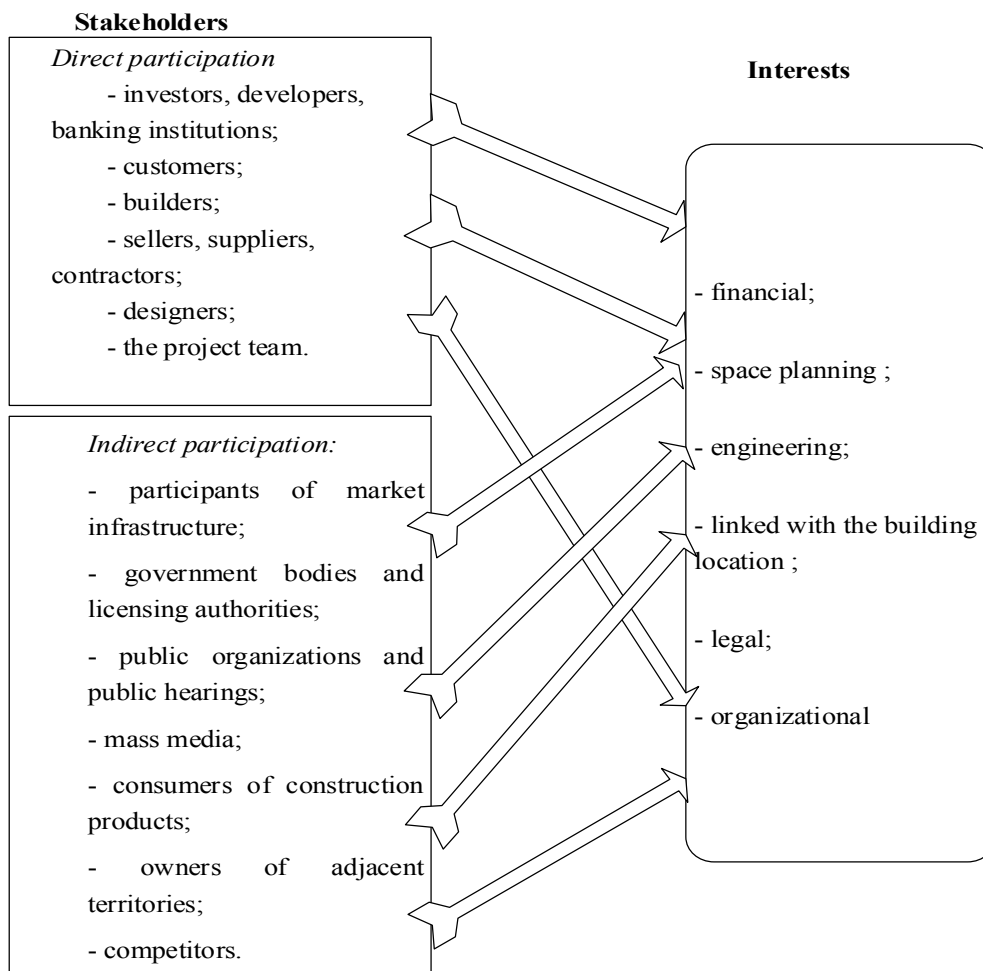


Fig. 3. The example of the interests of project stakeholders

The interests of stakeholders are suggested to be considered from the point of view of the business, social and public environment that is interested in housing construction and within the full life cycle of the investment and construction project.

But such functions as state control, the supply of resources, registration of property rights and so on will remain external elements of the system with regard to the project. All these elements are the project stakeholders.

The interests of the community in the area where the construction is planned are often left without

attention. After all, new construction will create an additional burden on the transport, social and engineering infrastructure of the district. All this can worsen the living conditions for citizens. The reasons for the risks and failures of construction fall mainly on the initial pre-investment phase of the life cycle of projects. The construction of the vast majority of such “problematic” facilities is suspended or not conducted at all due to a lack of funds from the company-builder. The source of such funds could be a private investor - an individual who would invest in construction. The causes of risk are also the use of “shadow schemes” in the activities of

construction organizations, unskilled workers who are engaged in repair and construction, deceiving investors with advertising promises. That is, any investment is a risky activity.

One company is developing a construction project, the second company is building it, the third one is

financing the project, the fourth is maintaining deliveries, the land plot belongs to the fifth party, other companies are providing services and resources, somebody else is using the constructed object and so on. That is, stakeholders must realize their interests at various stages of the project lifecycle. (Fig. 4).

Spheres of stakeholders' interests

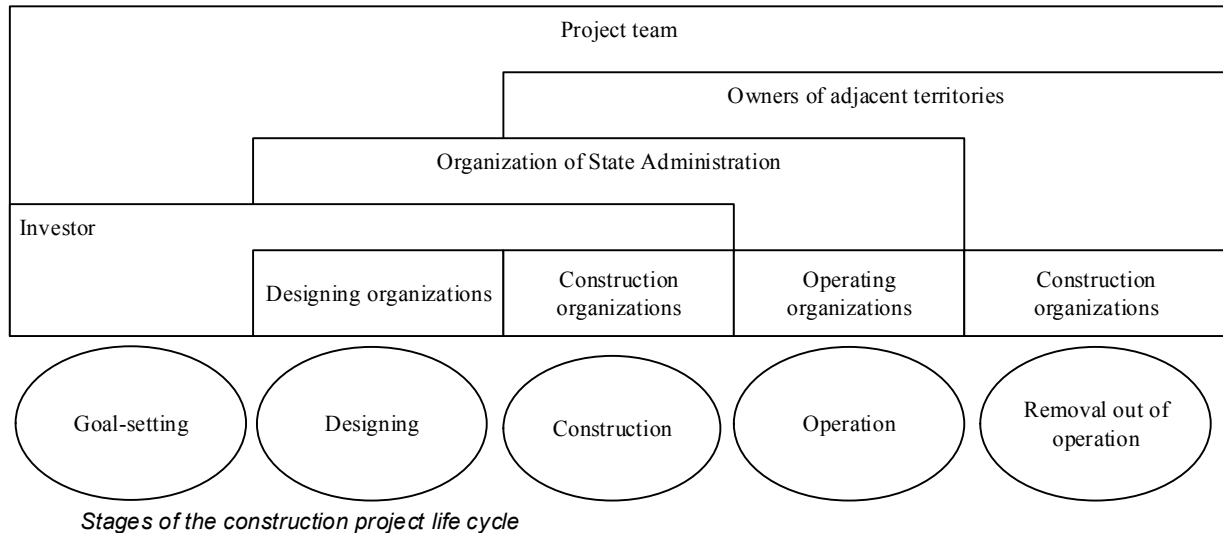


Fig. 4. Spheres of interests of the participants of the investment and construction project

The scheme shows that such project stakeholders as designers, builders or operating organizations interact with the project only in a certain period.

Thus, the interests of stakeholders at each phase of the project should be taken into account already when the project scope is formed. These interests should be reflected both in the generalized parameters of the project and when planning individual project activities.

Conclusions

The article describes the structure of the elements of the conceptual model of the construction project taking into account the stakeholders. The impact of various factors on the scope of the construction project was considered. The environment of the construction project was systematized and numerous factors were classified into external and internal, stable and variable ones. The impact of social and cultural factors on the scope of the construction project is analyzed.

A set of stakeholders of investment and construction projects is determined, this set is divided into the groups of direct and indirect impact on the project scope. From the point of view of the degree of impact of stakeholders on the project and its objectives, indicators by which stakeholders have their own interests are determined. The scheme that shown how stakeholders correspond to the areas of project interests was developed.

The interests of stakeholders are suggested to be considered within the full life cycle of the investment and construction project. The scheme of the spheres of interests of the participants of the investment and construction project at separate stages of its life cycle is constructed.

In the future, the suggested elements of the conceptual model will be formalized and the method for assessing stakeholder interests and their impact at the stages of the life cycle of the project will be developed.

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Концептуальна модель проекту будівництва з урахуванням інтересів стейкхолдерів

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Предметом дослідження в статті є складові змісту інвестиційно-будівельних проектів та інтереси його стейкхолдерів. **Мета роботи** - розробка концепції застосування ціннісного підходу при формуванні будівельних проектів. В статті вирішуються наступні **завдання**: аналіз впливу факторів зовнішнього та внутрішнього оточення будівельного проекту на процес його управління, огляд невирішених методологічних проблем у сфері управління змістом, розробка концептуальної моделі будівельного проекту з урахуванням соціокультурних факторів. Використовуються такі **методи**: методології управління проектами, теорія стейкхолдерів, теорія цінностей, системний підхід. Отримано наступні **результати**: розроблено структуру елементів змісту концептуальної моделі будівельного проекту з урахуванням інтересів стейкхолдерів. Розглянуто вплив різноманітних факторів на зміст проекту будівництва. Проведено систематизацію оточення будівельного проекту у вигляді класифікації множини факторів на зовнішні та внутрішні, на стабільні і змінювані. Проаналізовано вплив соціокультурних чинників на зміст будівельного проекту. Визначено множини стейкхолдерів інвестиційно-будівельних проектів, яку поділено на групи прямого та непрямого впливу на зміст проекту. З точки зору ступеню впливу стейкхолдерів на проект та його цілі, визначено показники, за якими стейкхолдери мають власні інтереси. Побудовано схему відповідності стейкхолдерів зонам інтересів проекту. Запропоновано розглядати інтереси стейкхолдерів на протязі повного життєвого циклу інвестиційно-будівельного проекту. Побудовано схему сфер інтересів учасників інвестиційно-будівельного проекту на окремих етапах його життєвого циклу. **Висновки**: При формуванні змісту інвестиційно-будівельних проектів слід застосовувати ціннісний підхід, тобто враховувати інтереси стейкхолдерів, які впливають на виконання робіт проекту протягом усього життєвого циклу.

Ключові слова: соціально-культурні фактори; проект будівництва; цінність проекту; інтереси стейкхолдерів проекту; життєвий цикл.

Концептуальная модель проекта строительства с учетом интересов стейкхолдеров

А. А. Дорохина, А. Ю. Старостина, Р. В. Артюх

Предметом исследования в статье являются составляющие содержания инвестиционно-строительных проектов и интересы его стейкхолдеров. **Цель работы** - разработка концепции применения ценностного подхода при формировании строительных проектов. В статье решаются следующие **задачи**: анализ влияния факторов внешней и внутренней среды строительного проекта на процесс его управления, обзор нерешенных методологических проблем в сфере управления содержанием, разработка концептуальной модели строительного проекта с учетом социокультурных факторов. Используются следующие **методы**: методологии управления проектами, теория стейкхолдеров, теория ценностей, системный подход. Получены следующие **результаты**: разработана структура элементов содержания концептуальной модели строительного проекта с учетом стейкхолдеров. Рассмотрено влияние различных факторов на содержание проекта строительства. Проведена систематизация окружения строительного проекта в виде классификации множества факторов на внешние и внутренние, на стабильные и изменяемые. Проанализировано влияние социокультурных факторов на содержание строительного проекта. Определены стейкхолдеры инвестиционно-строительных проектов, которые разделены на группы прямого и косвенного влияния на содержание проекта. С точки зрения степени воздействия стейкхолдеров на проект и его цели, определены показатели, по которым стейкхолдеры имеют собственные интересы. Построено схему соответствия стейкхолдеров зонам интересов проекта. Предложено рассматривать интересы стейкхолдеров в течение полного жизненного цикла инвестиционно-строительного проекта. Построена схема сфер интересов участников инвестиционно-строительного проекта на отдельных этапах его жизненного цикла. **Выводы**: При формировании содержания инвестиционных строительных проектов следует применять ценностный подход, то есть учитывать интересы стейкхолдеров, которые влияют на выполнение работ проекта на протяжении всего жизненного цикла.

Ключевые слова: социально-культурные факторы; проект строительства; ценность проекта; интересы стейкхолдеров проекта; жизненный цикл.