

TECHNICAL SCIENCES

Factors of behavioral economics in scientific projects

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Annotation. This study contains materials on the application of project management standard in any field of human activity, including scientific. The analysis of scientists' publications revealed that risks, uncertainty and conflict can have both negative and positive effects on the success of scientific project. It is proposed to study in more detail the factors of behavioral economics in the process of managing the scientific projects. It is established that the results of this study will provide the leader and members of project team with a basis for further analysis and identification of the impact of behavioral economics on the implementation of scientific project in terms of risk, uncertainty and conflict.

Keywords: *project management methodology, scientific project, factors, behavioral economics, risks, conflicts, competence.*

Introduction. Modern rates of development in any sphere of activity require a person to constantly develop personality, increase of competence and acquisition of new skills and abilities. [1]. This also applies to scientific activity because it is creative and intellectual, and requires scientists to constantly develop, update knowledge and skills [2]. Risks and conflicts may arise in the implementation of scientific projects, in particular, it may be related to behavioral factors [3]. In [4] the activity of scientists and their real behavior, which may result in an irrational component, was analyzed, possible causes of their ineffective and unethical behavior are given. Therefore, there is a need for further research on the impact of risks and conflicts, taking into account behavioral factors on the implementation of scientific project.

Brief overview of publications on the topic. In most cases, management decisions are made in conditions of risk, uncertainty and conflict. Thus, the peculiarities of the decision-making process, both private and public, in these conditions are of great interest, in particular for positive analysis in order to understand the behavior of the decision-maker, and for regulatory analysis - to make recommendations on features of business management or policy decisions [5].

Analysis of decision-maker's behavior in these conditions includes an understanding of how he assesses factors that affect the situation in respect of which it is necessary to make a decision. These reasons include the following: natural phenomena, political events, changes in legislation, tax regulation, fluctuations in prices and exchange rates, competition, fulfillment of contractual obligations, personal preferences, etc. This study can be useful in decision-making in scientific projects in conditions of risk, uncertainty and conflict.

Classical economic theory considers human as a rational being who makes decisions based on possible risks, maximizing own benefits, and thinks mostly logically and rationally [6]. But due to the rapid changes

taking place in the world (the information revolution, as a result, began the process of transition of society from industrial to post-industrial, or information, which accelerated globalization and internationalization), there was a new view of the person who accepts decision.

In particular, a person mostly departs from rational and clear thinking under the influence of such emotions as fear, passion, hatred, which called into question the vision of human as a completely rational being. In addition, this view of the human essence through the prism of psychology formed the foundation for the development of a new science - behavioral economics, which is based on economic and psychological sciences and provides an opportunity to study errors or distortions in solving business problems [6, 7]. These studies provide a basis for taking into account the influence of behavioral economics factors in management of scientific projects.

In [8] authors found that development of project management systems, programs and project portfolios depends on their environment. In particular, it is noted that significant changes in the environment from "rational economy" to "behavioral economy" require additional research on the effectiveness of existing methodologies application, knowledge systems and competencies of project managers.

The foundation of environmental change lies in changing the paradigm of decision-making in management from rational to irrational paradigm. Modern approaches to the formation of "behavioral economy", its specifics in terms of decision-making processes in project management and anomalies that affect these processes are investigated. A content model of diagnostics of application for models and methods of project management in "behavioral economy" is given. The patterns of project managers' behavior in creating a project product and project management are studied. Such patterns allowed the authors to identify bottlenecks in the application of modern project management methodologies in a "behavioral economy". This study will be useful in

the process of applying the principles of behavioral economics in scientific projects.

Based on publications' analysis, it can be concluded that risks, uncertainty and conflict can have both negative and positive effects on success of any project, including scientific, so the factors of behavioral economics in the management of scientific projects require more detailed study.

Purpose. The purpose of this study is to identify factors of behavioral economics in scientific projects and determine their impact.

Materials and methods. The project management standard [1] contains detailed key concepts, new trends, considerations for adapting project management processes and information on how to apply tools and methods in project implementation. Project managers can use one or more methodologies in the implementation of project management processes listed in specified standard. Project management views the decision maker as a rational person, but in today's world, scientists are increasingly paying attention to the study of irrational human behavior, in particular acting in conditions of risk, uncertainty and conflict.

Results and discussion. The study of behavioral economics is based on experimental observations, various types of research, surveys, testing, but recently increasingly used econometric analysis of data collected during field research [7, 9].

Fundamental in the theory of behavioral economics is the rejection of the theory of traditional rational behavior and analysis of the irrational component of economic agents' behavior. In order to understand how the economy works and how to manage it effectively, it is necessary to understand exactly how agents and market participants think in the process of making various management decisions.

But this requires understanding and studying the irrational grain behind human feelings, thoughts, and actions. Based on all the research conducted, behaviorists conclude that people make all sorts of management decisions that do not always correspond to the model of rational choice.

Behaviorists suggest that by analyzing the psychological aspects of decision-making, it is possible to predict behavioral errors that may be made by individuals and analyze the impact of mental states of individuals on their behavior in making important management decisions [9].

In the theory of behavioral economics and behavioral finance there are three main tools in the study and analysis of behavioral economics [8]:

1) heuristics - people often make decisions based on creative, unconscious thinking, which is not always logically correct;

2) frame - people use the semantic framework to understand and act in certain cases;

3) market inefficiency - market decision errors that lead to various market anomalies, including incorrect pricing, inefficient allocation of resources.

In [10] it is noted that the competency approach is based on two concepts: a) competence - the area of activity or function performed by the employee; б) competency - a description of the potential ability of the

employee to carry out successful activities within certain competencies.

In addition, the studies of domestic and foreign authors provide many different typologies of competencies [11, 12], in particular, there are three levels in the structure of competency:

a) integration competency – the ability to integrate knowledge and skills and to use them in practice;

b) psychological competency, which is a developed system of emotions, able to provide adequate perception of the world around and practical behavior of people;

c) competency in specific areas of activity, which is expressed in the ability to work with people, overcome uncertainty, implement plans, etc.

Modern development processes, which are based on project management methodologies taking into account the formation of breakthrough competencies, are characterized by the following factors [10, 12]:

1) increasing the factor of dynamism and uncertainty;

2) change of lifestyles at all levels: global, social, organizational, individual;

3) implementation of competence standards in education;

4) increasing the role of horizontal mobility of workers during working life;

5) transformation of many professions, their globalization and accelerated demarcation;

6) strengthening the role and complicating the tasks of personal development ("lifelong skills");

7) decentralization of responsibility for the quality of work;

8) the need for the employee to realize the high "value" of the decision in a particular workplace;

9) the need for a correct assessment of the individual contribution of a particular worker to the unique production result, this is due to the specifics of single or small-scale production at the enterprise;

10) inclusion personal qualities' evaluation of the employee's work that provide motivation to increase productivity;

11) high adaptability of the competency model in the selection, motivation, evaluation and development of employees.

Based on the above factors, we can conclude that human behavior in any activity can lead to disruption of the project's implementation or to its timely and quality completion, so in order to reduce the risk of irrational human behavior, it is proposed to apply the principles of behavioral economics in scientific projects [10, 12].

Behavioral economic theory considers that its main task is to study the influence of various mental states of individuals in making economic or managerial decisions [7].

The most common conclusion reached by behavioral economics is that people often understand and interpret the situations they find themselves in, not as the standard model of rational choice suggests. Behavioral economists [7, 13] insist that behavioral errors made by individuals are predictable.

In certain circumstances, even competent, functionally successful people begin to act irrationally, against their own long-term interests. Therefore, changing the

situation, even in small details, can provoke a person to completely different reactions and appropriate behavior.

Various deviations from the model of rational choice can be conveniently divided into two major classes - cognitive errors and defects of will.

However, most of these deviations can be synchronously seen as a manifestation of intellectual limitations and lack of self-control.

The most important psychological dysfunctions in the field of human resources management in scientific projects include the following (Fig. 1):

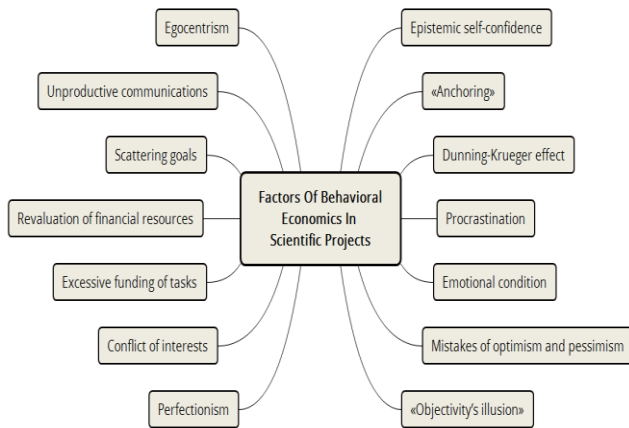


Fig. 1. Factors of behavioral economics in scientific projects

1. Epistemic self-confidence [14, 15] – reluctance to admit that human knowledge is limited, in particular: people overestimate their knowledge and underestimate uncertainty, narrowing the range of possible uncertain situations, so many people are prone to "tunnel" and "narrow" thinking. In scientific projects, this behavior can lead to the loss of leading positions in the development of science.

2. «Anchoring» [15] – making managerial decisions on the basis of the first received data, in particular, it is based on a consciously or unconsciously established strong conditioned-reflex connection. This may be the result of making wrong decisions that will contribute to the emergence of risky and conflict situations in the scientific project.

3. Dunning-Krueger effect [15] – making wrong decisions by incompetent people who are not able to realize it because of too much confidence in their own knowledge and competence. Due to the fact that most scientific projects are implemented in conditions of risk, uncertainty and conflict, such behavior may be grounds for losing the opportunity to become the first in a new direction of scientific research.

4. Procrastination [15] – postponing cases "for later", usually the most complex cases, which has negative consequences - unfinished work in time and negative destructive emotions - guilt, shame, anger. In a scientific project, this can lead to untimely and low-quality execution of existing projects, as well as the loss of new orders.

5. Emotional condition [7, 13] – can have a great influence on a person's choice, in particular: in psychologically "hot" states, such as anger, fear, admiration, excitement, etc., individuals are able to make ill-considered decisions. On the contrary, in "cold" states -

calm, composure, sober thinking, etc. - a person is able to make informed decisions. Based on the characteristics of scientific project, we can conclude that such behavior of any of its stakeholders' can lead to risks and conflicts.

6. Mistakes of optimism and pessimism [7, 13] – the mistake of optimism makes people overconfident in making decisions. Its essence - in underestimating the likelihood of adverse events that can cause serious, often irreparable harm to humans. There is the opposite mistake - pessimism, which makes people the most insecure, forcing them to exaggerate the likelihood of adverse events. Any stakeholder of a scientific project in this state can influence both negatively and positively, the decision concerning the project.

7. «Objectivity's illusion» [7, 13] – subconscious bias is present in every person and very often it contradicts the proclaimed values. Person, even on the basis of the best motivations, in the decision-making process is influenced by unconscious thoughts and feelings. This can lead to a loss of future prospects for both: scientific project team and the project itself.

8. Perfectionism [7, 13] – confidence in the possibility of achieving the best result, the desire to bring each action to excessively high results, scrupulousness, concentration on mistakes, doubts about the quality of work tasks; susceptibility to criticism, imbalance in self-esteem and others. Such behavior in a scientific project can lead to the loss of available resources (time, human and financial) and project failure.

9. Conflict of interests [7, 13] – a situation in which the employee's personal interest may influence the decision-making process and cause damage to the interests of society or company that is the employee's employer. Any scientific project stakeholder is interested in the success of the project, which can further improve its prospects, but it can also harm the project itself due to the fact that at any stage it may exceed the interests of the project.

10. Excessive funding of tasks [15] – making an incorrect or ill-considered decision by any stakeholder of the scientific project on the expenditure of available funds for tasks that are not of strategic importance, but are important for implementation, at the stage of current work.

11. Revaluation of financial resources [15] – overestimation of the necessary resources by any stakeholder of the scientific project of the request for financing of each separate task of the project.

12. Scattering goals [15] – dragging or distracting stakeholders' attention in scientific project from the strategic goals of the project.

13. Unproductive communications – inability of any project stakeholder to find a common language with others in the process of its planning and implementation. Non-implementation of the communication plan in the scientific project, which may contribute to the failure of the project and the emergence of risks, uncertainty and conflict.

14. Egocentrism – the focus of the project stakeholder on own goals, aspirations and experiences; and the inability as a result to perceive another person as a different personality. Such behavior in a scientific project can lead to risks, uncertainty and conflict, as well as loss

of resources (human, material, time), failure to perform project work, etc.

Conclusions. According to the results of the study, the factors of behavioral economics that may affect the process of planning and implementation of a scientific project were considered and analyzed, in particular, new factors were added to the previously proposed ones:

unproductive communications and egocentrism. Thus, we can conclude that one of the main problems of behavioral economics is the difficulty of building a model of optimal behavior in terms of risk, uncertainty and conflict based on the true utility function, ie interests and factors influencing the scientific project for a particular person in certain conditions.

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