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Competence Model of University Development Project Teams: Cross-Country Analysis

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Abstract. The results of a study aimed at solving the problem of the lack of a well-founded model of competencies of university development project teams are presented. The presence of this problem makes it difficult in practice to form successful project teams with the required competencies. This problem is significant for many countries. Accordingly, the purpose of the study was to substantiate the competence model of university development project teams based on empirical data collected at universities in different countries. The study was conducted in 2021–2022. The research methods were a questionnaire survey of representatives of universities in four countries – Russia, Georgia, Serbia, Iran, as well as a semi-formalized in-depth interview conducted at five universities in Russia. The results of the study are presented, namely: a competence model or a set of competencies of project teams is described; a refined model of competencies is proposed depending on the stages of the project life cycle; a comparative analysis of the obtained model of competencies in different countries is carried out. The developed competence model of the project team has a scientific novelty. The novelty is due to the fact that this model is as close as possible to the specifics of the higher education system. The model also reflects the features of the competence structure at different stages of the project life cycle. The results can be applied at universities when selecting candidates for transformation project teams with a focus on the specifics of project activities at universities and the stage of the project life cycle.

Keywords: university, transformation projects, project management, project team, competencies, competence model.

Research area: economics.

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Модель компетенций команд проектов развития университетов: межстрановой анализ

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Аннотация. Изложены результаты исследования, направленного на решение проблемы отсутствия обоснованной модели компетенций команд проектов развития университетов. Наличие этой проблемы затрудняет на практике формирование успешных команд проектов, обладающих требуемыми компетенциями. Проблема значима для многих стран. Соответственно, целью исследования стало обоснование модели компетенций команд проектов развития университетов на основе эмпирических данных, собранных в университетах разных стран. Исследование проведено в 2021–2022 гг., методами исследования стал анкетный опрос представителей университетов четырех стран – России, Грузии, Сербии, Ирана, а также полужформализованное глубинное интервью, проведенное в пяти университетах России. Представлены результаты исследования, а именно: описана компетентностная модель, или комплекс компетенций команд проектов; предложена уточненная модель компетенций в зависимости от стадий жизненного цикла проекта; проведен сравнительный анализ полученной модели компетенций в разных странах. Разработанная модель компетенций команды проекта обладает научной новизной. Новизна обусловлена тем, что данная модель максимально приближена к специфике системы высшего образования. Также модель отражает особенности структуры компетенций на разных стадиях жизненного цикла проекта. Результаты могут быть применены в университетах при подборе кандидатов в команды проектов трансформации с ориентацией на специфику проектной деятельности в университетах и стадии жизненного цикла проекта.

Ключевые слова: университет, проекты трансформации, управление проектами, команда проекта, компетенции, компетентностная модель.

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Introduction

The higher education system of different countries is in a state of continuous and global renewal, due to the influence of a dynamic and uncertain environment on it. This has a strong impact on the content of the projects

implemented by universities and their development programs. The number and scale of such projects and programs are growing every year. Their implementation requires highly qualified teams. However, practice shows that many university development projects

cannot be considered effective. The current period is characterized by a high proportion of unsuccessful projects. There are many reasons for this problem. Among the key reasons, it should be noted that the project teams lack the necessary competencies, the insufficient level of their development among the members of the project teams. This practical problem is complemented by a scientific problem, which consists in the absence of well-founded competence models of project teams that would take into account the specifics of university project activities and the requirements of different stages of the project life cycle. In addition, a comparative analysis of approaches from different countries to substantiating the competencies of university project teams is of scientific and practical interest. The research presented in this article is aimed at overcoming these problems.

Theoretical framework.

The study is based on the concept of forming a model of competencies of personnel of organizations, as well as the theoretical provisions of project management. Developments in the field of project management at universities and project team management, including universities, also provided significant assistance in substantiating the study. Let's focus on this in more detail.

The concept of forming a model of personnel competencies explains the essence and structure of the competencies of the organization's employees. This concept was developed by such authors of works on personnel competencies as Kaznacheeva S. N., Bicheva I. B., Kaznacheev D. A., Spencer L., Spencer S., Chulanova O. L., Sharipova O. M. In these and other works it is said that the competence model is a complete set of competencies required for certain positions and manifested by an employee in specific situations of performing professional and other functions within an organization with its specifics. Sometimes the competence model also includes behavior indicators that indicate the presence of a certain competence. In our study, the competence model is understood as a set of competencies with their structure, priority, relevant to the tasks of the project ac-

tivity of a particular organization, namely the university.

The competence model is investigated within the framework of the competence approach and the theory of competencies. Modern authors developing this approach and the theory of competencies include Kibanov A. Ya., Kolobova I. N., Konovalov V. G., Mitrofanova E. A., Petrova E. V., Chulanova O. L. In the works of these authors, the competence approach is positioned as a special way of personnel management based on the assessment and development of competencies. By competencies, the authors understand the totality of abilities, skills, abilities, knowledge necessary to perform tasks and functions and manifested in the specific behavior of an employee. The research presented in the article interprets competencies in a similar way to the definition presented.

Theoretical and applied developments in the field of project management can be seen in the works of Ruchkin A. V., Sazonova M. V., Sazonov A. A., Trofimova O. M., Khachaturova S. S. For our research, the theory of the project life cycle is important, outlined, for example, in the works of I. L. Byvnikov, V. V. Lovina. According to this theory, the project life cycle consists of the stages of initiation, planning, implementation and closure of the project. It is these stages that are studied in our study.

For the research, the works describing the specifics of project activities at universities have become important. For example, the works of Antokhina Yu. A., Fokina Z. A., Melnikova N. A., Vasilyeva E. V. outline approaches to the organization of project activities at universities. The authors Mostovshchikova I. A., Solovyova I. A., Fedoseeva A. I. explore the issues of project team formation. For our research, these aspects also have a certain value.

Statement of the problem

The research is aimed at solving the problem of insufficient validity of the composition of competencies that are included in the competence model of university development project teams. Therefore, such an aspect as taking into account the stages of the project life cycle and the industry specifics of the higher education

system of different countries in the competence model is not developed, therefore, problematic.

Methods

The purpose of the study is to substantiate the competence model of university development project teams based on empirical data collected at universities in different countries. Research objectives: to develop a competence model or a set of competencies of project teams; to take into account the specifics of university projects in the competence model; to clarify the competence model depending on the stages of the project life cycle; to conduct a comparative analysis of the received competence model in different countries.

The empirical study was implemented in two stages: a questionnaire survey in four countries – Russia, Serbia, Georgia, Iran; an in-depth semi-formalized interview in five Russian universities.

At the first stage, in 2021, a questionnaire was conducted in the form of an online survey based on a developed questionnaire containing 21 questions on modules: in-demand competencies of project teams, competencies de-

pending on the stages of the project life cycle, digital skills for projects, competencies in the field of project change management, the impact of competencies on project success indicators, data on respondents. The choice of countries is determined by the representation of citizens of Russia, Serbia, Georgia and Iran in the research group. The survey was conducted at leading universities with a developed project management system for transformational transformations and innovations. The selection of experts is based on the characteristics: experience of participation in transformation and innovation projects of the university for at least two years; work experience at the university for at least three years. A total of 203 experts were interviewed (in Russia – 54 experts, in Georgia – 48, in Serbia – 51, in Iran – 50). The following coverage of universities has been achieved: data from experts from 10 universities have been collected in Russia, 6 universities participated in the study in Georgia, 5 universities in Serbia, and 7 universities in Iran. In total, the study used data from experts from 28 universities. The representativeness of the data is ensured by a wide coverage of leading univer-

Table 1. The structure of the aggregate of experts from universities in Russia, Serbia, Georgia, Iran (in% of the number of respondents)

Specifications	Russia	Georgia	Serbia	Iran
Profile of the expert Faculty:	N=54	N=48	N=51	N=50
humanitarian	41	42	41	36
natural science	32	25	24	30
technical	27	33	35	34
Post of expert				
top management (rector, vice-rectors)	18	13	14	16
deans, directors of institutes, heads of departments	26	29	28	33
management staff (heads of services)	22	23	26	23
teachers	33	31	33	28
Work experience at the university				
3–6 years	31	31	41	38
over 6 years	69	69	59	62
Project experience				
2–5 years	56	56	39	32
more than 5 years	44	44	61	68

sities in different countries and a careful selection of experts according to predefined criteria.

The qualitative structure of the expert population by country is presented in Table 1. This structure includes different categories of university staff, which complements the representativeness of the obtained sample of experts.

At the second stage of collecting empirical information, an in-depth semi-formalized interview with 116 representatives of the administrative and managerial apparatus at five major universities in Russia was implemented. The choice of universities was made according to such selection criteria as: experience in project activities, in particular, participation in the project to increase the competitiveness of leading Russian universities among the world's leading research and educational centers (project "5–100") and inclusion in the implementation of the State Program of Support for Universities of the Russian Federation "Priority 2030". The universities that participated in the study have extensive experience in implementing transformation and change projects in various fields and spheres – in scientific, educational, managerial, entrepreneurial and others. The respondents were selected based on two criteria: experience of participation in projects and in the management of university transformation projects for at least three years; work experience at the university for at least ten years. Interviews were conducted in 2020–2022 at the place of work of the expert (in online or offline format). The sample included: rector, vice-rectors, directors of institutes, deans, heads of departments and services. The representativeness of the interview data is ensured by a large sample volume, careful selection of respondents according to the specified criteria, depth and breadth of the interview plan. In the interview structure, the priority position was occupied by issues related to the competencies of successful and unsuccessful university transformation projects.

Discussion

First of all, during the survey and interviews, the respondents' opinion on the role of competencies in achieving the success of university development projects and programs was clarified. The overwhelming majority of

respondents (87.8 % of interview participants and 88.6 % of survey participants) named competencies as a key factor in the success of project activities. Along with competencies, respondents attributed to the factors of project success: the level of maturity of project management at the university, the level of planning in projects, digitalization of project activity technologies, flexibility of project management, change management in project management. Similarities and differences across countries have been identified. Thus, the factor of the team having the required competencies is called a priority in all countries. It is rated slightly higher in Serbia and Russia than in Georgia and Iran. Also in Russia, experts more often point out as key factors administrative support of projects by top management, compliance of project activities with the university strategy, clarity of project plans, that is, to a greater extent external administrative and bureaucratic factors. Informal interpersonal communication is extremely important for Russia as a success factor of the project. And much less often in Russia there are factors of the ability to manage changes, the use of innovations in management and digital technologies, that is, internal factors of the organization of the project activity itself. It should be recognized that experts from other countries attach great importance to these significant factors.

The next step was to find out the most significant competencies for working in the university's project teams, which formed a model of the competencies of team members. It was important to find out the composition of competencies characteristic of university teams and reflecting the industry specifics of project activities. To do this, experts were offered a list of competencies during the survey and asked to note the degree of significance of each of them. The significance was reflected on three levels – high, medium and low. The experts chose one of three levels of competence significance. In order to analyze the data obtained, points were assigned to each level of significance: low significance (1 point), medium (2 points), high (3 points). Then the average score for each competence was calculated. The results by country are presented in table

2. In Russian universities, the competencies of project teams related to strategic and systemic thinking, the presence of motivation for project work, flexibility of thinking, and the ability to work in conditions of change turned out to be significant. Experts from other countries also note these competencies as highly significant. Unlike other countries in Russia, experts attach less importance to such competencies as the ability to work in a cross-cultural and multinational team, in a team with representatives of different countries; skills of working in a virtual team; knowledge of a foreign language. It can be assumed that international projects are still poorly developed in Russian universities, for which these competencies might be required. A characteristic feature is that experts from Russian universities point to the low demand for innovation skills and risk-taking abilities. In other countries, these competencies are assessed as more significant. Digital competencies are named by representatives of Russian

universities among the highly significant ones, but their level of significance is still lower than in other countries. As for research skills, they are not highly rated as in demand at the current time in all four countries.

Further, in accordance with the objectives of the study, it was found out which competencies are most important at different stages of the project life cycle. Since the project is implemented sequentially in stages and gradually unfolds over time, it was important to understand whether a change in the competencies of the team is required during its transition from one stage to another. To do this, respondents who participated in the survey were asked to note the most significant competencies at each stage. The results for all countries are summarized in table 3. As can be seen from Table 3, the need for various competencies increases at the stages of project implementation and closure, to a lesser extent the entire set of competencies is required at the stages of initiation and plan-

Table 2. The importance of competencies for working in university project teams (in points, where 1 is low significance and 3 is high significance)

Competencies	Russia	Georgia	Serbia	Iran
	N=54	N=48	N=51	N=50
Ability to work in conditions of change	2,7	2,8	2,7	2,9
Ability to work with digital technologies, including communications using digital technologies	2,2	2,7	2,6	2,8
Strategic and systems thinking	2,8	2,6	2,7	2,5
Foreign language proficiency	1,3	2,5	2,4	2,3
Professionalism in the subject area of the project	2,5	2,2	2,1	2,4
Research skills	1,4	1,8	1,9	1,6
Open communication skills in the project team and with partners, including online, in social networks	2,5	2,3	2,2	2,5
The presence of a pronounced motivation to work in the project	2,8	2,7	2,7	2,9
Focus on achieving results	2,4	2,3	2,4	2,2
Flexibility (not a template) of thinking and work	2,7	2,6	2,5	2,6
Willingness to take risks when making decisions	1,7	2,2	2,3	2,2
Ability to participate in projects in different roles	2,2	2,1	2,0	2,3
Leadership and responsibility in team management	2,3	2,4	2,6	2,5
Ability to work in a team with representatives of different countries, cultures, nationalities	1,2	2,4	2,5	2,4
Ability to work in a virtual team	1,3	2,3	2,1	2,2
Innovation and entrepreneurship	1,3	2,2	2,1	2,4

Table 3. Competencies of project teams depending on the stages of the project life cycle (as a percentage of the total number of respondents)

Competencies	Stages of the project life cycle:			
	initiation	planning	realization	closure
Ability to work in conditions of change	63,0	37,9	86,6	73,8
Ability to work with digital technologies, including communications using digital technologies	28,5	55,6	73,8	33,0
Strategic and systems thinking	75,8	72,4	32,0	31,2
Foreign language proficiency	6,8	7,3	10,8	9,7
Professionalism in the subject area of the project	27,5	39,4	50,2	46,7
Research skills	27,5	46,7	11,3	5,9
Open communication skills in the project team and with partners, including online, in social networks	14,7	15,8	83,7	78,8
The presence of a pronounced motivation to work in the project	55,2	31,5	86,2	27,5
Focus on achieving results	11,3	15,7	76,3	76,3
Flexibility (not a template) of thinking and work	67,9	69,9	27,1	20,6
Willingness to take risks when making decisions	55,1	59,1	32,2	22,3
Ability to participate in projects in different roles	8,8	15,8	82,2	32,1
Leadership and responsibility in team management	19,2	14,7	88,6	81,2
Ability to work in a team with representatives of different countries, cultures, nationalities	6,4	6,4	28,8	22,3
Ability to work in a virtual team	3,4	4,9	23,7	26,4
Innovation and entrepreneurship	64,3	20,6	27,1	78,8

ning. At the initiation stage, competencies are most in demand: strategic and systemic thinking, flexibility (not a template) of thinking and work, innovation and entrepreneurship, willingness to take risks when making decisions, the ability to work in conditions of change. It is these competencies that should form the core of the competence model of the team working at the project initiation stage. At the planning stage, according to respondents, competencies are more often needed: strategic and systemic thinking, flexibility (not a template) of thinking and work, possession of digital technologies, including communications using digital technologies, research skills, professionalism in the subject area of the project. The structure of priority competencies is radically changing at the project implementation stage. During this period of project activity, competencies begin to be important: the presence of expressed motivation to work in the project, leadership and responsibility in team management, open

communication skills in the project team and with partners, including online, in social networks. networks, the ability to work in conditions of change, concentration on achieving results, the ability to participate in projects in different roles, professionalism in the subject area of the project. That is, the core structure of the competence model changes dramatically at this stage of the project life cycle and special attention begins to be paid to the competencies of teamwork. At the closing stage, competencies are important: concentration on achieving results, leadership and responsibility in team management, innovation and entrepreneurship, research skills, professionalism in the subject area of the project, possession of digital technologies, including communications using digital technologies. If we conduct an analysis for different countries, then we find the unanimity of experts from different countries. They name approximately the same composition of the most important competencies at one stage or

another of the project life cycle. The exception is that for different countries, except Russia, at the stage of project implementation, the ability to work in a virtual team and in a team with representatives of different countries, cultures, nationalities is important. The importance of these competencies, as noted earlier, is higher in foreign universities in comparison with Russian universities.

As for the respondents who took part in the interview, 48.4 % of them noted that different competencies are required to the maximum extent at the project implementation stage. They also name as the most manifested at this stage such competencies as: team interaction, proper distribution of roles in the leadership team, motivation of team members, the ability to carry out effective communication, willingness to take risks. These data confirm the conclusions made by the results of the questionnaire survey.

Conclusion

Thus, thanks to the conducted research, the competence model of university development project teams was substantiated. The model consists of 16 competencies. The core of the model consists of the following competencies, noted by experts as the most significant: strategic and systemic thinking, motivation for project work, flexibility of thinking, ability to work in conditions of change. It is these competencies that should be evaluated and formed primarily in the teams of university transformation projects. Other competencies included in the model are significant, but to a lesser extent.

The allocated competencies take into account industry specifics, namely project activities in the higher education system. Consideration of this specificity was achieved through a survey of experts from the higher education system and taking into account their opinions when developing a competency model. It can be assumed that competencies such as research skills, knowledge of a foreign language, work in virtual teams and a cross-cultural environment are more in demand in university projects, rather than in business projects of enterprises of other industries. However, this hypothesis requires further verification in specially organized studies.

The formed competence model has been refined depending on the stages of the project life cycle. The clarification lies in the fact that competencies are structured and key competencies characteristic of a particular stage of the project life cycle are highlighted among them. For example, for the initiation stage, experts note the importance of the following competencies: strategic and systemic thinking, flexibility (not a template) of thinking and work, innovation and entrepreneurship, willingness to take risks when making decisions, the ability to work in conditions of change. These competencies formed the core of the competence model of the initiation stage. Completely different competencies acquire special significance at the stage of project implementation. According to the results of the analysis of expert assessments, the core competencies of the project implementation stage included: the presence of expressed motivation to work in the project, leadership and responsibility in team management, open communication skills in the project team and with partners, the ability to work in conditions of change, concentration on achieving results, the ability to participate in projects in different roles, professionalism in the subject project areas.

A comparative analysis of the obtained model of competencies in different countries is carried out. Thus, the structure of priority competencies included among the first most significant competencies is the same in all four countries. But the structure of the entire competency model, consisting of 16 competencies, differs in different countries. For example, it is typical for Russia that competencies that are in demand in other countries, such as willingness to take risks and to innovate, the ability to work in multinational and virtual teams, and knowledge of a foreign language, are less important. Also in Russia, digital competencies received lower ratings than in other countries. This is due to the peculiarities of project activities at Russian universities, in particular, the small scale of international projects involving international teams.

The obtained research results have scientific and applied significance. In particular, the developed competence model of the proj-

ect team has a scientific novelty. The novelty is due to the fact that this model is as close as possible to the specifics of the higher education system. The model also reflects the features of the competence structure at different stages of the project life cycle. It was not possible to find analogues of such developments in the scientific literature.

The practical significance lies in the fact that universities have at their disposal a competence model that will help to make more informed decisions about the composition of project teams. Using this competence model, the university management can select those candidates to the team who have the required competencies to the greatest extent. The mod-

el can also become the basis for the development of development and training programs for members of university project teams. The refined structure of competencies for different stages of the project life cycle helps to make a decision about which candidates should be involved in the project team at one stage or another, how it is possible to rotate team members, knowing their competencies and comparing them with the required competencies at one stage or another.

In general, it can be argued that the study contributes to the development of the theory and practice of project management and human resource management of the organization's project teams.

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