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Iurii Teslia
Doctor of Technical Science, Professor, Professor of the Department of Information Technology Project
teslyas@ukr.net, orcid.org/0000-0002-5185-6947
Cherkasy State Technological University, Ukraine

Nataliia Yehorchenkova
Doctor of Technical Sciences, Professor, professional worker Slovak Centre of Scientific and Technical Information
realnata@ukr.net, orcid.org/0000-0001-5970-0958
Slovak Centre of Scientific and Technical Information, Slovak Republic

Iulia Khlevna
Doctor of Technical Science, Associate Professor, Professor Department of Technology Management
yuliya.khlevna@gmail.com, orcid.org/0000-0002-1874-1961
Taras Shevchenko National University of Kyiv, Ukraine

Oleksii Yehorchenkov
Doctor of Technical Science, Associate Professor, Professor Department of Technology Management
alexee@ukr.net, orcid.org/0000-0003-1390-5311
Taras Shevchenko National University of Kyiv, Ukraine

Svitlana Biloshchytska
Doctor of Technical Sciences, Associate Professor
Professor Department of Computational and Data Science
Astana IT University, Kazakhstan
Professor Department of Information Technologies
bsvetlana2007@gmail.com, orcid.org/0000-0002-0856-5474
Kyiv National University of Construction and Architecture, Ukraine

Yevheniia Kataieva
PhD, Associate Professor, Researcher of Faculty Informatics and Information Systems
kataevae@ukr.net, orcid.org/0000-0002-9668-4739
Slovak Technical University, Slovak Republic

APPROACH AND STRUCTURE OF SPECIAL ORGANIZATIONAL, METHODOLOGICAL AND TECHNOLOGICAL COMPONENTS OF PROJECT AND PROGRAM PORTFOLIO MANAGEMENT SYSTEMS

Abstract. The functional limitations of modern corporate project and program management systems are presented. It is shown that the main limitation of such systems is connected with the weak implementation of organizational and methodological components, especially in the processes of project and program portfolio management. The structure of project and program portfolio management system, focused on the management of project portfolios in project-oriented companies, is proposed. The necessity of creating project and program portfolio management system in the companies involved in the implementation of a significant number of complex projects is justified. It was shown that since such systems combine organizational and methodological components, they are highly dependent on the construction of the project-oriented company itself. On its organizational structure, company

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management processes, peculiarities of the production process and its management. The consequence of this is the uniqueness of project and program portfolio management system. Description of organizational, methodological, and technological components of such system is given. The distinctive features of these components in different companies are described. It is shown that the organization of 3P-management is based on the creation of a service engaged in the implementation of project management in the company. The methodological component of project and program portfolio management system should be based on project management meta-methodology. And information technology should be based on a matrix model of interaction between company management tools and projects. The ways of integration of organizational, methodological and technological components of project and program portfolio management systems based on the implementation of a system-forming project of creating a project and program portfolio management system are presented.

Keywords: project and program portfolio management system, 3P-management, project management organization, project management methodology, project management information technology

Introduction

Intensification and globalization of the economy lead to an intensification of competition between companies for spheres of influence on the world markets. The winners are those companies that timely responded to the state of the market, reoriented to the output of demanded products and organized this output in a more organized and less costly way than other companies. All this require the use of the project approach for improvement, development, optimization of production, and, consequently, there is a growing interest in the project management methodology. In addition, considerable parts of companies are project-oriented. And they are also interested in development of tools for management of projects, programs, portfolios (3P-management), their convergence with the specifics of their own enterprises. Large-scale increase of companies' interest in the development of practical ways of effective 3P-management leads to the need for individualization (to meet the conditions of companies) and improvement of organizational management structures, enrichment of methodology and information technology of project management with models, methods and tools of management and development of enterprises, and project management of manufacturing of these or those products. And with the onset of the era of digital transformation and digitalization of modern enterprises there is a need to introduce some new views on the creation of organizational, methodological, and technological components of project and program portfolio management systems at project-oriented enterprises.

Literature review and problem statement

In today's environment, improving the efficiency of companies is possible only by using modern project management methodology. Whether to implement development and modernization projects, or to manage production projects. In fact, in practice, the application of the methodology of project management is carried out in two directions - management of project-oriented activity and development management of the enterprise. Almost all works on the application of project management methodology are devoted to these issues [1]. But the gap between the ideal of management prescribed in the project management methodology and practice of its implementation is sometimes huge. And often you can hear from project managers that «the methodology doesn't work» [1 [1, 2]. The reason for this is that it is impossible to create a single methodology for all cases. At the present time there have been created probably thousands of different methodologies (among them the most popular are PMBOK, P2M, OPM3, Scrum) for different specifics of projects implementation.

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According to PMBOK standard [3] methodology is considered as a system of practices, methods, procedures, and rules used in a particular area of activity.

Scrum is a framework that has a particular popularity in the field of software development, adapted to customer requirements by the rapid response of a self-organized, multi-functional team to emerging changes [4, 5].

Management of innovative projects and programs required the creation of a special methodology. The P2M methodology [6] has become such kind of a methodology. It presents well the approaches, methods, schemes, and principles that can be used in practice. But it does not regulate the practical work in projects and programs.

The works [7-8] form the methodological basis at the level of practices of OPM3 model. Results of work reflect, how to turn 456 best practices from 586, presented OPM3, in 38 typical best practices. A continuation of the presentation of the methodology as a practice is reflected in [9-10]. Its purpose is to develop a convergent approach as a mechanism of convergence of existing best practice methodologies (PMBOK, OPM3, P2M, PRINCE II, ISO 21500, etc.).

And still there is a need for methodologies for the specific activities of different enterprises. In this part the idea of using project management meta-methodology to create specific (for the conditions of enterprises) project management methodologies have been proposed [1]. On the other hand, there are works that investigate the creation of software and information superstructures over project management tools, reflecting the conditions of functioning and the needs of enterprises in this or that information [11]. But among the works there are no such works that would show how to combine the specific features of building enterprise-specific organizational structures, methodologies and information technologies into a single project and program portfolio management system (PPPMS). Although some works already solve the problem of integration of operational and project activities, which allows combining the functions of project portfolio management with operational support of projects [12]. The integration of operational and project activities at the level of project portfolio management is performed on the basis of matrix information technology [13], which complements the matrix organization of project management [14-16]. A number of methods developed in project management could be the basis for the creation of effective management systems for projects, programs, portfolios. In particular, the methods of vector management, reflecting the dynamics of project development [17] can be well used in the creation of technological and methodological components of PPPMS. But do not reflect its organizational component.

There are a number of works on creation and implementation of corporate project management system (CPMS) [18-19]. In contrast to the considered three-component structure of PPPMS when creating a CPMS, the main issue is focused on automation tools. And the methodological and organizational components of the management of the company's project activities either remain outside the CPMS or are considered as a derivative of the information technology solution. Therefore, this approach also requires adaptation in the conditions of creation of enterprise-specific organizational structure, methodology and information technology of project and program portfolios management. In addition, these systems are focused on project and program management and do not reflect the specifics of project and program portfolio management at the level of project management of the company [20-22]. The PMI standard for project portfolio management also does not address the construction of PPPMS [23].

As the analysis showed, despite the scientific and practical results obtained in the field of project management, the issue of creating enterprise-specific project and program portfolio management systems has not been sufficiently reflected in modern publications. The presence of the unresolved part of the problem in this area, namely, ensuring a balanced managerial activity when solving operational and project tasks, puts forward an objective need to develop

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original approaches, models, methods, and tools for building systems of project and program portfolio management for a particular enterprise.

Purpose and objectives of the study

The aim of the article is to develop an approach to the creation of project and program portfolio management system, focused on a particular company. To achieve this goal the following tasks should be solved in the paper: development of decision-making model for creation and implementation of PPPMS; content and specific features of projects for creation and implementation of PPPMS; development of approach for creation of organizational component of PPPMS; definition of principles and tools for creating company-specific project and program portfolio management methodology; development of approach for creating company-specific project and program portfolio management information technology.

Materials and methods

1.1 Decision-making on creation and implementation of the system of management of portfolios of projects and programs

The activities of many companies can be classified as project-oriented, aimed at effective investment management. Process management problems (multiple changes, uncoordinated actions of executives, production workers, logisticians, etc.) lead to unplanned downtime, changes and rework, delays in production. In this case no one doubts the necessity to create some project management system, which will provide the increase of management efficiency. Let us understand under the project management system a set of objects and processes of purposeful influence on the project environment, providing with high probability the achievement of project goals. In essence, the project management system is a clear organization of management activities, based on professional managers who are armed with a company-oriented project management methodology and possess complete, reliable, and timely information about the processes taking place in projects and their implementation environment.

Thus, while CPMS is necessarily based on project management tools, and methodological and organizational components are supporting subsystems, in PPPMS both organizational and methodological and technological components are functional subsystems.

Creation of PPPMS is a complex project requiring certain financial investments. Is it always profitable? Figure 1 shows trends in the cost of management when implementing two options PPPMS (Level 1 and Level 2), or without implementation. If a company has few projects, they can be successfully managed within the projects themselves (the red line in Fig. 1 for small N). In this case, the cost of PPPMS may be higher than the cost of managing a small number of projects. If the company has a lot of projects, there is a need to manage them as a single project activity of the company. Requiring the introduction of project management (in the first case - the introduction of project management). There are tasks of resource allocation between projects, their prioritization, coordination of actions in the project.

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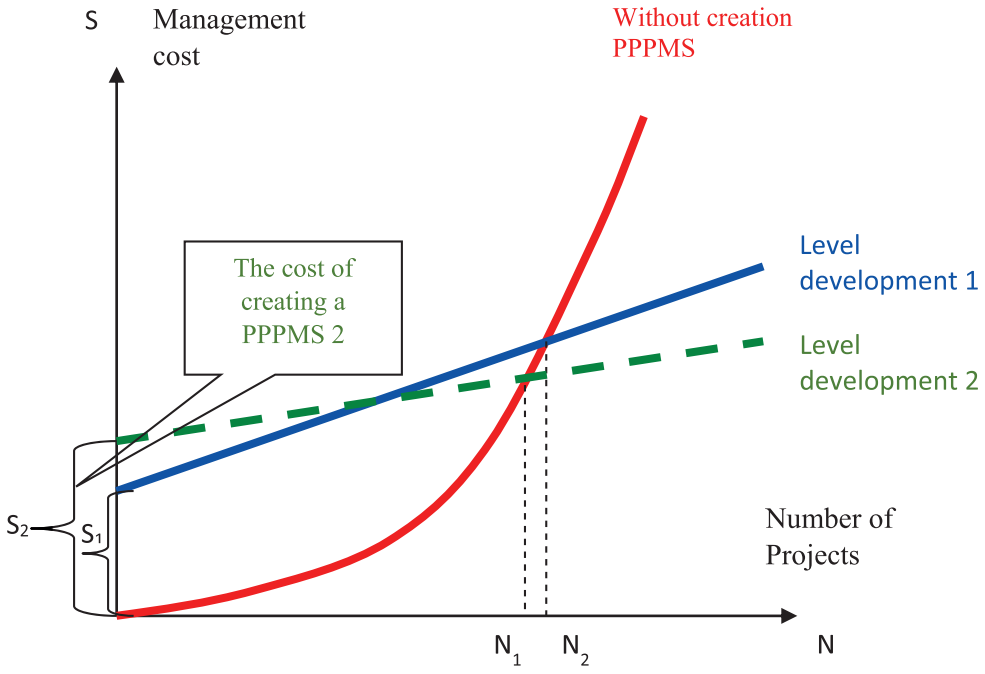

Figure 1. The dependence of management costs in a project-oriented organization on the use of PPPMS

In the general case, the number of interactions in the project management process grows, which certainly leads to errors, making irrational decisions, making changes in the resource allocation plan as the projects progress, the need to perform significant work on information support of project activities. If in this case the project management system is not implemented, the cost of management will grow geometrically (red line at large N). But if the management system is implemented, the growth of management costs will not be as significant. Because the system configured for one project (e.g., regulations, templates), will effectively manage other projects. It is clear that the more complex and functionally complete the system is (green line compared to blue), the more expensive it will be, but the growth of management costs will not be as rapid (because of its more complete functionality). Then there is a number of projects (or rather, a certain volume of realized functions of project management), on Fig. 1 it is N1 and N2, at which creation of project management system is profitable in terms of management costs.

Therefore, the project and program portfolio management system is a tool to manage many projects, or rather portfolios of projects and programs. It standardizes the processes and functions at the level of project management of the company for clearer, better, and more effective project and program portfolio management.

As follows from the above material - PPPMS, these are people (roles), rules (methodology) and information (IT). And in each company, these components are largely unique. Therefore, PPPMS cannot be bought, and cannot be borrowed from another company. It must be created and implemented. And the creation and introduction of such a system is a complicated project of company development. Its implementation imposes peculiarities both on the process of PPPMS creation and on PPPMS itself. Let's consider the main features of the project of PPPMS creation. Therefore, we need a formal mechanism for making a decision whether to create and implement PPPMS or not. Let's consider a decision-making model regarding the creation and implementation of PPPMS.

Portfolio management is a continuous process of implementing management actions for projects, programs, and portfolios:

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$$\forall \Pi_j \in \Pi: D_j = \{d_{ji}\}, i = \overline{1, n_j},$$

Where Π –the set of company projects;

Π_j – the company's project;

d_{ji} – a management action (operation) in project Π_j ;

n_j – number of managerial actions in project Π_j.

Examples of management actions are development of the project plan, bringing it to the executors, determination of the scope of work performed, appointment of the project manager, etc.

Each action is described by a formal seven:

$$d_{ji} =< Q_{ji}, r_{ji}, q_{ji}, H_{ji}, W_{ji}, \varepsilon_{ji}(H_{ji}), s_{ji}(H_{ji}) >,$$

Where Q_{ji} – the information needed to perform action d_{ji} ;

r_{ji} – the result of action d_{ji} ;

q_{ji} – the output of action d_{ji} ;

H_{ji} – performers of action d_{ji} ;

W_{ji} –resources needed to perform the action d_{ji} ;

$\varepsilon_{ji}(H_{ji})$ – the duration of the action by H_{ji} performers;

$s_{ji}(H_{ji})$ – the cost of performing the action by H_{ji}.

The total cost of management will be equal to the cost of all actions for all projects

$$S = \sum_{\Pi_j \in \Pi} \sum_{i=1}^{n_j} s_{ji}(H_{ji}), \quad (1)$$

Where S – the total cost of management.

Management actions can be performed correctly, and then their result and output will correspond to the realities of the project, or they can be performed in error. Especially if the qualification of performers is low (although usually they are cheaper). Then, firstly, it is necessary to incur additional costs to correct errors. Secondly, erroneous information, which is the result of the action will lead to errors in the actions that use this information. Then the cost of controls will be equal:

$$S^{err} = \sum_{\Pi_j \in \Pi} \left(\sum_{i=1}^{n_j} s_{ji}(H_{ji}) + \left(1 - p(d_{ji}, H_{ji})\right) \cdot \left(\varphi_{ji} + \sum_{q_{ji} \in Q_{jk}} \varphi_{jk} \right) \right), \quad (2)$$

where S^{err} – the cost of management including the cost of correcting errors in management actions;

$p\,(d_{ji}, H_{ji})$ – the probability of performing the management action d_{ji} correctly if the executors are H_{ji} ;

φ_{ji} – the cost of correcting the error in the management action d_{ji};

φ_{jk} – the cost of correcting the error in the management action d_{jk}, which is caused by incorrect input information $q_{ji} \in Q_{jk}$, obtained when performing the management action d_{ji}.

To reduce the cost of management actions it is necessary to:

1. Organize the project portfolio management in such a way that the same actions of different projects are performed, if possible, by the same executors. This raises their professionalism level. Something like a management conveyor is formed. And, consequently, the probability of error $p\,(d_{ji}, H_{ji})$ decreases. Indeed, if

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$$\exists d_{ji}, d_{rm}: Q_{ji} = Q_{rm}, r_{ji} = r_{ji}, q_{ji} = q_{rm} \rightarrow s_{ji}(H_{ji}) + s_{rm}(H_{rm}) \leq \max\left(s_{ji}(H_{ji}), s_{rm}(H_{rm})\right). \quad (3)$$

That is, instead of two identical management actions in different projects, one management action for two projects can be performed. This is what the project management office does when coordinating different projects. For example, creation of the regulatory base of projects, preparation of the company's budget according to the project budgets, development of risk prevention measures, etc.

2. To reduce the probability of error it is necessary to use a specific methodology and information technology of project management. Concretized methodology creates a standard of project management in the company. So that the management actions of different projects are performed according to the same algorithm, with the same regulations. It increases the probability of error-free managerial action in different projects due to the smaller number of variants of their implementation, and thus a more professional performance. Information technology provides executors of management actions with accurate, complete, timely information, which also increases the probability of their correct execution. Decrease of management cost will be equal to

$$\Delta S = \sum_{Q_{ji}=Q_{rm}, r_{ji}=r_{ji}, q_{ji}=q_{rm}} \left(s_{ji}(H_{ji}) + s_{rm}(H_{rm}) - \max\left(s_{ji}(H_{ji}), s_{rm}(H_{rm})\right)\right) + \\ + \sum_{\Pi_j \in \Pi} \left(\sum_{i=1}^{n_j} s_{ji}(H_{ji}) + \left(p^*(d_{ji}, H_{ji}) - p(d_{ji}, H_{ji})\right) \cdot \left(\varphi_{ji} + \sum_{q_{ji} \in Q_{jk}} \varphi_{jk}\right)\right), \quad (4)$$

where ΔS – the effect of implementation of organizational, methodological and technological components of project management system;

$p^*(d_{ji}, H_{ji})$ – the probability of performing the management action d_{ji} correctly if the executors are H_{ji} after the implementation of PPPMS.

The project management system should be implemented if the cost of its creation and implementation is lower than the effect of its use (4)

$$\Delta S > S_0 \quad (5)$$

where S_0 – the cost of creating and implementing a project management system.

The given model can be used to make a decision on creation and implementation of PPPMS. The data for it can be obtained from the information standard (how many times changes were made in the project, what management decisions were wrong and why), as well as on the basis of expert information (estimation of probabilities of performing management actions without errors for the available project teams). Intuitively, the more projects a company has, the greater the need to create and implement PPPMS.

Each PPPMS is a complex unique system, and its creation may even take more than one year [13, 25]. Therefore, the creation and implementation of PPPMS should be considered as an organization development project and use a project approach for its implementation. Let us consider this issue.

1.2 Project of creation and implementation of PPPMS

In the process of creation and implementation of PPPMS the following tasks should be solved:

1. initiate, design, and execute the PPPMS creation and implementation project.
2. Implementation of the project approach in the company's work.
3. Creation of rational organizational structures of project and program management.

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4. Creation of a rational organizational structure for project and program portfolio management.

5. Development and implementation of the corporate project management system (CPMS), including instrumental software tools (PP Primavera, MS Project or others) and focused on the specifics of management activities in the company of the matrix information technology [13, 25].

6. Conducting training for the managerial staff of the company, which will provide the necessary level of understanding of the processes of implementation of modern methods and tools of project management in the activities of aircraft production.

7. Development of an economically advantageous for the company and stimulating work production system of planning, monitoring, motivation, accounting for the consumed material, technical and financial resources.

8. Development of corporate standards for solving project tasks.

The objective of the project is creation of project and program portfolio management system aimed at organizational, methodological and informational support of the project, program and portfolio management processes. The company-oriented project and program portfolio management system should include: an organizational component (structure, functions, roles, interactions, and training of the company's employees involved in the projects); a methodological component (regulations, rules, principles and methods); a technological component (project management information technology, including the basic tools – PP Primavera or MS Project).

PPPMS is a project product and should provide the necessary quality of management of all portfolios, projects, and programs of the company. That means it must take into account the peculiarities of the company's management, its production and management processes, strategy, top-management and management relations. Therefore, the implementation of the project in each company will have its own characteristics, which lead to the uniqueness of creation and implementation projects. Let's consider these features in the context of the key functions of PPPMS:

1. Development, approval, and application of regulated procedures for project and program management - planning, document management, control, change management, procurement management, risk management, etc.

The uniqueness of regulated procedures is based on the necessity to take into account the level of technological maturity of executors, the company's structure, and existing procedures in the operating activity.

2. Detailed planning of the projects, including: the list of tasks, terms of their beginning and completion, volume of used resources, documents, risks, responsible persons.

All these details of project plans will correspond to the standards and resources of project management existing in the company. It is probably impossible to find two companies that implement the same type of projects, have the same resources, face the same risks and use the same methods to prevent them, etc. Therefore, the detailed planning procedures implemented in PPPMS, in general, will be different for different companies.

3. Efficient administration of all tasks in the project portfolio, including control over execution of approval procedures, communicating tasks to contractors, and control of task execution.

Assignment notification and control is based on the technical capabilities of the company, the structure of the contractors and the terms of the contracts. And fulfillment of approving and approving procedures depends on the procedures used by the approving bodies. And the approval procedures that go beyond the project activities. Therefore, this part of the system will also be unique.

4. Budgeting of portfolios of projects and programs, is based on the volume and cost of resources, the distribution of their needs over time.

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The procedure of budgeting of portfolios of projects and programs is a part of the general procedure of budgeting of the company's activity. Therefore, it cannot be imposed by PPPMS, but should reflect what is in the company. Consequently, it is impossible to develop a single budgeting procedure in PPPMS and implement it for all companies.

5. Monitoring the execution of the project plan and budget.

As in Item 3. is based on the technical capabilities of the company, the structure of counterparties and the terms of contracts. It will also be unique.

6. Carrying out procurement of material resources on the basis of project and program plans.

There may be developed a standard sub-system for carrying out procurement, because there is an appropriate legislation. The question arises for private companies. They can use their procedures simplified procedures, for example, the procedure for which the decision is made by the owner.

7. Training of managers and specialists.

The training program will always consist of 2 parts. Training of project management methodology. This is the common part of all programs. As well as the unique part. Training of the implementation of the listed functions. And since they are unique to each company, the training program, in this part, will be unique.

8. Certification of the company and managers on the level of technological maturity in project management.

This is a standard part for all companies. Depends only on the body that performs the certification - IPMA, PMI.

As you can see from this list, 6 of the 8 functions are unique to companies. Accordingly, unique tools for their implementation will be created in PPPMS. Let's consider the uniqueness of these tools in the context of PPPMS components – organizational, methodological, and technological.

1.3 Organization of project management in the company

As part of the project management organization there should be created:

1. an organizational structure introducing project management tools in the company (including the one responsible for implementation of the project of PPPMS creation).

2. Rational organizational structure for managing the company's project and program portfolios.

3. Rational organizational structures for managing the company's projects and programs.

4. The procedure for forming project teams.

5. Project teams.

6. Supporting organizational structures.

7. System of training of project teams, managers, and specialists of the company.

8. System of motivation of project teams, managers, and specialists of the company.

Traditionally, project-oriented companies are functional organizations (not organizations «under the project»). Divisions solve both operational (permanent) and project tasks. Usually, company employees have no professional training in project management.

PPPMS project tasks must be prescribed, the execution of which must necessarily take into account the peculiarities of the construction of the company itself:

1. Create a project management office (PMO).

2. Create a unit responsible for the development and implementation of a company-oriented project management methodology.

3. Create a subdivision responsible for the implementation of information technology for project, program, and portfolio management.

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4. Conduct training in project management.
5. Introduce a matrix organizational structure of project management.
6. Involve employees of departments involved in projects and programs in the teams.

All managers and specialists involved in project management will be required to perform the tasks of the PPPMS project manager, participate in scheduled and unscheduled PPPMS project team meetings, and be responsible for the compliance of actions in their professional areas with the PPPMS project objectives and plan.

Since project-oriented companies implement projects of different scales of implementation, timelines, investments, and types of products created, this requires a combined approach to project management organization. Therefore, lifecycle models will be different in scale and purpose of projects. The resource of project managers at all stages of the project life cycle will be: heads of the company, heads of departments, employees of departments, as well as outsourced specialists who form the project team. Project and program teams must necessarily have roles:

- project manager;
- project administrator;
- project coordinator;
- project planner;
- financial manager.
- production manager;
- design manager;
- product promotion manager;
- delivery manager.

All project team roles must be personalized. The team structure, roles, and project functions will be developed for each type of project within a project.

At the project and program portfolio management level, functions are implemented:

- Project and program portfolio coordination;
- allocation of resources among projects and programs;
- appointment of project and program managers;
- development of a uniform management methodology for the company;
- Development of information technology for project and program management;
- implementation of the PPPMS project.

As the level of project and program portfolio management is intermediate between project and program management and top management of the company, it reflects the specificity of managerial activity in the company as a whole, its development strategy. And taking into account the fact that this level is integrated with the tasks of implementation of project management methods in the work of the company it is better if this direction is headed by the deputy head of the company for project management.

1.4 Project activity methodology

Taking into account the specifics of each company a methodology of project, program and portfolio management specified in its conditions should be developed. Concretized methodology is a product of project management meta-methodology [1]. Meta-methodology uses the tools of popular methodologies in the world, selects and integrates a set of such tools for a certain company into a single specified methodology. Such integrated set of tools takes into account the specifics of the company, which allows for the best way to build all the processes of managing and providing management of projects, programs, portfolios.

At the heart of the specific methodology are the general principles of project management, which are spelled out in the meta-methodology:

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1. Who is responsible - that's who makes decisions.
2. Who makes decisions - the one who manages.
3. Management is based on a plan.
4. Any activity, including project management, should be handled by professionals.
5. For effective management, each project is divided into parts, and one manager should be responsible for each part.

7. The main capital of any company in modern conditions is the knowledge of its employees. Knowledge and ability to implement this knowledge in the field of professional activity. For this purpose it is necessary to «study, study, and again to study». That is why in the project of PPPMS creation managers and specialists of the company are to be trained.

8. The main result of PPPMS project and program portfolio management system.

9. The main management tool of any project, including the project to create PPPMS - the plan. The plan is a coordinated and approved document which coordinates the actions of all project implementation participants. The plan reflects the actions of all project participants, including those who are not directly subordinate to the project manager. The effect of approval is that everyone must comply with the signed plan.

In addition, the specified methodology uses the tools that are used in the company for the management of operational activities and adds the tools necessary for the implementation of project activities. For example, the processes of project planning, team building, allocation of structures, reporting in projects and programs can be represented through approaches, models, methods, regulations and structures from different project management methodologies. Thus, it is possible to reach conformity of the methodology of project management in the company to its peculiarities and needs.

1.5 Project management information technology

Traditionally, the core of the project management information technology are tools MS Project, Oracle Primavera P6, Clarizen, Trello, Open Plan, etc. At the same time the function of informational content of these tools is entrusted to the project management groups and PMO departments. In addition, there is always the problem of integration with the enterprise information system. For example, the budgeting of the project portfolio is connected with budgeting of the whole company. This is often performed by the company's information system. In this case, in different companies, these information systems, in general, consist of different tools.

To eliminate this drawback it is proposed to introduce matrix information technology (MIT) uniting both project (functional) and operational (providing) processes within the project of PPPMS creation. Such matrix information technology solves the following tasks:

- planning;
- administration;
- budgeting; - budgeting; - monitoring;
- monitoring;
- management of human resources (responsible and executives);
- management of material resources;
- creation of the company's information standard (all data on the implementation of projects and programs is stored in the data and knowledge warehouse).

To solve the above tasks, the following tools can be used:

- project analysis (Project Expert);
- project planning and monitoring (PP Primavera or MS Project);
- budgeting, project administration, integration with the enterprise information system (MIT tools);
- maintenance of the company's information standard (MS SQL Server, PostgreSQL).

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In any case, the tools used may be different. Most often they reflect the vision of the company's IT specialists. But MIT tools integrate them into a single information technology to manage the company's project activities, which is a component of PPPMS.

Results

The main result of the work is a new approach to the creation of project portfolio management systems. The basis of this approach is a trinity of key management subsystems - organization, methodology and information technology. These subsystems are adjusted to the specifics of a particular company and integrated into a single project and program portfolio management system in the project to create a PPPMS. The proposed approach has been practically tested in the creation of PPPMS in various projects [13, 25]. The project and program portfolio management systems created using the proposed approach have shown their high efficiency. That allowed to reduce the time of projects execution by 5-20% and also to reduce their cost due to more rhythmic execution of works with reduced number of changes, downtime, rework.

Discussion of results

The proposed approach is not simple and cheap to implement. The paper shows that the creation of PPPMS is justified if the projects and management costs are significant. In this case, the gain from better management becomes higher than the cost of creating the system itself. Another problem in the implementation of the proposed approach is the high requirement for professionalism of managers who form the project management team for the creation of PPPMS. After all, these managers form the organizational, methodological, and technological space for teams to work in projects and programs. Therefore, their level of competence should be higher than the level of competence of the company's employees.

But on the other hand, globalization of economic development, huge volumes of investments into production, competition on the market, shortage of professional staff, impossibility to get full information about the project, especially at the early stages, require implementation of project and program portfolio management system. Without such systems large companies, implementing a large number of large-scale projects will have a lot of problems, delays and cost overruns. And the management of these companies is unlikely to sleep well. And here is the use of PPPMS, of course, makes it possible to reduce the impact of the abovementioned negative factors on the management of portfolios of projects and programs. According to the authors, such systems have a future. And their practical implementation in a number of companies confirms this.

Conclusions

The work solved scientific and scientific-practical problems:

1. The decision-making model for creation and implementation of PPPMS is proposed. It is shown that the creation of PPPMS is necessary and justified if the cost of management in the company is significant because of the large number of projects. And expenses for creation of PPPMS are lower, than the effect from its use.

2. The contents and features of the project of creation PPPMS are defined. It is shown that creation and implementation of PPPMS is possible through the project of development of the company. The tasks which should be solved in the project of creation PPPMS are allocated. It is shown that the implementation of the project in each company will have its own characteristics, which lead to the uniqueness of the project of creation and implementation of PPPMS. Analysis of these features in the context of key functions of PPPMS is performed.

3. An approach to the creation of the organizational component of PPPMS is developed. It is based on three types of organizational structures: organizational structure, which introduces

project management tools into the company (including the one responsible for implementation of the project on creation of PPPMS); organizational structure for management of company's projects and programs portfolios; organizational structures for management of company's projects and programs.

4. The tool of creation of company-specific project management methodology was defined. It is shown that the only possible tool for creating such a methodology is a meta-methodology of project management. The general principles of project management meta-methodology, which should be implemented in the project of PPPMS creation, are described.

5. The matrix approach to the creation of information technology of project and program portfolios management is proposed. It is based on matrix information technology (MIT), uniting both project (functional) and operational (supporting) processes. The means of implementation of project management information technology in PPPMS are proposed.

The solution of these tasks allowed to achieve the goal of the study - to develop an approach to the creation of project and program portfolio management system, focused on a particular company. The creation of project and program portfolio management system makes it possible to «implement» all the processes in any project-oriented company, so that top management, managers, specialists, and workers were satisfied. And it is confirmed by practice [13, 25].

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