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3rd International Conference on Quality of Life

Center for Quality, Faculty of Engineering, University of Kragujevac

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Dear friends,

By providing international platform, 3. International Conference on Quality of Life 2018 will gather experts from industry and academia in order to exchange ideas and present results of ongoing research in a range of topics.

This Conference has a motto "From quality to happiness".

We invite you to participate in this important event.

Sincerely yours,
President of Programme Committee

Prof. dr Slavko Arsovski

Content:

QUALITY OF PROJECT LIFE CYCLE

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Abstract: *Project management covers a wide area of industrial engineering and management that continues to raise a lot of open issues. Among other things, significant project management issues are oriented to assess performance or achieve appropriate performance and output quality over the entire life cycle through which the project is underway.*

Choosing critical success factors in linking project management performance and project success through different conceptual frameworks sets the focus on important areas and allows project managers to focus on choosing priorities in different elements through project execution and quality assurance. On the other hand, all these factors carry a certain amount of uncertainty that can lead to the peril of the actual realization.

Keywords:*Project life-cycle, Project realization, Project success, PMBOK*

1. INTRODUCTION

The period from the idea to the completion of the project realization is called the life cycle of the project. At that time, the project goes through many phases. The stages of project development and improvement should be clearly defined in order to better monitor and manage the project itself ([1-6]).

Each phase is separate from the previous one and has its own defined goals, but very often individual ones overlap depending on the type of project. This is undoubtedly obtained on the complexity of project realization, and the process of project management gets on its complexity.

There are two methodologies for completing the project ([4], [5]), the first is the life cycle of the project, which represents the project phases, which shows what needs to be done in order to complete the project, and the other methodology for project management is the project processes. The project manager can split the project into stages to better control the project and achieve better performance and quality assurance.

A successful project is a project that fulfills all of the objectives set out in the plan ([7], [8]), although the very definition of project success is insufficiently defined ([9-12]). This ambiguity stems partly from the differences in the perspective of viewing, ie, in what is important for different interest groups.

For example, users of a product or service can see the project as successful if all the requirements of functionality are met, and on the other hand if the project organization that is implementing the project itself receives a financial loss that may be considered unsuccessful by the same project.

2. PROJECT LYFECYCLE

The project life cycle defines the project phases from the start to the end of the project. Using the life cycle principles of the project, it can be easier for the project managers to decide whether to consider the feasibility study at the early stages of a project realization.

Within each category and sub-category of the project, it is necessary to identify the most frequently used models of the life-cycle phases of the project and decision-making points because these phases are the basis for identifying joint management processes within each phase of the life cycle.

Transition from one phase of the project to the other usually involves a certain transfer of technical or other knowledge and confirmation of the end of the previous phase to start the next

phase (Figure 1). The most frequent outputs of one phase are examined to verify their accuracy and completeness and need to be approved before the next phase begins. They are mostly sequential and receive the main information from the previous stage. The cost and engagement of human resources (Figure 2) are small at the beginning, while the peak of human resource reengineering increases during the middle stages, and rapidly decreases as the project ends.

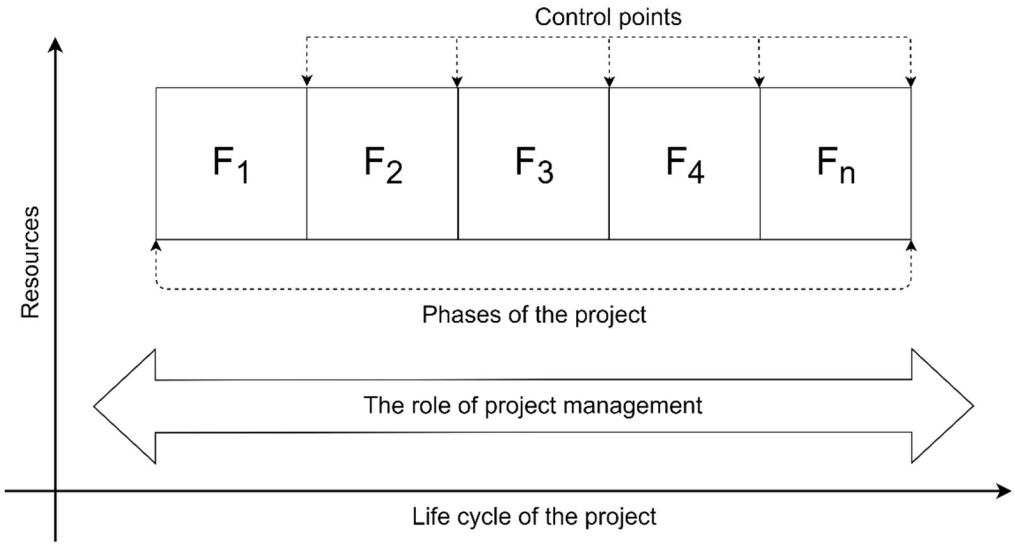

Figure 1 – Project lifecycle transition

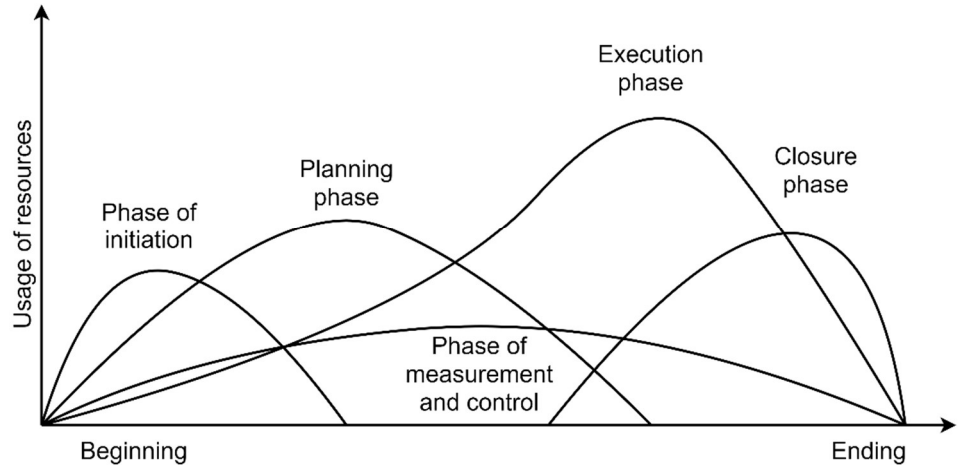

Figure 2 – Graph of resource utilization during project implementation

However, these phases of the life cycle are often very wide and what is needed is to define five to ten basic phases for each category of project, usually with several sub-phases defined within each basic phase, together with an appropriate number of control points.

3. QUALITY SUCCESS FACTORS

From the perspective of the project management, Critical Factors of Success (CFS) that define quality outputs are characteristics, conditions or variables that can have a

significant impact on the success of the project when it is properly maintained or managed ([13], [14]).

Various studies have identified some success factors, but there is a lack of consensus and opinion among researchers on the criteria for evaluating the success of the project and the factors that influence this success ([15], [16]).

In order to correctly identify success factors in project management, the main reasons why projects fail are:

1) Projects fail when there is no support or commitment of management at the highest level that should provide supervisory functions to the project team;
2) Projects also fail when uncertainty identification and its management is ignored. In the work of previously quoted authors who deal with uncertainty assessments in project management, it has been established fact that need for an appropriate uncertainty assessment is a prerequisite for reducing the chance of a negative event in order to reduce the extent of such an impact if it occurs. Uncertainty goes through each phase of project management, and a good management plan helps mitigate adverse effects;
3) The poorly defined scope of the project leads to failure because this is a technical description of the work being done and which covers major issues such as development, quality assurance and maintenance. If the scope of the project itself is not assessed at the appropriate level, this can lead to inconsistencies when appropriate outcomes are expected;
4) Absence of commitment of the members of the project team and stakeholders, i.e. poor cooperation in project management because collaborative project management highlights systematic planning, coordination and monitoring of complex projects in order to foster cooperation among team members;
5) The creation of impractical schedules and uncertain budget frameworks sometimes oblige project managers to work with unrealistic budgets and different time frames.

Since during the life cycle of the project a large number of activities are taking place, which are often very different from each other, it may be quite difficult to identify critical success factors in project management.

These critical factors usually vary from project to project because, for example, a critical factor for the development of computer software can be qualified staff, and a critical factor for a project that has a large number of team members can be communication and alike.

Turner and Zolin (2012) [17] suggest that the efficiency of the project is important for success, because if the project is completed later and exceeds the budget it hardly entails business success. Although, costs, time and quality necessary they are insufficient conditions when success factors are taken in consideration.

It is crucial to begin with a clear and precise definition of what is projected out as a result. In other words, the project team should have a very detailed project idea, with project vision, objectives, scope and outcomes. In this way, uncertainties that adversely affect critical success factors can be identified at each stage of the project. After that it is necessary to hire an assessment team in the early stages before there are potential factors for the occurrence of these uncertainties.

Uncertainties are not observed all the same because the occurrence of uncertainty is always different. It can be positive or negative, although most people assume that the uncertainties are something negative. Where uncertainty is negative, it means something unwanted, which represents the potential to irreparably damage the project until positive uncertainties can affect the project in a beneficial way.

Table 1 shows the five dimensions, ie success factors of the project that guarantee the quality [18].

From the shown table it can be concluded that the overall performance of a project is a much wider concept than a traditional triangle, which can be seen through the suggestion of many authors in the project management literature ([18-20]).

Table 1 – List of critical success factors in quality perspective [18]

Success factors		A measure that assesses the success factor	Time frame
1.	Efficiency of the project	1) Achieving the defined goals defined in the planning phase; 2) Respecting planned budgetary framework.	The efficiency of the project as a success factor in this way is checked at the end of the life cycle of the project.
2.	The satisfaction of people involved in the project implementation	1) The level of people morale; 2) Development of human skills acquired during the implementation of activities through the project phases; 3) Increase of members in the project team; 4) Retention of project team members during the realization of the project itself.	The satisfaction of people as a success factor in this way is checked at the end of the life cycle of the project.
3.	Impact on the user of the product or service that is the outcome of the project	1) Achieving functional performance; 2) Achievement of the promised technical specifications; 3) Fulfilling user needs; 4) Customer satisfaction.	Some time after the project is completed, when a product or service is released to users for use.
4.	Business success	1) Creating commercial success; 2) Creating a large market share.	The time frame through which business success can be estimated can be several months or even a year after the project is completed.
5.	Preparing for future corporate objectives	1) Creating a new market; 2) Creating a new product line; 3) Development of new types of technologies.	The timeframe through which the future conditions can be foreseen, and can be for several months or even a year after the end of the project

4. QUALITY ASSURANCE

When assuring the quality of outputs in project phases, it is expected that, when managing projects, it complies with the limitations suggested by different authors in the literature ([21-25]) through the use of simplified planning and control systems, and simplified reporting mechanisms. Such control and management mechanisms are displayed through frameworks such as *PRINCE2* and *PMBOK* ([4], [5]).

Project Management Body of Knowledge (*PMBOK*) [5] is a collection of procedures and knowledge that are accepted as the best practices that serve project management teams.

It covers ten areas of knowledge that are fully managed: integration management, scope management, time management, cost management, human resource management, procurement management, risk management, communication management, quality management and stakeholder management.

Projects in a controlled environment (*PRINCE2*) [4] is a different methodology that is also used in project management to improve knowledge of a project manager and overall quality of project managing.

PRINCE2 is a project management methodology that, besides *PMBOK*, has accepted as the project management standard in the UK, and is practiced worldwide. It covers the management, control and organization of the project. In order for project managers to fully master this methodology and get fully certified, it is necessary to fulfill two conditions:

1) It is necessary to lay a foundation level consisting of mastering the project management, which follows all the methods and methodologies that cover the life cycle of the project from the preparation of the project until the closing of the project;
2) The project manager is also expected to pass a certain level of practice in order to understand how this methodology is implemented in real business conditions.

PMBOK and *PRINCE2* do not offer a unique way to offer safe management. Both the guides state that organizations need to adapt such systems to the project culture in managing

in their organizations. *PRINCE2* has enabled this by introducing a special section that would provide users with methods to define in which specific environment the project is at.

The advantage that *PRINCE2* offers is that the main decisions on the project must be based on a detailed case study, which means that a clear understanding of costs, timelines and risks is required. This procedure is performed before the start of the project and during the initiation phase.

On the other hand, *PMBOK* does not look at case studies compared to *PRINCE2*. Using the approach provided by the *PMBOK* project can be approved on the basis of stakeholders' consent and then moving to the initiation of phases so that the project can deliver the product or service on time, within the budget and by specification.

5. CONCLUSION

When ensuring the quality of project outputs and projected phase design performance, it is crucial to begin with a clear and precise definition of what is projected out as a result. In other words, the project team should have a very detailed project idea, with project vision, objectives, scope and outcomes. In this way, any uncertainty that could jeopardize the project can be identified at each stage of the project. After that it is necessary to hire an assessment team at an early stage before there are potential factors that challenge the success.

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