

Multi-criteria decision problems in information technology program management

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The authors identify the crucial multi-criteria decision problems in program management in themes defined in Standard for Program Management published by PMI (Project Management Institute). Solving presented problems may be supported by MCDA methods. This article is the complement to the new standard for program management that doesn't address multi-criteria decision aid.

KEYWORDS: multi-criteria problems, decision aid, program, program management, project management, PMI

1. Introduction

Organizations occasionally use tools to support decision-making processes, but still don't take advantage of their full potential of multi-criteria decision support in a key area of project management. The activities of many organizations formalized as projects are more and more often grouped in programs. The program is a collection of related projects managed in a coordinated way in order to attain the benefits that cannot be obtained through the management of these projects individually [1].

Managing multiple projects by the use of programs allows you to optimize costs, schedules and resources. The program may involve various projects for example from the point of view of relationships between their tasks, resource constraints, or organizational changes, which affect them.

The main task of the person who manages program (program manager) is to identify, rationalize, monitor and control the relationship between projects and to track the impact of each project on the consolidated program benefits. We can say that the program manager manages the project managers. Table 1 shows the difference between projects and programs.

Table 1. The chosen differences between projects and programs

Projects	Programs
The success of the project is measured by the products, budget and schedule	The success of the program is measured by the benefits and return on investment
The head of the project (project manager) manages the members of the project team	The head of the program (program manager) manages the managers of the projects covered by the program
The project manager monitors the tasks and results of the project	The program manager monitors the status of the projects

It is important to understand the relationships between the management of programs, projects, and portfolio. A project is a temporary endeavor to obtain a specific result. A program includes a number of related projects managed in a coordinated manner. Portfolio consists of several or many components, among which can be projects, programs and portfolios and other non-project activities. These components are grouped to make it easier to manage them from the point of view of strategic business objectives [1]. Figure 1 shows the relationships between the programs, projects, and portfolio.

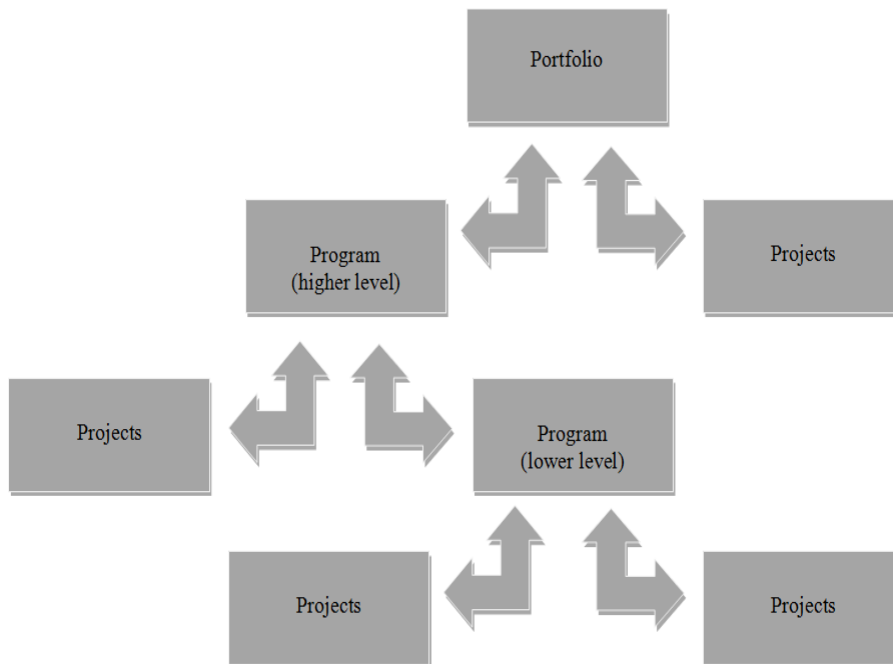


Fig. 1. Dependencies between programs, projects, and portfolio

Recommendations for the program management are included in The Standard for Program Management published by PMI (Project Management Institute), the international not-profit organization of professionals in the field of project management. PMI standards, unfortunately, do not relate to the application of MCDA in project management or programs. This vulnerability in the context of the projects, the authors have tried to fill in the work [2] and [3]. This publication has to answer the question, what are the main decision problems in programs life cycle which can be solved with the support of the MCDA methods.

2. Themes of program management

As well as projects, program in its life cycle passes through different phases. The PMI Standard for Program Management lists the five main phases of the program [1]:

1. Pre-program Preparations,
2. Program Initiation,
3. Program Setup,
4. Delivery of Program Benefits,
5. Program Closure.

In the life cycle of the program, the manager must manage stakeholder expectations, requirements and resources and conflicts between competing projects [1]. The Standard for Program Management defines 3 themes critical to the success of the program management [1]:

1. Benefits management,
2. Program stakeholders management,
3. Program governance.

In the first theme (benefits management) by the benefits we mean improvements for running an organization, such as increasing sales, reducing costs and minimizing losses. Benefits management comprises actions and techniques for defining, creating, maximizing and maintaining the benefits obtained from the program. In the area of this theme, the key tasks of the program manager include:

- estimation of the value and impact of the program on the organization;
- identification of the relationships between the benefits of the individual projects of the program;
- ensuring that the planned benefits have been unambiguously and clearly defined as measurable, realistic and time-bound;
- analysis of the impact of the program changes on target benefits.

Compared to projects where benefits are the final results, the benefits of the program are available at the end of it or incrementally during the whole

program life cycle. Programs are established to produce much higher benefits than single projects.

Figure 2 presents main benefits management activities throughout the program life cycle.

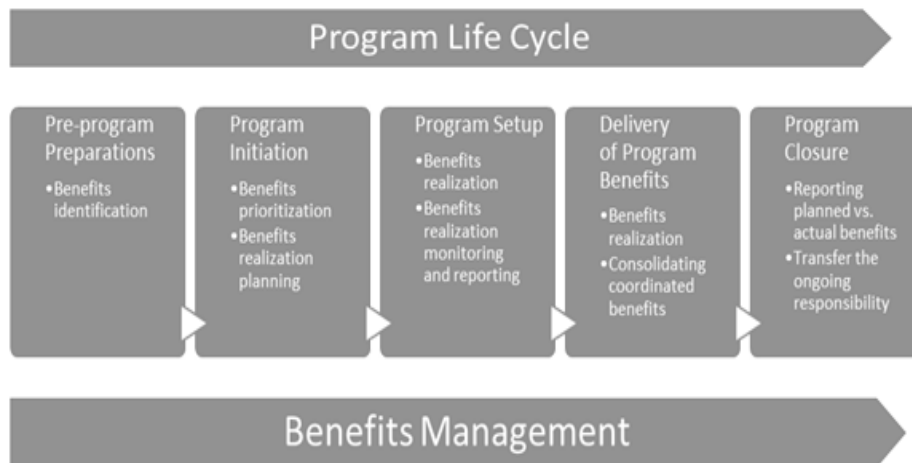


Fig. 2. Benefits management in program life cycle

In the second theme (the program stakeholders management) stakeholders are individuals and organizations affected by the program and its results, and this impact can be positive or negative. Stakeholders may also have an impact on the program. The main stakeholders are: program manager, project managers, program sponsor, customers, members of project teams, the organization in which the program was established, or suppliers and external organizations.

The third theme defines program governance as a process of development, implementation, monitoring, communicating and ensuring policies, procedures, organizational structures and practices related to a particular program [1]. In many organizations governance issues are the area of Steering Committee responsibility.

The specific tasks of the Steering Committee include:

- program initiation;
- approval of subsequent phases of the program on the basis of the status reports;
- organizational decision making, which may not be taken by the program manager due to a lack of powers;
- providing resources for the program;
- ensuring compliance with the program policies, organizational standards and legislative requirements.

In the framework of the above defined three themes authors indicate the key decision problems, which faces the program manager and which may require the support of MCDA.

3. Decision problems in the themes of program management

The expected benefits of the program should be defined at the stage of program initiation, in business analysis (business case). Later, during the review of the program or its closure, benefits management includes comparing benefits planned and achieved for now, predictions, identifying the reasons for deviations and recommendations how differences can be overcome. In specific cases, there may be a problem to continue the program (go-not-go). According to the authors the key decision problems in the area of benefits management that can be supported by MCDA, are:

1. *Multi-criteria assessment of program benefits*: at the planning stage the manager should determine program benefits ranking. Benefits may be measurable or unmeasurable, hence the use of MCDA methods can help in preparation of their statement.
2. *Multi-criteria assessment of the changes in the program*: the program manager must be ready for the changes that will optimize the benefits of the program. Programs are conducted in a variable environment and the manager gets the task to assess the proposed changes and serialize them in the ranking to facilitate their acceptance or rejection. A similar problem was pointed out in [2], however, it was a project context and as far as program is concerned the problem may be more complex due to the dependencies between the projects.

Stakeholders have crucial meaning for the success of the program. Some of them may have a positive or negative impact on the program depending on how do they assess the program benefits. The program manager must identify the major stakeholders of the program and assess their needs. The basic decision problem in this area is:

1. *Multi-criteria assessment of stakeholders*: the program manager should assess the expectations of stakeholders, in order to be able to manage them in the program life cycle. It is clear that some stakeholders have greater significance for the program (impact, decisiveness) and their early evaluation can significantly facilitate the program management and increase its chances of success.

Under the theme of governance the program phase gate reviews play an important role that allow the Steering Committee to evaluate the program from the point of view of strategy and quality:

- are the program and projects (included in its range) all the time in accordance with the strategy of the organization?

- are the expected benefits in accordance with the business plan?
- is the level of risk acceptable for your organization?
- are good practices used?

Each phase gate review should answer the question whether the program is to be continued in its current form. Arguments should be provided by the program manager. He may face the decision problem requiring MCDA support:

1. *Multi-criteria assessment of the program status in order to take a decision on its continuation*: there may be more than 2 variants in this decision problem, for example. continuation, closure or suspension of the program.

5. Conclusion

The identified decision problems in program management are the proposal of enhancement of The Standard for Program Management, being prepared by PMI. This document has a chance to become the standard in organizations like PMBOK in the area of project management.

MCDA is still undervalued by project and program managers, hence the inclusion of this subject to the standards of PMI would be a valuable contribution to popularizing MCDA methods.

References

- [1] Project Management Institute: The Standard for Program Management – Third Edition, 2013.
- [2] M. Szymaczek, S. Iskierka: Problemy wielokryterialne w zarządzaniu projektami informatycznymi wg PMBOK, XV Konferencja Naukowa – Zastosowanie Komputerów w Elektrotechnice, Poznań 2010.
- [3] M. Szymaczek, S. Iskierka: Wybór metody wielokryterialnego wspomaganie decyzji w zarządzaniu projektami, XIV Konferencja Naukowa – Zastosowanie Komputerów w Elektrotechnice, Poznań 2009.