

Successful management in multi-project environment

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Introduction

The aim of this paper is to study how to organize project-oriented organization and what are the successful management principles in multi-project environment. The paper approaches the challenges first by focusing on organizational structures and management models in multiple projects organizations, and second studying the success factors in multiple project management. The study emphasizes the importance of projects' role in fulfilling strategic objectives of the organization, managing complex interactions between project and organizational structures, and information sharing. Based on the empirical study and on the literature analysis project portfolio management is proposed as solution to manage in multiple projects environment.

Furthermore, the study proposes two different factors categorizing the success related to management in multi-project environment. The proposed success factors are related to project results, and processes and resources. The results-related success factors contribute directly to the project business' success, while the processes- and resources-related success factors are more enabler like success determinants.

The research data are extracted from the two research projects initiated at TAI Research Centre at Helsinki University of Technology initiated in early 2001. The projects dealt with project portfolio management and were conducted in four Finnish organizations. The research data in both projects were collected using group discussions in well-planned systematic development workshops, and supplemented by interviews.

Managing a multi-project organization

A variety of models and approaches to project organization's structures and management are presented in the literature (Mitsberg 1979, Turner 1999, Larson and

Gobeli 1988, Toney 2002). The main point of interest has been in finding out what is the most appropriate organizational structure in different business environments and business contexts of companies (Greenberg 1996, Tidd 2001).

Matrix organizational viewpoint to management in multi-project environment was found in the 1960's as a solution to manage complex and unique cross-functional efforts in the traditional hierarchical organization (Arenius et al. 2001). The common characteristics of the matrix organization are vertical hierarchy overlaid by lateral authority, influence, or communication, and dual authority, responsibility, and accountability (Pinto 1998).

Galbraith (1995) has presented general approach to manage organizations. Even if this approach is rather general it gives important guidelines about managing project-based organizations. According to Galbraith, the principal organizational elements to be managed fall into five categories. The organizational elements are as follows. 1) strategy, 2) structure, that determines the placement of power and authority in the organization, 3) processes, including information and decision processes cutting vertically and horizontally across organization's structure, 4) rewards, referring the system that provides motivation and incentives for the completion of the strategic direction, and 5) people, referring management of human resources to produce talent and skills necessary for the organization.

Pinto and Rouhiainen (2001) have introduced a novel customer-based approach to project-based organizations. The core of their approach lies on managing relationships between customers and suppliers.

Artto et al. (2001) have proposed that the management of project-oriented corporation 1) include company or business-level administrative components such as general administration, sales and marketing, project financing, new product development, organizational and process development, research, training and education, 2) balances resources as well as risk aspects across projects, and 3) provides guidelines and instructions about general business practices in projects.

The set-up of managing projects and project business as a whole is referred, and conceptualized by the term project portfolio management. Project portfolio management focuses on the management of the project environment aligning projects to business objectives. Project portfolio management refers to the dynamic

management process of portfolio related strategic planning, portfolio evaluation and selection, resource allocation and monitoring, as they are integrated to organizational management context (Dietrich 2002). Moreover project portfolio management can be seen as a process to manage organizations in multi-project environment by aligning projects to business objectives, allocating resources, and managing complex interactions between project and organizational structures (Arto et al. 2001). Thus the principal underlying questions in managing project-based organizations by projects are as follows:

- What are the project's interrelations with other organizational structures?
- What is a project's role in fulfilling the strategic objectives of the organization, and how to drive organizations towards success by projects?

These issues emphasize also the importance of information content, information sharing, decision-making and organizational learning as novel aspects of management of project-based organization (Arenius et al. 2001).

Organizing for success

Project success plays an important role in managing overall business of a project-based company. According to Saravirta (2001) a project reflects the overall business processes, especially from the view of effectiveness. Managing project-business successfully requires successful management of projects. Company's business objectives and goals should be interrelated.

Different approaches and factors affecting to project success and project business success have been presented in the literature, and success of different types of projects has been the main point of interest (Baker, Murphy and Fisher 1983, Morris and Hough 1987, Pinto and Slevin 1987). Saravirta (2001) proposes six success domains by which the success is assessed. These success domains are related to 1) the strategy, e.g. developing new competitive advantage or attaining reference value for the clients 2) the project implementation, e.g. cost and schedule related factors 3) the product, e.g. product quality, commercial success, 4) the stakeholder relationships, e.g. client (or: customer) satisfaction, client's (or: customer's) present and future value, team relationships, 5) the learning situation, e.g. learning-by-doing. Thus, success and success measures may relate to the wide interpretation of results of a project, processes related to the project, or resources related to the project. Furthermore,

evaluation of success depends on the perspective or the stakeholder. For example, customer and supplier organizations have different perspectives, and a company executives' perspectives differ from those of individual project managers.

Atkinson (1999) has studied the success of IT-projects (IT= Information Technology). The results reveal that the success can be categorized in four areas such as: 1) project performance, e.g. time, cost, and quality related information, 2) project results e.g. system maintainability, reliability, validity and information-quality use, 3) benefits for the organization e.g. improved efficiency, improved effectiveness, increased profits, strategic goals, organizational learning and reduced waste, and 4) benefits for the stakeholders e.g. satisfied users, social and environmental impact, personal development, professional learning, content project team, and economic impact on the surrounding community

Rouhiainen (1997) proposes that success of the project can be defined using four success domains. First one is commercial success of the project e.g. commercial benefit for the project service providers. Second domain consists of technical success e.g. client satisfaction on a product and competitiveness of the product. Third area is project management success e.g. project management on budget, on schedule, and to technical specifications. Finally, the fourth domain includes learning of project stakeholders.

Brown and Eisenhardt (1995) found in their study on product development projects that successful projects are usually characterized by 1) cross-functional teams composed of members from more than one functional area, 2) effective internal and external communication, 3) powerful project leaders, and 4) senior management support.

Many studies have focused only on the effective and successful management of a single project, without in-depth consideration of the relation of project success to success of project-based organization, and on how to integrate the success of the corporation with the project success. Shenhar et al. (1997) state that project success has an effect on the success of project-based organization in two different forms. The first form is the immediate and commercial success of the project, and the second one concerns future business possibilities created by the project. These two forms of project success and the success of the corporation emphasize the distinction between the short- and long term benefits for the company. Atkinson (1999) has proposed

organizational learning as one of the long-term benefits for the company. This is in line with Artto et al. (2001) who emphasize the importance of organizational learning, innovation, and creativity in the management of a project-based company.

Kaplan and Norton (1996) have introduced the Balanced Scorecard aimed to derive objectives and measures from company vision and strategy that finally can be derived further to project-specific objectives aligned to business strategy. Four different perspectives translating organization's strategy in operational terms are financial, customer, internal business-process, and learning and growth. These four perspectives include similar elements to success domains proposed in studies by Rouhiainen (1997), Saravirta (2001), and Atkinson (1999).

To sum up, previous studies present different approaches to managing organizations and reaching success in a multi-project environment. The challenges and characteristics of novel management of project-oriented organization are related to the issues such as linking projects to strategy and business objectives, determining the placement of power and authority in the organization, managing risks and resources (both tangible and intangible), sharing information, and enhancing organizational learning. Moreover the management of project-based organization is extended to cover external perspective to organization, management of customer relations in projects, and in complex project networks.

Furthermore, based on previous studies we can conclude that three different success areas related to management in multi-project environment can be defined. These areas are: 1) results including both financial and customer perspectives. The results can be measured by the terms of strategy, benefits for stakeholders and company, and project product related quantities; 2) project performance and resources aspects such as: project's costs, time, quality, and scope, and management's support and commitment; 3) learning and communication at individual and organizational levels.

Research objective

The objective of this study is to identify the characteristics of successful management of project-based organization. The research task was approached in a case study of four Finnish companies representing both public and private sector organizations.

Research questions are:

- How to organize project-oriented organization?

- What are the successful management principles in multi-project environment?

Material and methods

Data gathering

The paper derives findings from two research projects initiated in early 2001 in four organizations developing their project portfolio management. Four participating case organizations include two private sector and two public sector organizations. The organizations have a long-term objective of implementing systematic project portfolio management with all their projects across the whole corporation. Moreover, their ultimate aim is to improve the capability to manage successfully the project-oriented organization as a whole. The two public organizations are large organizations delivering local and nation-wide services for the society and individuals in the society. The investigated portfolios include organization unit specific portfolios, development program specific portfolios, and cross-functional IT project portfolios. The two private organizations include a large private organization with mainly service product deliveries for individual and industrial customers, and a large organization with engineering services, systems and equipment deliveries for industrial customers. In both private organizations the investigated product development projects are inclined towards new service development and towards improving service product production. In both organizations, the project portfolio management issue is focused mainly on business unit specific projects, but, however, many projects and portfolios are cross-functional, as it is typical that the projects in the business unit specific portfolios cross the boundaries of several business units.

The empirical data were gathered using group discussions in well-planned systematic development workshops. The workshop methodology is modified version from the 3A-Workshop procedure proposed by Järvinen et al. (2000). Several individuals have participated in each workshop. Their job assignments related directly or indirectly to the project process. Thus, the individuals represented the different functions and roles, which guarantees a cross-functional view to projects. The coverage of the vertical dimension in the organizational structure was ensured by involving individuals from different organizational levels to the workshop.

Data analysis

The data from the workshops and from the group discussions was analysed. The idea was to identify the main characteristics required for successful management in a multi-project environment. The empirical data was continuously linked to existing theory and body of knowledge of project portfolio management, and to a wider theoretical context of management of project-oriented activities in an organization as a whole.

Results

First of all, the analysis revealed that the organizational solution to manage multi-project environment consists of management by project portfolios. The organizational structure would consist of several project portfolios and responsible individuals responsible for their follow-up. The decision-making should be organized in both organization unit specific and in cross-functional project portfolio groups. Moreover, in the case companies it was seen essential to organize for project portfolio specific responsibilities and roles for effective management. Such responsibilities and roles include those of a project portfolio board, a portfolio manager, and a support providing party, e.g. a project support office. In addition, responsibilities should be integrated to existing organizational bodies and structures to ensure top management involvement by transparency across projects for top management. Relevant information should be delivered to support decision-making. Finally, both horizontal and vertical communication should be increased.

Second, analysis revealed following general observation as important determinants when managing multi-project environment:

- The strategic alignment of projects with business objectives is important from the very early phases
- All companies consider the functional effectiveness of the project product (deliverable) in the operation phase as the first important issue to be evaluated already in the ideation phase
- Life cycle (or whole life) considerations are important to conduct in the very early stages
- Organizational ownership of the project and its deliverable is important, as well as careful planning or the production start with ensuring user involvement
- The continuation in the production/operation phase must be ensured by further development plans already in the execution
- Alternative solutions are important to consider simultaneously for potential alternative decisions

- In all organizations, time and resource considerations tend to be very important
- Estimating and monitoring changes in the external factors and in the environment is important throughout the project. This occurs as changes in the environment is likely to put pressure on making new changed decisions
- Follow-up of the effectiveness of the project product in operations phase is important for feedback and learning
- Learning from the operations phase links to new project ideation
- New projects must be carefully matched against existing systems and products in the operations phase, which makes it worthwhile to include considerations of portfolios of already executed projects.
- Need to bring new ideas to become transparent throughout the organization as early as possible. This occurs since it will be impossible to kill or change the content of ideas that have been prepared in organizational units already for months or years, thus gaining commitment locally.

Finally, it was found out that when making decisions on projects two types of success factors were considered. The first one, results-related factor contribute directly to success, while the second one, process- and resource-related factor is more like enabler type success determinant. Results-related success factor measure the benefits of the project outcome for the company and stakeholders, strategic importance of the project results, risks, and importance of the project results. The process- and resource-related success factor includes time, resource, and responsibility, commitment of the management and stakeholders, and learning aspects. The considerations related to both success factors are presented in Table 1.

Table 1. Success factors related considerations.

Results related success factors	Process- and Resources-related success factors
<ul style="list-style-type: none"> • Link to business (strategy, products, markets, environment, trends) • Need and importance for project deliverable • Novelty: new product, technology, service • Alternative solutions • Achievement of strategic objectives, strategic alignment • Impact on stakeholders and interfacing 	<ul style="list-style-type: none"> • Commitment • Resources • Time • Responsibilities • Feedback • Learning

parties <ul style="list-style-type: none"> • Customer requirements • External factors and environmental changes • Risks • Benefits 	
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Conclusions

The paper describes the principles of successful management in multi-project environment. The study emphasizes the importance of aligning projects with strategy, sharing information, and managing complex interactions between project and organizational structures when managing project-oriented organization.

The study employs empirical data from the four case organizations. Based on the empirical study and on the literature analysis project portfolio management is proposed as solution to manage in multiple projects environment. The empirical findings emphasize the meaning of roles and responsibilities, management’s support, information delivery to support decision making, and horizontal and vertical communication. In addition, the observations bespoke for monitoring of changes in internal and external environments, alternative solutions considerations, and transparency of new ideas in the early phases.

Furthermore, the study proposes three different areas categorizing the success related to management in multi-project environment. These are: results-related success factors and process- and resource-related success factors. The results-related success factors contribute directly to the project business’ success, while the processes- and resources-related success factors are more enabler like success determinants. The empirical finding support the literature since the aspect of learning, seen as one success area in literature, is included in the process- and resource-related success area.

The small number of case companies set some limitations to the generalization of the results of this study. However the facts that the case companies represented both public and private sector organizations and different types of projects were studied increase the usability and utility of the results.

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