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An empirical investigation on how portfolio risk management influences project portfolio success

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Abstract

Project risk management is recognized as essential in order to cope with the challenges arising from the environment. Literature suggests a portfolio-wide perspective for managing risks in project portfolios. However, research on risk management and its success in a project portfolio context is scarce. This study examines how portfolio risk management influences project portfolio success. Using a sample of 176 firms, this study provides evidence that portfolio risk identification, the formalization of the portfolio risk management process, and risk management culture directly influence risk transparency, whereas risk prevention, risk monitoring, and the integration of risk management into project portfolio management are directly connected to risk coping capacity. The findings also suggest that both risk transparency and risk coping capacity have a direct impact on project portfolio success. However, the results did not confirm the hypothesis that risk transparency and risk coping capacity have a complementary effect on success. Implications for scholars and project portfolio managers are discussed.

Keywords: Project portfolio management; Portfolio risk management; Risk management quality

1. Introduction

The management of risks is a crucial element of project portfolio management. Risk management enables the organization to cope with arising opportunities and threats. In a project portfolio environment it is no longer sufficient to manage solely the risks of single projects (Olsson, 2008). Organizations tend to run several projects concurrently to maintain flexibility and efficiency. New risks emerge additionally to single project risks due to the dependencies between projects (Project Management Institute, 2008b). Therefore, literature suggests a portfolio-wide risk management that extends the management of single project risks (Artto et al., 2000; Lee et al., 2009; Olsson, 2008; Pellegrinelli, 1997).

A portfolio-wide approach for risk management supports the alignment and redistribution of resources between the projects and considers additional portfolio risks. Thus, portfolio risk management is assumed to enhance transparency, the revelation of transferences of problems (Sanchez et al., 2009), the capacity to cope with risks (Lee et al., 2009), and the profoundness of information on which decisions are based on (McFarlan, 1981). By connecting information derived from the risk management of different single projects, portfolio risk management can identify risks that emerge in multiple projects simultaneously. Therefore, activities can be consolidated and duplication of work can be prevented. Consequently, portfolio risk management avoids failure and increases the possibility of the project portfolio success (de Reyck et al., 2005; McFarlan, 1981). Besides the positive effects of portfolio risk management one also needs to consider that portfolio risk management is time consuming and involves costs. Therefore, it is worth investigating whether the benefits justify the costs (Kutsch and Hall, 2009). Portfolio risk management is rarely implemented de facto (de Reyck et al., 2005). Organizations seem to have a low consciousness of portfolio risks and of the need to view risks holistically (Olsson, 2007). The reason for this may be the

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special challenge of evaluating risks at the portfolio level. Alternatively, project portfolio managers may lack expertise and time or have a problem of cost justification (Kutsch and Hall, 2009; Ward and Chapman, 1991).

The positive effects of single project risk management have widely been acknowledged in project management literature (de Bakker et al., 2011). However, research on managing risks within a project portfolio is relatively rare (Sanchez et al., 2009). There exist some conceptual research and single-case studies on portfolio risk management (Olsson, 2008; Sanchez et al., 2008). However, to our knowledge no large-scale empirical study exists that examines risk management in a project portfolio environment. Further investigation is necessary to show where to focus when managing risks in a project portfolio. The main objective of this study is to examine the linkage between portfolio risk management practice and project portfolio success. Therefore, this study attempts to answer the following research question: How does portfolio risk management influence the success of a project portfolio?

This study makes meaningful contributions to the risk management and project portfolio management literature. This research provides a better understanding of portfolio risk management with its main constructs, underlying mechanisms, and their relationship to project portfolio success. Moreover, to measure the improvement through portfolio risk management, this study delivers a new procedure to operationalize the quality of risk management. We provide empirical evidence for the existence of a positive relationship between risk management quality, measured as risk transparency and risk coping capacity, and project portfolio success. Additionally, we show that the portfolio risk management constructs portfolio risk identification, the formalization of the risk management process, and risk management culture directly influence risk transparency, whereas risk prevention, risk monitoring, and the integration of risk management into project portfolio management are directly connected to risk coping capacity. These findings provide project portfolio managers with valuable heuristics and guidelines enhancing their decision-making. They are able to manage portfolio risks more effectively which eventually improves the success of the project portfolio. This model with its associated guidelines establishes a basis for supplemental empirical research in this field (e.g., on contingencies) and the development of tools specifically for managing risks in project portfolios. As earlier research indicates that management processes and tools are not used in practice as expected, further research in this area seems appropriate (Bannerman, 2008).

2. Portfolio risk management—a literature review

Project portfolio management has received increased attention in the last years as organizations typically undertake more and more projects at the same time. A project portfolio is a collection of single projects and programs that are carried out under a single sponsorship and typically compete for scarce resources (Archer and Ghasemzadeh, 1999; Pennypacker and Dye, 2002). The task of project portfolio management is to manage the resources and other constraints, coordinate the group of projects, and manage the interfaces between projects (Elonen and Artto, 2003; Olsson, 2008). The focus is on the alignment of the projects and programs to the organization's strategy and the balance of the project portfolio regarding risks and benefits (Project Management Institute, 2008b). Applied to project portfolio management, portfolio theory concerns the constant allocation of resource choices (Chapman and Ward, 2004; Markowitz, 1959), taking into account the interdependencies between projects.

Risk is defined as an uncertain event or condition that, if it occurs, causes a significant positive or negative effect on at least one strategic portfolio objective (Project Management Institute, 2008b). The management of risks at the portfolio level may enhance the effectiveness of risk management compared to the independent consideration of risks at the project level (Aritua et al., 2009; de Reyck et al., 2005). A few guidelines currently exist that specifically regard the management of risks at the portfolio level. The second edition of The Standard for Portfolio Management is the first guide that offers processes and instruments particularly for portfolio risk management (Project Management Institute, 2008b). The Project Management Institute's (PMI's) Standard for Portfolio Management (2008b) describes the stakeholders and proposes four process steps for managing risks in project portfolios as well as three categories of portfolio risks (i.e., structure, component, and overall risks). Structural risks are risks associated with the composition of the group of projects, and the potential interdependencies among components. Component risks are project risks that the project manager needs to escalate to the portfolio level for information or action. The overall risk considers the interdependencies between projects and is, therefore, more than just the sum of individual project risks (Aritua et al., 2009). Furthermore, the Guide to the Project Management Body of Knowledge (PMBOK® Guide; Project Management Institute, 2008a) includes portfolio risk management. We follow the definition of the Project Management Institute (2008b) and define portfolio risk management as the management of uncertain events and conditions as well as their interdependencies at the portfolio level that cause significant positive or negative effects on at least one strategic business objective of the project portfolio and thus influence project portfolio success.

Few studies have specifically investigated the management of risks in the context of project portfolios. Pellegrinelli (1997) emphasizes a distinction between risk management at the project level and risk management at the program level, highlighting that risk management at the program level implies a wider perspective with a focus on strategic issues. He suggests using strategic management techniques including benchmarking and competitor analysis in this context. According to McFarlan (1981), an aggregated view on project risks will enhance decision-making and success. Olsson (2008) conducted a case study and developed a framework that compares project risk management to the management of risks in project portfolios. The findings suggest that portfolio risk management helps to identify common risks and trends for the project portfolio and makes the gained experiences easily accessible. Petit (2012) investigates how uncertainty affects project portfolios in dynamic environments.

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