

Chapter 33

Project Risk Management Process for Professionals: A Value-Based Approach

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ABSTRACT

This chapter will provide an instantly applicable integrated project risk analysis method, which tracks the probabilities of the occurrences of harmful events perceived by the owners from the conceptual phase to the end of the project. The chapter follows a threefold structure. First, the paper provides a revised integrated project risk assessment framework that enhances conventional risk category-based methods. Second, the minimum requirements of the owners are clarified to attain the main goal of project risk assessment and to identify the harmful events jeopardizing this goal. Third, the widely known risk assessment procedures are revised, and a methodology for taking and selecting proper risks is provided. Finally, a new valuation approach to the monitoring phase is introduced, which is able to capture the current market value of the project based on the risk management and controlling system's data.

INTRODUCTION

The field of risk management has found its appropriate place and role in project management processes in recent decades. However, certain targeted empirical tests signal the practical emergence of fundamental questions because the practical application of risk management for business projects has numerous challenges. The business analyst can encounter pitfalls in several areas, including the exact definition of risk, the background model applied, the visualization of risks, the description of the risk management process and the definition of the risk management limits. It is not surprising that risk management receives increasingly more focus in professional forums, such as in this book.

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It appears that although risk management is a mandatory element of corporate governance processes, the general rules of the currently applied guidelines (e.g., Turnbull Guidance in Great Britain or Practice Standard for Project Risk Management by Project Management Institute) can be problematic because they provide definitions and requirements without methodological details. Thus, risk management becomes an obligation and is not a value-added activity obvious for all participants or a key element embedded in the organization's culture (McCrae & Balthazor, 2000; Project Management Institute, 2009.). Although most experts are familiar with the current concepts of risk management, they do not apply them in the initial phase of projects. Although information technology is widely used in the conceptual phase of a project's life cycle, it is primarily used for cost estimation, scheduling and forecasting. Moreover, risk identification is the best-known component of risk management (whereas measuring, monitoring, creating and executing action plans are less known), and practitioners prefer using qualitative methods in risk analysis techniques. These phenomena signal that although the most up-to-date risk engineering techniques are available, their application and operation remain far from the optimal. The root of this phenomenon is that the picture remains incomplete; the ultimate motivation behind risk management processes is not clarified. The literature often implicitly assumes that risk management can be interpreted as an engineering tool when processes are bound to the tangible product of a project (e.g., finding and managing causes that jeopardize the completion of the planned object). Perhaps because of this, in most cases, the more sophisticated risk management frameworks focus on engineering methods and fail to define the comprehensive goal of risk assessment suitable for all stakeholders. For example, it is irrational to discuss the well-known time overrun risk from the project owners' perspective if such a risk does not involve a change in value for these because e.g., lost money will be regained from a contractor in the form of a penalty payment or full compensation by insurance.

Because of the difficulties of practical application, many experts predict the stagnation of risk management. The authors of this chapter do not share this view and believe that a holistic, integrated risk management system for each industrial sector can be developed, in which the added value for all stakeholders is clearly measurable utilizing financial principles.

In this chapter of the book, we present a straightforward, easy-to-use general holistic project management framework for practitioners. First, we examine the concept of project risk defining the problem area that our methods focus on. Then, the risk management process and the mathematical model in which risks become measurable are defined, and the methods of measuring risks and the means of easy interpretation of results are discussed in detail. Finally, we briefly discuss the dynamics of project risks

Background

The general definition of risk in a project management context has undergone significant changes since the 1950s. At that time, risks were only regarded as the possible negative consequences of events or tasks (Rowe, 1977) and were analyzed in a quantitative and qualitative formal way. Subsequently, the two-sided nature of risk was emphasized: positive consequences were also considered (Flanagan & Norman, 1993). To address this, project management standards included the objective of maximizing the results of positive events and minimizing the consequences of adverse events. In accordance with these standards, many resources suggested methods for risk analysis that accounted for the probability and consequences of risks (PMI, 2013). Turner (2009) summarized the most relevant generic risk management processes and standards. Consequently, numerous industry-specific applications and research projects were established to enable the efficient management of risks (Bevilacqua et al., 2009; Chan et

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