



The professionalization of risk management: What role can the ISO 31000 risk management principles play?

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Abstract

Risk management is increasingly seen as a means of improving the likelihood of success in complex engineering projects. Yet the presence of a legitimacy gap, driven by the lack of empirical validation of published best practices, might explain low adoption of risk management on projects. We present an empirical investigation and discussion of the eleven principles of the ISO 31000:2009 Risk Management Standard via a large-scale survey of engineering and product development practitioners. Adhering to the risk management principles at a high level was found to be a significant factor in better reaching cost, schedule, technical and customer targets, in addition to achieving a more stable project execution. This finding suggests that, rather than a single rigid standard or an ever-changing set of detailed methods, the ISO principles have potential to be the basis for our shared understanding of best practice, and to catalyze the professionalization of project risk management.

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1. Introduction

Risk management is increasingly seen as a means of improving the likelihood of success in the complex, multi-functional and challenging task of managing engineering and product development projects. Studies show that project risks affect outcomes in a number of industries (Wallace and Keil, 2004; Mishra et al., 2016). Yet studies have shown that risk management practices are poorly adopted by project managers (Kutsch and Hall, 2009; Raz et al., 2002; Grant and Pennypacker, 2006; Ibbs and Kwak, 2000; Papke-Shields et al., 2010). How do project managers decide which risk management practices to engage in, and how can they have confidence in the value of investing in such processes?

Given the increasing ad hoc implementation of risk management practices by project managers, the under-usage of existing methods due to lack of legitimacy, and thus the search for and generation of numerous prescriptive guidelines, we recognize the need for studies that validate methods for project risk management, and lead to professionalization of the field. But we must balance this search for validation of prescriptive methods with the warnings of the contingency point of view, and avoid a one-size-fits-all solution.

In this paper we propose the use of risk management principles as an alternative to specific practices or tools. We argue that these principles provide guidance to project managers in establishing a risk management process, while recognizing that each project is different. We seek to explore the potential of one set of such risk management principles in this work. This study will report the results of an empirical study in the engineering and product development context of the effectiveness of the principles included in one promising standard — the ISO 31000:2009 Risk Management guideline.

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2. Literature review

We begin with a discussion of the state of professionalization of project risk management. The establishment of a formal body of knowledge is seen as a critical step towards professionalization of a field (Wirth and Tryloff, 1995). This body of knowledge provides a common understanding of industry best practices in the field, allowing for teaching, certification, and common competence improvement. The complex and diverse nature of project management has led to various communities of practice and bodies of knowledge, and it has been a challenge to reach a common and workable understanding of project management best practices (Bresnen, 2016). Some research has been directed towards identifying critical success factors in project management, well reviewed by Fortune and White (2006), which include risk addressing, assessment and management.

We can learn about the likely future path to professionalization of risk management from discussions of professionalization of project management (Duncan, 1995; Morris et al., 2006; Muzio et al., 2011). We see the same patterns beginning to play out in the project risk management field. There exist a great number of popular guidelines for implementing risk management in engineering project domains (INCOSE, 2011; DoD, 2006; International Organization for Standardization, 2009; Project Management Institute, 2008; NASA, 2008). These guidelines generally consist of a list of so-called “best practices” in risk management, assumed to be captured from experience and lessons learned over time; however, the guidelines fail to include evidence to support the effectiveness of their prescriptions. What results is an ad hoc application of risk management processes, if there is any application at all; there is both a lack of legitimacy and a lack of unity towards one common best practice understanding.

To this point, Kutsch and Hall (2009) argue that despite a great deal of work towards prescriptive risk management guidelines, little work exists to reveal what risk management is actually done (or not done) by project managers, and why. Kutsch and Hall report that one third of the 102 IT project managers in their study conducted no project risk management process on their project at all, because they could not justify the cost of such processes. In a number of other studies of project management maturity, risk management methods are included as a category of competence, and is consistently found to be relatively immature (Ibbs and Kwak, 2000; Papke-Shields et al., 2010; Grant and Pennypacker, 2006). It appears that even though project managers might be aware that risk management practices exist, project managers fail to implement these practices. Little evidence exists to prove the legitimacy of these methods, and persuade project managers to invest in risk management.

Legitimacy is critical in the decision of an organization to adopt a standard (Brunsson et al., 2012), but is difficult to assess from the standard itself. We can look to the literature to provide legitimacy through empirical studies that investigate both important factors in risk management and if and how risk management leads to project success. We highlight below the limited set of studies that have attempted such evaluations.

2.1. Empirical evaluations of project risk management practices

Agreement on a standard set of risk management methods would not only be a catalyst for professionalization, but would allow for more coordinated and integrated research on the effectiveness of risk management practices.

A meta-analysis of empirical evidence from previous studies of risk management in IT projects seeks to address the question of whether risk management actually contributes to project success (de Bakker et al., 2010). The authors identify that senior management support of and user participation in risk management are highly influential on project success. Further, the authors warn that the knowledge of risks alone (or what they call the “evaluation approach” as opposed to the “management approach”) is not enough to contribute to project success.

In a study of 291 development programs, Oehmen et al. (2014) examined 30 proposed risk management best practices and showed that more than 70% show no significant association with desirable product development or risk management outcomes, with only indirect impact on product and project success in impact measures. These findings suggest that we should take a more critical look at the conventionally recommended risk management practices.

A project management focused study, investigating specific methods extracted from the PMBOK, surveyed 142 practitioners (Papke-Shields et al., 2010). The risk-related methods include “quantitative risk analysis” and “risk register updates,” for example. Of particular interest to this work is the finding that risk-related methods were found to be the least used of 10 knowledge areas. The authors found a significant difference in the level of use of risk management methods between the successful and unsuccessful projects in the study, suggesting that even though infrequently used, the more risk management, the better project outcomes.

An empirical study based on over 100 product development projects in various industries was reported by Raz et al. (2002). This study found that only a small number of projects used any kind of risk management practices. Those projects that did use risk management, however, were found to have better met time and budget goals.

In another study, this time with evidence from a questionnaire of 84 project managers from the software and high-tech industries, Raz and Michael (2001) start from a list of 38 risk management tools from the literature and identify 28 tools that are used by organizations with better project management performance. Examples of such tools include ranking of risks, risk probability assessment, and checklists.

Mu et al. (2009) propose and validate a risk management framework for new product development which decomposes risk management into three factors: organizational, technological, and marketing. Validation was performed empirically through a survey of Chinese firms. The results show that risk management strategies aimed at those three factors contribute both individually and interactively to the performance of new product development.

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