

# Escalation of commitment in troubled IT projects: Influence of project risk factors and self-efficacy on the perception of risk and the commitment to a failing project



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## Abstract

Past studies have indicated that project managers may be less likely to continue failing IT projects if they are able to perceive project risks accurately. Using the scenario of a failing IT project, a computer simulation-based experiment investigated the influence of individual self-efficacy and project risk factors on the perception of risk. Participants played the role of a project manager and managed a simulated IT project. The results suggest that project managers are likely to underestimate the risks of a project with endogenous risk factors as compared to a project with exogenous risk factors. Results of this study point to a 'self-efficacy bias' where project managers with higher self-efficacy may underestimate the risks of a troubled IT project as compared to project managers with lower self-efficacy. Further, risk perception mediated the influence of self-efficacy on the commitment to a failing IT project.

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*Keywords:* Risk perception; Self-efficacy; Project risk management; IT projects; Escalation of commitment

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## 1. Introduction

'Escalation of commitment' in IT projects is often a problem where project managers may continue to persist with failing projects (Keil, 1995; Keil and Mann, 1997). Many studies have investigated factors contributing to 'escalation of commitment' in IT projects (Keil et al., 2000a,b; Keil et al., 2003; Keil and Robey, 2001; Smith et al., 2001; Tan et al., 2003). Keil and colleagues (2000a,b) have suggested that project managers who accurately perceive the risks of a failing endeavor are less likely to continue with failing projects. Several researchers have identified inadequate risk management as a contributing factor for many software project failures (Barki et al., 1993; Boehm, 1991; Charette, 1989) and have advocated strategies like evolutionary development for assessing project risk on an ongoing basis. Project managers can take appropriate action if proper risk assessment leads to early identification of a failing project. While assessing project risks, project managers may go through a cognitive process of risk

identification, risk classification and risk evaluation. Risk identification is about identifying the factors or events that could potentially have a negative impact on project outcomes. Risk classification involves explicit or implicit categorization of these variables. Risk evaluation is about assessing the likely impact of these variables or events on project outcomes. Several studies have focused on identification and classification of risk factors for software development projects (Barki et al., 1993; Boehm and Ross, 1989; Ropponen and Lyytinen, 2000; Keil et al., 1998; Tiwana and Keil, 2004; Wallace et al., 2004; Kappelman et al., 2006; Tesch et al., 2007). However, few studies have paid attention to the risk evaluation processes in IT project management. Keil et al. (2000a) have proposed a comprehensive conceptual framework that considers the influence of personal, project, informational, and organizational factors on risk perception which in turn influences the willingness to continue a failing project. However, there is a need to investigate empirically the specific factors that may influence the risk perception of IT project managers. This study fills the gap in the current literature by investigating an individual-level and a project-level factor that may influence the risk perception of project managers.

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### 1.1. Self-efficacy and risk assessment

The self-efficacy hypothesis (Whyte et al., 1997; Whyte and Saks, 2007) which draws upon social-cognitive theory (Bandura, 1997) suggests that individuals with high self-efficacy, built upon a history of past successes, are more likely to persist with a failing course of action as they may continue to believe that they can turn around the failing situation. Sitkin and Weingart (1995) have suggested that future research should investigate the link between self-efficacy and risk taking behavior. Whyte and his colleagues (Whyte et al., 1997; Whyte and Saks, 2007) have tested the direct influence of self-efficacy on commitment to a failing endeavor. However, it is possible that risk perception mediates the influence of self-efficacy on commitment. Self-efficacy may influence how one perceives the risks inherent in a situation, which in turn may determine whether one would abandon or persist with a risky venture. We are not aware of any other study that has investigated the relationship between self-efficacy and risk perception, especially the mediating role played by risk perception in the self-efficacy → commitment path. Thus, the first aim of this study was to contribute to the literature on escalation of commitment in IT projects by investigating whether individual self-efficacy influences the perception of risk in a failing IT project and whether risk perception in turn influences the commitment to a failing IT project.

### 1.2. Perceived controllability of project outcomes and risk assessment

Project managers pay attention to their ability to control project variables that have an impact on project success. Managers believe in post-decisional control, that they will be able to control a risky situation using their skills (Shapira, 1995). Shapira (1995, p. 80, *italics original*) quotes a manager in his study “Decision theory puts all the emphasis on the analysis leading to the moment of choice. While it is definitely important, my experience taught me that my ability to influence whatever goes on *after* the moment of choice is perhaps even more important.” Project managers’ perceived controllability over project risk factors is likely to influence how they assess the risks of IT projects. Hence, the second aim of this study was investigating how controllability of project risk factors influences the perception of risk in a failing IT project.

Thus, this study focused on the following research questions: How do project risk factors influence the perception of risk in a failing IT project? How does personal self-efficacy influence the perception of risk in a failing IT project? How does risk perception influence the commitment to a failing IT project?

## 2. Hypotheses

### 2.1. Project risk factors, controllability of outcomes, and risk perception

Ropponen and Lyytinen (2000, p. 99) define software project risk as a “state or property of a development task or

environment, which if ignored, can increase the likelihood of project failure”. Wallace et al. (2004) have identified six dimensions of project risks: organizational environment risk, user risk, requirements risk, project complexity risk, planning and control risk, and team risk. Tiwana and Keil (2004) identified six project risk drivers and classified these risk drivers on the basis of the sphere of influence project managers have over them. Using an international Delphi study, Keil et al. (1998) identified the risk factors deemed most important by project managers in the U.S., Finland, and Hong Kong. Keil et al. (1998) classified software risk factors as having two dimensions: perceived importance of the risk factors and perceived control over the risk factors. Keil et al. (1998) found that project managers deemed the risks that were often not under their direct control to be the most important risks.

Following the work by Keil and his co-authors (Keil et al., 1998, Tiwana and Keil, 2004) this study classifies project risk factors into two categories based on the degree of managerial control over the risk factors (Jani, 2008): *endogenous* and *exogenous* risk factors. Endogenous risk factors are variables or events that can influence the project outcomes negatively, such as project team morale, employee productivity, inadequate training, or inadequate project reviews (Jani, 2008). These are linked to a project’s internal factors and are typically under the direct control of a project manager. Exogenous risk factors are due to external events or factors that influence the project outcomes negatively such as environmental factors like governmental regulations, or change in business environment or change in project scope (Jani, 2008). These are often not under the direct control of a project manager. According to the classification used in this study, organizational environment risk and requirements risk identified by Wallace et al. (2004) could be considered exogenous risk factors. Project managers may have limited capacity to influence the organizational environment risk (e.g. factors like politics, organizational support for the project) and requirements risk (change in requirements). User risk, project complexity risk, planning and control risk and team risk identified by Wallace et al. (2004) could be considered endogenous risk factors because these factors are mostly internal to the project and project managers will have greater degree of control over these factors. Project managers can make sure that there is adequate user participation in the development process, reduce project complexity by using a modular design and by breaking down large projects into smaller projects, implement adequate processes and project management practices in place, and make sure that the team members are knowledgeable, have received adequate training and the communication and coordination problems are resolved.

Individual risk taking is influenced by risk perception (Sitkin and Pablo, 1992; Sitkin and Weingart, 1995). Sitkin and Pablo (1992, p.12) define risk perception as the “decision maker’s assessment of the risk inherent in a situation”. Risk perception has also been defined as the assessment of a situation in terms of probabilistic estimates of the degree of situational uncertainty, how controllable that uncertainty is, and confidence in those estimates (Sitkin and Weingart, 1995, p.1575). Controllability of potential outcomes is a key factor that determines an

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