

# Does risk management contribute to IT project success? A meta-analysis of empirical evidence

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## Abstract

The question whether risk management contributes to IT project success is considered relevant by people from both academic and practitioners' communities already for a long time. This paper presents a meta-analysis of the empirical evidence that either supports or opposes the claim that risk management contributes to IT project success. In addition, this paper also investigates the validity of the assumptions on which risk management is based. The analysis leads to remarkable conclusions. Over the last 10 years, much has become known about what causes IT projects to fail. However, there is still very little empirical evidence that this knowledge is actually used in projects for managing risks in IT projects.

This paper concludes with indicating new directions for research in the relation between risk management and project success. Key elements are stakeholder perception of risk and success and stakeholder behaviour in the risk management process.

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## 1. Introduction

Does risk management contribute to project success? This question is considered relevant by people from both academic and practitioners' communities already for a long time. Especially in the area of Information Technology (IT), where projects have a long history of failing (The Standish Group International, 1999), there is a great deal of interest in the effects of risk management. This interest goes back as far as the 70's with Alter and Ginzberg (1978), whose article "... suggests that the likelihood of successful MIS implementation can be increased by identifying the key uncertainties at each stage of the development process and devising strategies for coping with the range of possible results" (Alter and Ginzberg, 1978).

However, as Alter and Ginzberg's (1978) use of the word "suggest" indicates, the effects of risk management

are hard to establish. The debate during the time of the millennium change, in IT circles known as the Y2K problem, is an example of the general problem that it is difficult to establish the influence of something that is meant to prevent something else from happening. During the late 90's, large sums of money were invested to identify and repair computer software that was assumed to be unable to handle the transition from the year 1999 to 2000. When the transition actually took place, however, there were no major computer failures. The question was then asked whether it had been worth the investment (BBC News Talking Point, 2000). The debate took the form of a controversy between believers and non-believers, because it is impossible to determine what would have happened if this risk management had not been applied. With respect to the use of risk management in projects, professionals therefore state that risk management must be done because the project management handbooks say so, and it should be done in the way the handbooks prescribe it (Association for Project Management, 2006; Project Management Institute, 2004). This normative approach is often found

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in relation to literature that focuses on project management in general (Turner, 1999), and on risk management in IT projects in particular (Ropponen and Lyytinen, 1997).

The purpose of this paper is to structure the ongoing debate, and contribute to it by presenting a meta-analysis of empirical evidence that either supports or opposes the claim that risk management contributes to project success. This paper focuses on IT projects, projects that are aiming at the development and implementation of computer software, because the debate in this area among scientists and practitioners is vivid.

First, we will deal with the various approaches to risk management in the literature on risk management in IT projects. These approaches vary among researchers, while their preference for a certain approach mostly remains implicit. Two approaches are distinguished here: an *evaluation* approach and a *management* approach. Subsequently, the concept of project success in the context of IT projects is surveyed. The traditional *vendor-oriented* definition of project success (Turner and Cochrane, 1993), based on time, budget and requirements criteria, is frequently used in publications that study risk management in relation to IT project success. However, due to incorrect assumptions or claims that are only valid in certain situations, this definition of project success does not fit the context of IT projects very well. Therefore, a more elaborate view on project success, as presented in the more recent literature, will be used in the remainder of this paper.

Next, we will study the relation between the evaluation approach to risk management and its contribution to project success in greater detail. Recent publications are analysed to look for empirical evidence for the contribution of risk management to project success. If this evidence is found, its underpinning data and methods used are carefully investigated. After that the management approach to risk management is studied in greater detail. Attention is then given to the assumptions underpinning the two risk management approaches.

The analysis leads to remarkable conclusions, which are presented in the last section of the paper. Over the last 10 years, much has become known from extensive empirical research about what causes IT projects to fail. However, there is still little empirical evidence that this knowledge is actually used and that the risks in IT projects are really manageable. An analysis of the assumptions underpinning risk management indicates that the risk management instrument may only work under very strict conditions. Therefore, more in-depth empirical work which looks inside the risk management process is necessary.

## 2. Risk management and project success in IT projects

### 2.1. How risk management is approached

For quite some time now, researchers have had a common interest in the area of risk and uncertainty in IT projects. Early publications include e.g. Alter and Ginzberg

(1978), Zmud (1980) and McFarlan (1981), later followed by Boehm (1991), Barki et al. (1993), Charette (1996) and Lyytinen et al. (1996). These authors consider risk management primarily an ex-post evaluation process. The aim of such a process is to list and quantify the risks and find the causes for software project failure. This information is then used in the next project in order to prevent these risks from occurring. Fig. 1 presents this process graphically, showing that:

- known risk factors are the input for a project;
- the project risk management process collects information about the risks and failure of the project, which leads to new risk factors;
- these new factors are added to the list of known risk factors, together forming the input for the next project.

In the remainder of the paper, this approach is referred to as the evaluation approach. This approach aims at answering the question *what* causes projects to fail. This approach assumes that by knowing the risks and their causes they can and will be managed, which is likely to lead to a positive effect on the project outcomes. The aim is to create project predictability in a new project by using the information regarding the risks and causes of project failure gathered in previous projects. The underpinning assumption is that projects are comparable in the sense that information about risks can be generalised and is used in future projects.

In his paper, Boehm (1991) discusses a list of risks in software projects, as a result of which the paper can be positioned as belonging the evaluation approach. But in the same paper, Boehm describes risk management as a process consisting of identifying, analysing, controlling, and monitoring events that may jeopardise a software project. Risk management then becomes a sequence of activities with the aim to gather information about situations that may or may not occur in a specific project (Chapman and Ward, 1997; Pich et al., 2002). The sequence of activities that characterises project risk management is described in detail by e.g. Del Caño and Pilar de la Cruz (2002). This sequence of activities is executed during the project with the aim to

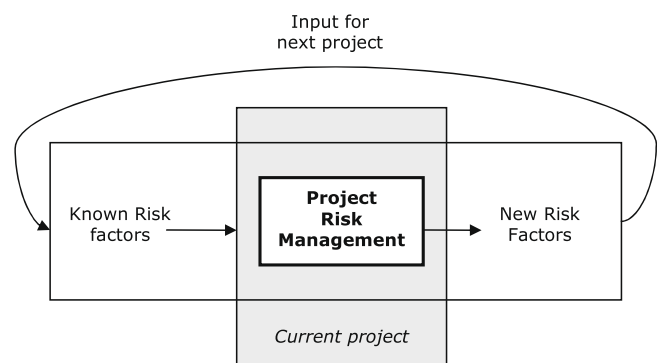


Fig. 1. The evaluation approach to project risk management.

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