Risk management in ERP project introduction: Review of the literature

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Abstract

In recent years ERP systems have received much attention. However, ERP projects have often been found to be complex and risky to implement in business enterprises. The organizational relevance and risk of ERP projects make it important for organizations to focus on ways to make ERP implementation successful.

We collected and analyzed a number of key articles discussing and analyzing ERP implementation. The different approaches taken in the literature were compared from a risk management point of view to highlight the key risk factors and their impact on project success. Literature was further classified in order to address and analyze each risk factor and its relevance during the stages of the ERP project life cycle.

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No risk, no reward.

Companies must take risk both to launch new products and to innovate themselves. "However, risk processes do not require a strategy of risk avoidance but an early diagnosis and management" [73].

1. Introduction

Unfortunately implementation difficulties still affect complex IT projects like the introduction of enterprise resource planning (ERP). The integrated e-business marketplace and external environments have highlighted the needs for companies to react quickly to customer signals and behave competitively. To achieve this, companies need effective communication systems and integrated IS that fit their business goals and processes, both inside and outside the company's boundaries. Companies must establish strong partnerships and form an effective supply chain [116].

ERP and SCM system applications are often implemented to improve a firm's performance [144]. Over the last decade, many firms world-wide have implemented enterprise ERP systems which are packaged business software systems that help in managing the efficient and effective use of resources (materials, human resources, finance, etc.) [77,87]. They assist enterprises in automating and integrating corporate cross-functions, such as inventory control, procurement, distribution, finance, and project management [130].

As estimated by AMR Research [7–10], with ERP penetration at 67% (2002), the ERP market is the largest segment of a company's applications budget (34%). The global market grew 14% in 2004 to become a US$ 23.6

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billion business, moreover the European ERP market revenues are expected to increase 7% annually through 2009.

However, ERP projects are complex; PMP [108] found that the average implementation time of an ERP project was between 6 months and 2 years and that the average cost was about US$ 1 million. Researchers have pointed out that there is a substantial difference between an "ERP" project and a simple "Software" project [24]. An ERP project involves several components of software and business systems, thereby raising organizational problems.

Despite the significant benefits that ERP software packages provide, they often cost millions of dollars to buy, several times that to install, and they often require disruptive organizational changes [155]. It is thus some companies have experienced considerable advantages while others have had to reduce their initiatives and accept minimum payoffs, or even relinquishing ERP implementation altogether [133,134]. Time and costs can be enormous [68,114]; Soh et al. observed that ERP implementation involves a large number of stake-holders and that the hidden costs during the ERP life cycle dramatically increase the total implementation cost.

IT projects have a high failure rate. According to the Standish Group International, 90% of SAP R/3 ERP projects run late [128]; a study of 7400 IT projects showed that 34% were late or over budget, 31% were abandoned, scaled or modified, and only 24% were completed on time and in budget [38].

Our work focused on the importance of ERP risk management through the ERP life cycle and resulted in guidelines for managing the risk. In particular, starting with an extensive analysis of the literature, we classified project risk factors and concentrated on the question of how they impact the best use of a company's limited resources. The main purposes of our work thus was to:

- review and analyze key articles on ERP project from a risk management point of view;
- identify risk factors and risk approaches, their relations and differences in terms of their impact on the organization;
- describe and classify important contributions to ERP risk management identifying their differences, advantages, and disadvantages;
- clarify at which stage of the ERP life cycle it is critic to manage the risks;
- identify areas needing ERP risk management deployment.

2. ERP project risk assessment

One reason often cited for any software project failure is that managers do not properly assess and manage the risks involved in their projects [90]. Most project managers perceive risk management processes as extra work and expense; thus, risk management processes are often expunged if a project schedule slips [78].

In the past, several ways were proposed in order to improve the success rate of ERP introduction, unfortunately without great effect [62,64,103]. The nature of IT project risk is determined by the risk factors [72,129,131] and by the strategic need for the project, innovation, repetition of failed experience, etc. Many processes have been developed in recent years to address the need for a more effective risk management, though they are often too general for ERP application, models including PMI 2001 [107], Standards Australia 1999 [140], SAFE methodology [47], and Risk Diagnosing Methodology [73] are typical iterative approaches to risk management problems (see Fig. 1). Main phases are:

1. context analysis;
2. risk identification;
3. risk analysis;
4. risk evaluation;
5. risk treatment;
6. monitoring and review;
7. communication and consulting.

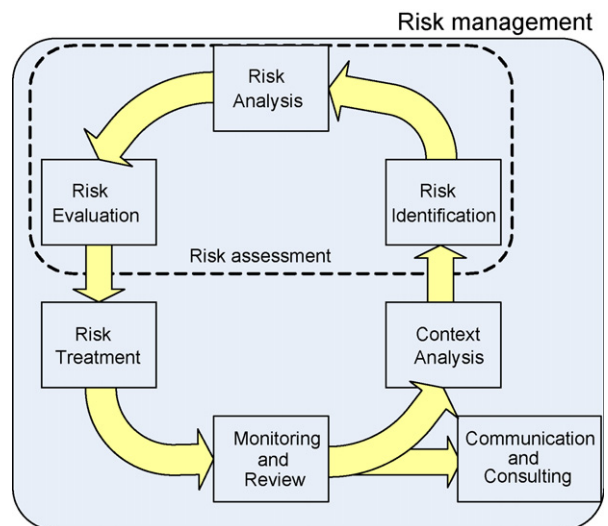However, ERP projects are interdisciplinary; they affect interdependencies between business processes,

Fig. 1. Risk management phases.