

Decisions in software development projects management. An exploratory study

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Given the importance of software in today's world, the development of software systems is a key activity that requires complex management scenarios. This article explores the implications of hard decisions in the context of software development projects (SDPs). More in deep, it focuses on the emotional consequences of making hard decisions in IT organisations. Complex SDPs involve a great variety of actors. This fact entails morale, feelings and emotions, which play an important role for communication, interaction and, ultimately, decision making. The aim of the article is twofold. First (Study 1), to identify which are the most important hard decisions in SDPs. Second (Study 2), to study the influence of emotions on decision-making processes (Study 2). Findings show the complex emotional consequences and difficulties that managers must face in hard decision-making processes.

Keywords: hard decisions; emotions; software project management; Delphi method; decision making; task analysis; information systems success; emotional response; organisational performance

Introduction

Software development is a human centric and socio-technical activity (Casado-Lumbreras *et al.* 2011) and a knowledge-intensive process (Chou 2011). The task of managing a software project can be extremely complex, drawing on many personal, team and organisational resources (Rose *et al.* 2007, Soto-Acosta *et al.* 2010). The software development process is founded on three basic pillars: processes, technologies and people. These pillars are interconnected, forming an inseparable triangle on which organisations operate (Hernández-López *et al.* 2010). The managing of this triangle is full of decisions and other managerial issues. Given this importance, numerous efforts to support and analyse decision making in these projects have been made. One important aspect is the diverse decision-making methods of professionals and management teams driving the projects. Thus, organisations end-up with their own (ad hoc or formal) decision model for managing SDPs (Nguyen 2006). Existing literature has proposed several tools to assist decision making in SDPs, which include: indicators (e.g. Hopple 1986, Basili 1996), software project control centers (Münch and Heidrich 2004), system dynamics (e.g. Abdel-Hamid and Madnick 1991, Lee *et al.* 2009), checklists (Keil *et al.* 2008), decision models (e.g. Sakthivel 1994, Nguyen 2006) or multi-

criteria decision analysis (e.g. Lai *et al.* 2002, Wang and Lin 2003).

The perspective of using the concept of hard decision in SDPs brings new research opportunities to software project development managers. According to Clemen (1996) and Clemen and Reilly (2001), hard decisions are characterised by four aspects:

- (1) the complexity of the problem;
- (2) uncertainty inherent in the situation;
- (3) the decision-maker being interested in working towards multiple objectives but progress in one direction impeding progress in others;
- (4) different perspectives leading to different conclusions.

The importance and applicability of the concept of hard decisions in SDPs can be considered as capital in such environments. Given the key role human resources in SDPs (Colomo-Palacios *et al.* 2010, Colomo-Palacios *et al.* 2011), knowing which circumstances and decisions change the evolution of SDPs project is key for practitioners and researchers alike.

Furthermore, the study of emotions within software development teams also represents a prominent research area. Thanasankit (2002) argued that organisations need to go further and consider the emotions and culture of users and software specialists. As a

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