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International Journal of Project Management 28 (2010) 220–227
International Journal of Project Management
www.elsevier.com/locate/ijproman

Task completion competency and project management performance: The influence of control and user contribution

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Received 29 December 2008; received in revised form 5 May 2009; accepted 7 May 2009

Abstract

Recent research examines the relationship between competency and success in the information systems project environment. The links, however, are not well established and the antecedents of competency not well explored. We model the link between general task completion competency and performance of development teams with two crucial antecedents built by other stakeholders, the contribution of users and controls established by management. A sample of information systems professionals confirms the model and places a focus on the competencies of the professionals involved in a development. Management must be aware of team level controls and the competencies within a team and not focus on the individual members of a system development team.

Keywords: Information systems development; Project management; Competency; User participation; Management controls

1. Introduction

Organizations frequently adopt project teams for information systems (IS) implementation in order to accomplish the necessary tasks. Still, organizations are just beginning to understand the complexity of factors that influence project management performance (Subramanian et al., 2007). Aladwani (2002) proposed an integrated model for IS project management performance by synthesizing the literature on software project management. He argues that certain project environmental attributes (e.g., support technologies, project-team size, clear goals, expertise of staff, and management advocacy) are necessary factors for problem solving ability, which in turn represent necessary conditions to secure a more successful implementation. The focus of the model is on the mediator variable of task completion competency – which is associated with process characteristics of the project team. The implication is that management and researchers should focus on the antecedent variables to facilitate process so that outcomes are improved.

One likely facilitator frequently mentioned in the IS literature is user contribution (Nelson and Cooprider, 1996; Barki and Hartwick, 1994; Alter, 1979; Wang et al., 2006; Subramanian et al., 2007). From another research perspective, the project management literature views management controls to be crucial to success (Henderson and Lee, 1992; Lee et al., 1995b). Each of these factors from the different literatures has ample theory backing their importance, but the empirical results linking them directly to success is mixed (Leung, 2001; Beath and Orlikowski, 1994; Andres and Zmud, 2002; Ives and Olson, 1984; Kirsch and Beath, 1996). Using the model of Aladwani (2002), a mediating variable that is a good predictor of success might better serve to explain the relationship between the factor variables and eventual project success.

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0263-7863/$36.00
doi:10.1016/j.ijproman.2009.05.006

One process factor believed to promote success is a team's innate ability to complete tasks (Aladwani, 2002). For example, a key success factor for software development projects is not the tools or techniques traditionally emphasized in project management and software engineering, but the cumulative competences of the software development team (Rose et al., 2007). Learning and control theories lead one to expect that the task completion process will be enhanced by management controls over processes and the contributions to learning made by the users (Nelson and Cooprider, 1996; Henderson and Lee, 1992).

The purpose of this study is, therefore, to empirically examine the relationships among management control, user contributions, project team task completion competency, and the project team's performance. We argue that management control behaviors and user contribution that have direct impacts on project team's task completion competency, which, in turn, impact project management performance and outcomes. By adding to our understanding of the process factors that lead to success of a development project, we build on the ability of organizations to address factors and process jointly in order to achieve eventual project success.

2. Background of hypotheses

The complex nature of teamwork is a multifaceted, higher-order concept that includes both task related activities and social interaction within teams (Högl and Gemünden, 2001). A high level of general teamwork quality leads to a high level of team performance (Högl and Parboteeah, 2006; Högl et al., 2004). More specifically, an IS development team with a high level of teamwork quality is associated with a higher effective use of technology (Easley et al., 2003). There is a great deal of interaction among teamwork quality and organizational conditions such as procedural and interactional justice, team autonomy, and external influence (Högl and Parboteeah, 2006; Dayan and Di Benedetto, 2008; Molleman, 2009). Team task completion competence is an another factor believed to promote project performance, except it is rooted in the abilities of the team rather than the social interaction components (Aladwani, 2002; Rose et al., 2007). The cumulative competences of the software development team are deemed more important than the tools, techniques, processes and interactions employed by the team. As such, competency should be a more direct predictor of the outcomes of performance than the activities and social interaction aspects.

Additionally, high performing development teams are those in which managers retain control over assigning specific work assignments to team members and developing task procedures (Lee et al., 1995b). Henderson and Lee (1992) indicated that the total level of management control behaviors is positively correlated with IS project team's final performance. Yet another critical external factor is learning (Shepherd et al., 2006; Neufeld and Haggerty, 2001). Learning is often perceived as a positive predictor of project team outcomes and member satisfaction (Argote et al., 2003; Gold et al., 2001). In fact, the learning between users and IS project teams has been widely examined in the IS literature (Grover and Davenport, 2001; Beck et al., 2006). It is believed that user contribution is a necessary ingredient for successful learning for IS development teams (Christiaanse and Venkatraman, 2002; Jiang et al., 2006).

However, the extent of impact might differ across measures of success. Aladwani (2002) argues that studies should consider a project level measure of success in addition to the more traditional measures of user satisfaction or product effectiveness. IS project effectiveness (e.g., usage, user satisfaction, product quality) is primarily a consideration of the individual or product but project management performance (e.g. meeting objectives of cost, quality, scope) is indicative of the overall project. Given the difference between these two performance measures, Aladwani (2002) argues that an integrated research model for IS project management performance is needed in research efforts on IS project management performance. The specific model proposes that organizational characteristics (i.e., management advocacy), people characteristics (i.e., staff expertise), task characteristics (i.e., clear goals), technology characteristics (i.e., support technologies), and project characteristics (i.e., project-team size), directly influence the project team's general problem solving and task completion competency and, in turn, affects the project team's performance. The project team's general task completion competency was emphasized as a mediator.

However, empirical findings do not reveal a positive relationship between organizational characteristics (i.e., management advocacy) and the project team's task completion competency. To consider why, this study considers learning theory and control theory as an addition to Aladwani's proposed framework (Aladwani, 2002) to explain the link between organizational factors and task completion competency. The research model in this study is shown in Fig. 1. In general, we propose that user contribution and management control have positive impacts on the IS project team's task completion competency which, in turn, leads to positive project management performance.

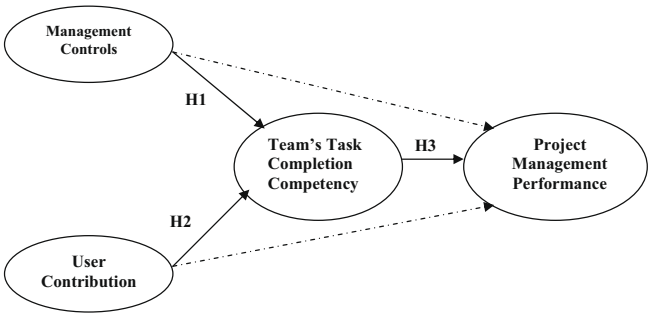

Fig. 1. Proposed research model.