

The effects of organizational culture and environmental pressures on IT project performance: A moderation perspective



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Abstract

In this study we examine the impact of culture and environmental pressures on IT project performance. Specifically, the current study examines four dimensions of organizational culture (i.e., institutional collectivism, results orientation, positive work environment, leadership risk tolerance) and environmental pressures that are competitive and regulatory in nature. Within the context of these variables this study examines the moderating effect of environmental pressures (i.e., levels of competitive and regulatory pressure) on the relationship between organizational culture and IT project performance. The model was empirically tested with data from the United States and China. These two countries were chosen due to their very distinctive characteristics related to organizational resources and environmental factors.

Results support the theory that the relationship between organizational culture and IT project performance is moderated by environmental pressures. These results should aid project managers when making decisions pertaining to the designing and carrying out of project management practices.

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1. Introduction

A key question in project management research revolves around why some projects succeed while others fail. This question has led researchers to explore potential determinants that might lead to project success or failure. Despite recent advances in project management knowledge, the establishment of

project management standards, and increased availability of project management resources to organizations under the leadership of the Project Management Institute during the last two decades, the majority of projects still fail (Yazici, 2009). For example, the Standish Group International (2009) found the overall project failure rate to be 72% in the US. Additionally, Gray and Larson (2003) found software development projects are often completed over budget and behind schedule.

Although it is difficult to quantify the financial cost arising from low success rates associated with information technology (IT) projects, a 2003 review estimated that a phenomenal \$150 billion was attributable to wastage from IT failures in the United States, with a further \$140 billion in the European Union (Dalcher and Genus, 2003). One reason for this high level of wastage may stem from IT projects being unique relative to other

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types of projects due to several factors identified in a 2004 report from the Royal Academy of Engineering.

One of these factors is the lack of constraints associated with IT projects. That is people working on IT projects are sometimes guilty of taking on degrees of novelty and risk far in excess of the levels typically accepted by people working on other types of projects. A related problem for IT projects is the abuse of the perceived flexibility of IT. The inability to visualize the boundaries of what is practical or even possible in IT encourages people to change their minds more often than they might do for projects unrelated to IT where constraints are more obvious. Complexity can also be a significant obstacle to successful design and delivery of IT projects since complexity is both harder to detect and less well understood. This is due to the fact that the complexity associated with IT projects is more multi-dimensional, encompassing scale diversity, and heterogeneity.

Another unique factor associated with IT projects is the extremely rapid pace of technological progress in IT. This rapid change makes it difficult for expertise in a particular technique or language to become mature and established, as well as creating an environment where the use of unproven tools and solutions are acceptable. There is also a strong tendency in IT projects to start from scratch each time a new project is started, with software continually being reinvented to perform essentially the same function (The Royal Academy of Engineering, 2004).

The goal of the current study is to provide IT project managers with insights that will help them increase IT project performance. Nielsen and Michailova (2007) identified key success factors in the implementation of IT projects, specifically in the implementation of knowledge system IT projects. They were environmental factors, corporate culture and pressures such as following industry norms. They found the success of IT projects was related to the relationship between these factors and that management needs to be aware of their importance in planning IT projects.

In order to further examine the relationship between these factors, the current study examines how the alignment between organizational culture and environmental pressures impacts IT project performance. Specifically, the current study examines four dimensions of organizational culture (i.e., institutional collectivism, results orientation, positive work environment, leadership risk tolerance), and environmental pressures pertaining to competitive and regulatory pressures. Additionally, because IT projects are unique it is theorized that the manner in which the alignment between environmental pressures and organizational culture affects information technology (IT) project performance may also be unique for IT projects. It should be noted that within the context of the current study, alignment is viewed from a moderation perspective, where the interaction between two independent variables affects a dependent variable.

2. Theoretical framework

A common practice in management studies is to utilize contingency models when simpler models are considered insufficient to predict or explain the topic of interest. Over the

years, several operations management studies have found a connection between alignment and business performance (Cao and Hoffman, 2011; Cao and Schniederjans, 2004; Joshi et al., 2003; Schniederjans and Cao, 2009; Tarigan, 2005). Traditionally, research on project performance (including IT project performance) has focused on the project manager's individual leadership or on investigating organizational factors (Al-Ahmad et al., 2009; Yazici, 2009). One organizational factor that has been linked to project performance is culture (Belassi et al., 2007; Shore, 2008; Wang and Liu, 2007; Yazici, 2009). In addition to organizational factors being linked to project performance, research has also suggested that the environment may also play an influencing role in project performance (Schmidt et al., 2001). In the paragraphs below literature pertaining to organizational culture, environmental pressures, and the alignment between the two is reviewed. Hypotheses are then developed which examine how the alignment between organizational culture and environmental pressures affects project performance.

2.1. Culture and project performance

Culture is a multifaceted variable. Baba et al. (1996) studied technology management in American culture and concluded three interrelated forms of culture (i.e., national, organizational, and work culture) exist in corporations that use information technology. Work cultures are defined by a particular discipline (e.g., project management). Organizational cultures are subcultures within a nation derived from corporate founders and experiences. National culture is based on the behavior of people in a specific country. As mentioned earlier, the focus of the current study is on the effect of organizational culture on IT project performance.

Schein (1990) defined organizational culture as a pattern of basic assumptions that are invented, discovered, or developed by a given group as it learns to cope with problems of external adaptation and internal integration. They have worked well enough to be considered valid and, therefore, they are taught to new members as the correct way to perceive, think, and feel in reference to problems. In addition, according to Martin (1992), organizational culture is a collection of elements with which individuals come into contact within organizations. These elements include dress norms, stories people tell about happenings, the organization's formal rules and procedures, its informal codes of behavior, rituals, tasks, pay systems, jargons, and jokes only understood by insiders.

Throughout the last twenty years, a number of researchers have identified elements of culture that are believed to be critical to the success of an organization. Pfeffer and Viega (1999) identified high-involvement human resource practices, such as sharing information, careful hiring, and employing self-managed work teams that reflect successful organizational cultures.

Research suggests strong organizational culture enables people to identify what an organization expects and how they must perform to get the work done (Deal and Kennedy, 1982). Research also suggests organizational culture develops within

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