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International Journal of Project Management 23 (2005) 181–192
INTERNATIONAL JOURNAL OF PROJECT MANAGEMENT
www.elsevier.com/locate/ijproman

Standardized project management may increase development projects success

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Received 20 July 2004; received in revised form 17 September 2004; accepted 23 November 2004

Abstract

Companies frequently opt to implement standardized project management (SPM), which can be defined as a standardized set of project management practices. These companies expect that such an approach will carry significant potential for improving project performance. To investigate this potential, we undertook an exploratory study into the impact of SPM on project performance in development projects in high-velocity industries. Our research started with the qualitative method using case study research to identify the major factors in SPM efforts on the organizational project management level (as opposed to the individual project level). Then, we developed hypotheses based on these factors and performed hypothesis testing to identify factors that impact project success. In addition, we conducted the follow-up interviews to enrich and refine our findings. Three major findings came out of this study. First, the variables of SPM tools, leadership skills, and process showed themselves to be of higher interest to standardization than the other independent variables because they may impact project success; second, these variables of higher interest are typically customized to fit the strategic purpose of the company; and third, companies tend to standardize project management practices only to a certain level.

Keywords: Standardization; Project management; Development projects; Project performance; Success factors

1. Introduction

According to multiple empirical studies, a company's effectiveness partly depends on the success of its projects [1,2]. Consequently, many researchers have investigated those factors affecting project success, including product definition, quality of execution, and even project management techniques [2–4]. Common to these studies are that they are done on the individual project level and they tend to see these success factors as fitting all project situations [5]. In addition, the studies are not specifically conducted for projects in high-velocity industries.

Some companies in high-velocity industries have recognized standardized project management (SPM, see Table 1 for acronyms in this paper) as a strategy for managing development projects. For example, Brown and Eisenhardt [6] suggested that critical success factors can hinge on the degree of standardization of project practices. Recently, the Project Management Institute (PMI) issued a new standard, the Organizational Project Management Maturity Model (OPM3) [7], which suggests SPM as a major strategy. These references suggest that SPM may have a significant place in many companies' approach to PM.

Given the significance of SPM in the industry, it comes as a surprise that empirical research on the topic remains sparse, especially on the organizational project

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0263-7863/$30.00
doi:10.1016/j.ijproman.2004.11.002

Table 1
Acronyms used in this paper

Acronyms	
ISO	International Standards Organization
OPM	Organizational Project Management
PM	Project Management
PMBOK	Project Management Body of Knowledge
SWD	Software Development
NPD	New Product Development
OPM3	Organizational Project Management Maturity Model
PMI	Project Management Institute
SPM	Standardized Project Management
WBS	Work Breakdown Structure

management (OPM) level. Prompted by this paucity of research, we designed an exploratory study into SPM. In particular, this study aims to identify and then get a better understanding of the factors that may impact project success and, thus, be of interest in future research related to SPM efforts in development projects in high-velocity industries. Specifically, the goal is to address two research questions: *What are the major factors in SPM efforts on the OPM level?* And, *what SPM factors on the OPM level are of interest because they may impact project success?*

2. Conceptual background

The context of this research is the high-velocity electronics, computer, and software industries. According to Eisenhardt [8], a high-velocity environment abounds with rapid and discontinuous changes in demand, competition, and technology; in addition, that information is often inaccurate, unavailable, and obsolete. Lengnick-Hall and Wolff [9] proposed that in these industries:

- Disequilibrium and perpetual, discontinuous, radical change makes all competitive advantages temporary
- Organization units and actions are loosely coupled, stimulating entrepreneurial behaviors
- Any advantage is temporary, contributing to surprise, flexibility, and unpredictability to a firm's strategic weapons
- Continuous disruption is a nonlinear process, and risk is viewed as a factor to capitalize on
- Destabilizing the current environment is focused in such a way that a succession of fleeting advantages lead to high performance.

In such context, while recognizing Brooks' views [10] of the uniqueness of software development (SWD) projects, in this study, we believe that there are enough similarities between new product development (NPD) and SWD projects, especially in the electronics, computer, and software industries. The similarities are in terms of the level of technological uncertainty, system complexity, and risk involvement, etc. These similarities and a phenomenon that a multitude of project products in the electronics and computer industries include both the NPD (hardware) and SWD (software) components, led us to study such NPD and SWD projects together, called "development projects."

- Technological uncertainty: This issue is closely related to the degree that the project uses novel versus mature technologies. Projects involving more novel technologies are considered to have a higher technological uncertainty than those with more mature technologies. For example, breakthrough NPD projects that create product platforms based on a new generation of technology are characterized by a higher level of technological uncertainty than derivative NPD projects, whose purpose is to adapt the platform for a certain market niche [11]. Similarly, an SWD project focusing on maintenance, including minor upgrades, has a lower level of technological uncertainty than a breakthrough program. *Since the essence of NPD and SWD projects is innovation advantage, a large portion of these projects deal with a medium to high level of technological uncertainty.*
- System complexity: This issue can be conceptualized as a combination of product characteristics, functional mission, and organizational structure. For example, imagine a project with a single component and a single function of a limited scale that is implemented within a functional group, such as the development of a computer hard drive or development of a software translator. In contrast, a complex project would have multiple components and multiple functions and require the involvement of multiple organizations, e.g., development of a new generation of computers or a large software suite. *Many NPD and SWD projects have medium to high levels of system complexity, which causes further complexities in their development process* (e.g., complexity of team communication, project structure, and project schedule) *and product* [10].
- Risk involvement: NPD and SWD projects are among the riskiest endeavors for the modern company and those risks tend to hit NPD and SWD projects from many angles. A risky situation may be severe when the firm has limited knowledge and experience with the product and process technologies that they intend to incorporate into the product [11]. In both NPD and SWD projects, the risk level increases if the project involves many personnel, has a high application complexity, involves a high number of technology acquisitions, and lacks of sufficient resources and team expertise. *Generally, a significant number of NPD and SWD projects are exposed to medium to high severity of risk.*