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ABSTRACT

This study argues that factors such as the characteristics of the organization, the portfolio of IT projects they are managing and skill composition of their IT workers influence a firm's outsourcing decision. Using a case study methodology at 10 firms located in the Midwest, we will study organizational and project characteristics as they relate to the sourcing of the development of the project. Additionally we will look at the portfolio of IT skills that are present in the firm and their role in the decision process for outsourcing. A firm's ability to learn and assimilate new technologies largely depends on its previous experience with related technologies, and thus we suspect that firms should be encouraged to keep critical project in-house. Results will be presented.

Keywords

IT Worker, Projects, Outsourcing, Off-shoring

INTRODUCTION

As organizations work to leverage new technologies for competitive advantage, researchers and managers search for answers to questions about the underlying theory and implementation mechanics that determine success. It is widely recognized that IT workers represent a valuable resource, critical to the successful implementation and use of information technology in organizations (Amoroso, Thompson, & Cheney, 1989; Rainer, Carr, Snyder, & Frolick, 1989; Watson, 1990; Niederman, Brancheau, & Wetherbe, 1991).

In competitive environments, a firm's ability to successfully implement and earn an adequate return on strategic information technology investments depends heavily on those workers who design, develop, implement, and maintain these related systems. A recent study of Fortune 2000 firms by Byrd and Turner (2001) argues that IT workers do affect IS success, and that their technical skills are viewed as the most important skill set in affecting IS infrastructure flexibility and competitive advantage. Some argue that the IT workforce employed by the firm may even enable long-lasting competitive advantage (Ross, Beath, & Goodhue, 1996).

However, since the economic downturns in the late 1990's executives are becoming increasingly more concerned with the cost of IS projects and also with their high failure rates[1]. In order to mitigate these costs managers have begun to outsource many of the projects they once would have built in-house. More recently, the global economy has impacted the outsourcing market for IS projects by making available the programming resources of countries like India, China and Russia, in the form of "off-shoring" (McLaughlin, 2003). Again, the argument for this move to off-shore IT projects has usually been cost (Carmel & Agarwal, 2002).

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[1] A survey released in 2001 by Forrester Research showed that the number of large companies in North America that had cut their eBusiness budgets had nearly doubled. Specifically, Forrester found in May 2001 that only 17% of large companies had decreased their eBusiness budgets. Nearly one-third of Global 3,500 firms reported such reductions. The average reduction was only 0.3% in spring 2000, whereas in fall 2001, big companies said that they expected a 6% budget drop.

While the high cost of such personnel is one strong reason to outsource projects, consideration should be given factors that go beyond the cost of labor. Although some progress has been made showing that the introduction of new information technology leads to increased organizational productivity, the same research shows that such productivity increases are contingent on a variety of organizational changes and human resource activities (Kemerer, 1998; Brynjolfsson & Hitt, 1998). Research by DeMarco (1995) and DeMarco and Lister (1987) in the software productivity literature reinforces this conclusion. These researchers found systematic relationships between human resource policies and programmer productivity. Being able to manage and improve the human capability to assimilate new technologies may produce large returns.

Even if the decision to outsource does not involve a reduction in force, many questions about personnel still remain. If you are outsourcing projects because your internal people do not have the skills needed to do the project, the question becomes, why don't they have the skills? Technology changes quickly and many of the skills that are in demand one day are obsolete the next. Productivity of the firm requires that IT workers keep upgrading their skills to address the changes induced by technology (Cohen & Levinthal, 1990; Acemoglu, 1997; Acemoglu & Pischke, 1999). However, the reality is that many workers do not progress their skills over time. In our view, outsourcing could be a signal to firms that they are falling behind in technology if they are outsourcing projects involving newer technologies. It is the age old question of, "what happens if I train my employees and they leave?" vs. "what happens if I don't train them and they stay?"

The goal of this research is to explore the outsourcing phenomena from the perspective of the decision process based on antecedents that represent factors beyond cost reduction. We investigate the selection process managers from a number of different firms use to identify projects they wish to outsource and the human resource characteristics that make these projects suitable for outsourcing both here and abroad. The rest of this paper is organized as follows. The second section presents a brief literature review. Section three gives a preliminary list of our hypotheses. Finally, our conclusion presents our initial plan of research.

LITERATURE REVIEW

While the recent research has often focused on the task level of projects, we want to include the strategic implications of outsourcing for the outsourcing firm. In Wernerfelt (1984), a resource was defined as "those (tangible and intangible) assets which are tied semi-permanently to the firm." Wenerfelt also discussed the dual nature of technological investments:

> "A technological lead will allow the firm higher returns, and thus enable it to keep better people in a more stimulating setting so that the organization can develop more advanced ideas than followers. The followers on the other hand will often find the reinvention of your ideas easier than the original invention. So you need to keep growing your technological capability in order to protect your position."

Therefore, when making the outsourcing decision firms should balance their need to control costs with the real possibility that they are losing their in-house knowledge of technology, skilled personnel, and routines (Kogut & Zander, 1992; Kirschenbaum & Mano-Negrin, 1999).

Developing and maintaining knowledge about an outsourced component in an outsourced project can be difficult (Takeishi, 2002). Knowledge partitioning, not task partitioning, is the key to effective outsourcing (Von Hippel, 1990). Thus in some cases, project outsourcing is reduced to task outsourcing where only the tasks that are not knowledge intensive are outsourced.

Williamson (1981) recognized that asset specificity could arise in any of three different ways, site specificity, physical specificity, or human asset specificity that arises in a "learning-by-doing fashion." Again this implies that managers should think twice before outsourcing projects using skills that cannot be easily or cheaply duplicated in the marketplace. Furthermore Teece, Rumelt, Dosi and Winter (1994) note that, "learning is a process involving repetition and experimentation which enables tasks to be performed better and quicker, and new production opportunities to be identified." Ho et al. (2003) focused on managerial expectations in an outsourcing context and showed that the presence of strong ties between manager and contractor, and the lack of prior outsourcing experience increased the persistence of managerial expectations.

Contractual agreements have assumed significant complexity in recent times because of the emergence of strategies like outsourcing and researchers (Dayanand & Padman, 2001) find that contrary to current practice, the client obtains the greatest benefit by scheduling the project for early completion such that the payments are not made at regular intervals. Profits from outsourced projects depend on size, duration of outsourced projects (Gopal, Sivaramakrishnan, Krishnan, & Mukhopadhyay, 2003) and the contracting choices made early in the context of offshore software development projects.

Maintenance and enhancement projects are sources of steady income for most software development corporations. Today most large corporations in the U.S. have subsidiaries overseas. When projects or tasks are outsourced to subsidiaries present overseas, the hierarchical and political structure within the corporation simplifies the complexity of contracts needed to manage such outsourced projects.. In our study we want to focus on projects that are outsourced to independent contractors and to the foreign subsidiaries of U.S. companies. In our study, we hope to create a methodology to identify human resource factors that make a project or task favorable for outsourcing.

MODEL AND HYPOTHESES

In our model, the decision making process used by managers is moderated by the three factors: organizational characteristics, project characteristics and human capital characteristics.

The organizational climate influences human resource capabilities and capacities in knowledge based areas (Bresnahan, Brynjolfsson, & Hitt, 2002). We identified the following relevant **organizational characteristics**: the size of the firm, the prior outsourcing experience of the firm, the existence of foreign subsidiaries in the firm and the technology resources and expertise of the firm.

Project characteristics directly determine the human resource requirements (Kirsch, 1997). We identified the following relevant **project characteristics:** project duration, project budget and project complexity, project decomposability.

IT is a knowledge based industry and assets specificity applies not only to physical assets of the firm, but also to its employees (Josefek, 1999). Human capital theory (Becker, 1975) maintains that individual characteristics, such as education and general skills, make an individual more marketable. Using human capital theory as a framework, we identified the following relevant **human capital characteristics**: the scarcity of the needed skilled resources in the marketplace, the learning curves of the technologies involved in the concerned project and the ease of determining the level of skill of employee, (for example, design and architectural skills are harder to identify than more concrete programming skills).

Sourcing decision process = f (Organizational characteristics, Project characteristics, Human capital characteristics)

The number, quality and availability of a firm's employees directly affect its ability to handle projects in house.

H1: The characteristics of the firm's IT human resource portfolio moderate the project outsourcing decision making process.

The supply of a given resource in the marketplace directly affects a resource's price and therefore affects the firm's outsourcing decision making process.

H2: The more competitive the market for the skilled resources required for a project the more likely the project is to be outsourced.

The ability of a firm to profitably reuse its human resources in projects directly related to the core business of the firm directly affects its outsourcing decision making process.

H3: Projects using IT skills directly related to the core businesses of the corporation are less likely to be outsourced.

To test our hypothesis we plan to use case study methodology at approximately 10 sites. These sites are in either the Midwest or the Northeastern United states. Consistent with Yin (1984), we will gather interview data from managers involved in the decision making process. We want to study how managers made the decisions that did and did not lead to project outsourcing.

DISCUSSION AND CONCLUSIONS

The last few years have seen a great increase in the number of outsourced projects, both locally and overseas. We believe that the three human resource factors discussed in our model significantly shape the decision making process used by managers in identifying projects or tasks for outsourcing. We believe that the need to control knowledge-based resources in a firm's core businesses will dominate the outsourcing decision making process.

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