Information & Management 48 (2011) 53–61

Contents lists available at ScienceDirect

Information & Management

journal homepage: www.elsevier.com/locate/im

The role of IT human capability in the knowledge transfer process in IT outsourcing context

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ARTICLE INFO

Article history:
Received 8 November 2009
Received in revised form 20 September 2010
Accepted 20 December 2010
Available online 13 January 2011

Keywords:
Knowledge transfer
IT human capability
Trust
Cooperative learning
Human character

ABSTRACT

Our research attempted to identify the behavioral process of knowledge transfer by examining the effects of IT human capability, human character, trust, and cooperative learning on it in an IT outsourcing situation. By analysing data collected from vendor and client matched-pair samples of 87 IT outsourcing projects, we found that both the client's and the vendor's character influenced trust, trust affects on cooperative learning, and the cooperative learning influence on knowledge transfer. More importantly, it we found that the client's IT human capability had a direct impact on cooperative learning and knowledge transfer. This indicated that client's IT human capability was a crucial factor in effective knowledge transfer during IT outsourcing. It also implied that client firms should identify and retain some IT personnel who can apply vendors' competencies in IT practice and respond effectively to any technological challenges.

1. Introduction

IT outsourcing is considered a strategically and economically good choice in enhancing firm performance. In IT an outsourcing context, however, clients without proper knowledge and understanding could encounter poor performance. Thus knowledge asymmetry between the client and vendor tends to favor the vendor, and the client loses control of IT, ceding it to the vendor. Lack of IT expertise in client firms also allows vendors to dominate IT-management. Recently, IT outsourcing research has focused on knowledge transfer between vendors and clients, which posits that effective knowledge transfer is critical in meeting the perceived needs of client firms and in achieving outsourcing success [17]. Clients typically acquire operational, maintenance, and training knowledge of outsourced IT. Willcocks et al. [28] suggested that most organizations do not understand how experiential research on transferring new knowledge can be used to improve an outsourcing situation.

However, few studies have focused on knowledge transfer in IT outsourcing contexts [8]. Furthermore, research that incorporates the perspectives of both clients and vendors is relatively rare, even though outsourcing involves actions from both sides of the relationship [15].

Previous research on IT outsourcing has a focus on outsourcing success that is defined as the extent to which clients achieve financial, managerial, technical, and relational expectations from IT outsourcing or the level of clients' satisfaction with their vendors. We extended research on IT outsourcing success by considering the behavioral dimensions that are relevant to knowledge transfer from vendors to clients. To do this, a research model was developed based on resource-based and social exchange theory.

2. Theoretical background

2.1. Knowledge transfer

By sharing knowledge in IT outsourcing environments, clients and vendors are able to sustain an effective outsourcing relationship over time. Moreover, the effective transfer of technical knowledge can have significant impact on the clients' IT use and management. The knowledge domain includes implementation and customization knowledge which is both explicit and tacit: it may embody activities associated with configuring and testing applications or ERP modules, installing software and hardware, and training clients in preparing for ongoing operation and maintenance.

There have been several definitions of knowledge transfer; for example, Szulanski [26] takes an exchange approach by defining knowledge transfer as dyadic exchanges of knowledge between a source and a recipient. This definition focuses on the exchange of knowledge among intra-organizational members. Recently, knowledge transfer has been directed toward changes to the recipient and the inter-organizational interfaces. For instance, Argote and Ingram [2] define knowledge transfer as the process through which one unit is affected by the experience of another. Darr and Kurtzberg [7] also

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doi:10.1016/j.im.2011.01.001

argue that knowledge transfer occurs when a contributor shares knowledge that is used by an adopter. Ko et al. [15] define knowledge transfer as the communication of knowledge from a source so that it is learned and applied by a recipient. Thus knowledge is transferred when learning takes place and when the recipient understands the implications associated with that knowledge.

We therefore defined *knowledge transfer* as the extent to which clients acquire, absorb, and utilize knowledge on outsourced IT from vendors.

Based on social exchange theory, the behavioral elements selected in our study were *trust, human character*, and *cooperative learning* [20]. From previous resource-based theory studies [5], *IT human capability* was also adopted as a factor affecting knowledge transfer. Organizational support was used as a control variable in our study.

2.2. Resource-based theory

According to resource-based theory, IT related resources can be divided into two categories: IT assets and human capabilities [5]. IT assets facilitate the rapid collection, collation, storage, and dissemination of data, thereby assisting the knowledge creation and diffusion process. However, the human capabilities rather than IT assets were adopted as the factor affecting knowledge transfer [4,10]. Human capabilities refer to skills required to manage resources. IT human capability requires four types of skills: technology management, business functional, interpersonal and management, and technical [6]. IT human capability is costly to imitate and it is a valuable resource of a firm.

Argote and Ingram argued that IT staffs play the most significant role in technology transfer: their ability to absorb knowledge is essential in an outsourcing relationship. O'Dell and Grayson [21] also suggested that the IT human infrastructure could enhance performance in project and knowledge transfer and stressed that many organizations tended to emphasize the development of human infrastructure for effective knowledge transfer and management.

2.3. Social exchange theory

Social exchange involves actions that are contingent on rewarding reactions from others. Social exchange theory posits that the purpose of social exchange is to maximize benefits and minimize costs from an exchange. Human character, trust, and cooperative learning were selected as the behavioral factors that we used as influencing good knowledge transfer.

Thus, the role of trust would be more critical in an IT outsourcing situation than in outsourcing for other purposes, because clients rely on vendors for IT control and operation in IT outsourcing. Ba and Pavlou [3] found that trust could diminish information asymmetry between clients and service providers and decrease risk in the relationship. Gefen [9] also agued that trust can advance knowledge transfer and outsourcing performance. We assumed that trust was the expectation that a vendor (or client) could be relied upon to fulfill obligations, behave in predictably, and act fairly even if opportunism could be present [22].

Jarvenpaa et al. found that the human character was an antecedent of trust in a global virtual team environment. In our study, the human attributes included ability, benevolence, and integrity [13].

A cooperative work process among exchange parties is another essential factor in a social exchange relation where a power-dependence relation exists. Social exchange theorists have developed a power-dependence theory which argues that uncertainty resulting from resource scarcity and a lack of knowledge can be reduced through the use of organizational exchange. In the context of knowledge and resources exchange, cooperative learning (an activity where every team member works to maximize performance and learning [12]) can be important in the exchange process. Janz and Prasarnphanich [12] suggested that cooperation and collective approaches were desirable characteristics in knowledge creation and exchange. Hult et al. [11] insisted that cooperative learning facilitated knowledge management. Certain characteristics were essential for cooperative learning: positive interdependence (the degree to which group members feel that they are linked in), promotive interaction (the degree to which each group member identifies his or her strengths and weaknesses in the group and seeks to assist others in developing skills to achieve their goals), and group process (the extent to which the group periodically assesses its works as effective or ineffective).

3. Research model and hypotheses

Our research model, shown in Fig. 1, was developed as the way in which we could examine the process of knowledge transfer; it incorporated both client and vendor perspectives.

3.1. IT human capability and trust

Lacity et al. [16] suggested that clients should have IT human ability to evaluate and monitor vendors' activity so that they could establish trust with vendors. Having knowledge of system development and business process was also assumed to be important in performing evaluation and effective monitoring of vendors' performance. Also, clients' knowledge and experience during the system development process enabled them to develop trust with vendors through evaluation and monitoring of them.

Thus, a project member who had IT human capability might participate in a project and interact with other members more actively than a project member who did not. While *knowledge-based trust* is facilitated by shared experience between clients and vendors, *identification-based trust* is developed by mutual understanding and goal sharing between them. Thus trust building is based on both parties knowing and understanding the project and its goals. IT human skills should increase the mutual trust of project members. Therefore, we hypothesized:

H1. Client's IT human capability is positively associated with trust.

3.2. IT human capability and cooperative learning

For efficient IT knowledge transfer in an outsourcing situation, clients and vendors should contribute their ideas and capabilities to be successful. According to the study by Kaiser and Hawk [14], clients should have a strong understanding and knowledge of IT and business process in order to exchange and share information with vendors during the system development phase. They argued that such behavior would result in competitive advantage.

IT personnel with substantial knowledge and skills tend to work cooperatively and interactively. Aladwani [1] demonstrated that a project group they had IT personnel with knowledge and experience performed better in problem solving than a project group without them. Accordingly:

H2. Client's IT human capability is positively associated with cooperative learning.

3.3. IT human capability and knowledge transfer

Clients' knowledge acquired and transferred from vendors can significantly affect system usage and improve its management. When clients do not receive IT operation and maintenance supports, knowledge becomes more important. Bartlett and