Review Article

Impact of Individual Motivation Factors and Capabilities on Knowledge Capturing and Sharing in IT Projects: A Review on Conceptual and Practice Perspectives

Naleen Jayasuriya[1], Ajith Medis[2]

[1] Doctoral Student of University Of Kelaniya

Department of Marketing Management, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka

[2] Senior Lecturer,

Department of Marketing Management, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka

Abstract - *This case study examines how knowledge capture and share within IT projects during project implementation. IT projects are purely knowledge base projects. Knowledge capturing and sharing in IT projects one of the challenges in IT project knowledge management. Individuals assigned to the projects have some knowledge, and during the project, new knowledge is acquired. This paper will examine whether Knowledge capturing and sharing are affected by individual motivation factors and capabilities. Effective knowledge management affected project success.*

Keywords - *Knowledge capturing, Knowledge sharing, Individual motivation factors, Individual capability, Knowledge management.*

I. INTRODUCTION

This IT project's focus on knowledge yields new insights because IT projects are primarily knowledge work (Reich, Gemino & Sauer, 2012, p. 664). However, discussions with project managers have indicated that IT projects are becoming more ambitious, more organizationally and technically complex, and more time-to-market focused. Acceptable project performance may still be an elusive target (Sauer & Reich, 2007). Industry research shows fifty to sixty percent of all projects are considered failures (IT-Cortex, 2006). There are many reasons for these IT project failures. One reason for these failures on poor project management and/or lack of executive sponsorship (Reich, 2007). Mainly the fact that there is very little knowledge transfer and sharing between project teams and project teams not worry about the knowledge transfer. One research emphasis that "Most of the cases the valuable knowledge gained on IT projects is unable to captured and utilized. Failing to retain knowledge from past projects suggests that solutions are reinvented, mistakes are repeated, and process knowledge is lost" (Tiwana & Ramesh, 2001) as Taylor (2004) explain that 'Managing the IT project means managing of the total effort and ensuring that the various components integrate to produce the desired final product' (Taylor, 2004). Further, Taylor (2004) explains that there are a number of things that make IT projects different from the projects in other areas, which include unique IT-related risks, the rapid development requirements to meet rush-to-market demands, the short life of technology, and multiple dependencies with other projects (Taylor, 2004). Damm and Schindle (2002) explain that knowledge reuse is associated with soft skills, managing user expectations was a reasonable choice of the problem due to its importance and prevalence in IT projects. Knowledge management is not a purely managerial activity because it may be performed by all project team members and not only by the management team. Each team member, especially in a project that makes intensive use of knowledge, can and should take part in the creation, storage, and distribution of knowledge (Damm & Schindler, 2002). One researcher explains, "They need to retain knowledge and lessons learned from IT projects is important to organizations" (Schindler & Eppler, 2003). Further, Schindler and Eppler (2003) emphasize that "Knowledge is often lost in a project, after a project is completed or when the team members move on to other activities" (Schindler & Eppler, 2003).

Polyaninova (2011) develops this further and suggests that project knowledge is generated from two sources – internal and external. Internal sources include risk logs, lessons learned, and experience, while external sources include seminars, benchmarking, and competitor analysis. It is evident that the nature of the projects and organizational culture has a significant impact on the ability to manage project knowledge which in turn aids to the

project's success or failure (Polyaninova, 2011). Some researchers explained that one of the main reasons for the failure of the project was "not managing the project knowledge management properly". Desouza and Evaristo (2004) explain that "Proper Project Knowledge Management (PKM), especially in complex projects, is one of the main success factors in project management" (Desouza & Evaristo, 2004). Because we wanted to examine the knowledge reuse associated with soft skills, managing user expectations was a reasonable choice of the problem due to its importance and prevalence in IT projects. Damm and Schindle (2002) emphasize that Knowledge management is not a purely managerial activity because it may be performed by all project team members and not only by the management team. Each team member, especially in a project that makes intensive use of knowledge, can and should take part in the creation, storage, and distribution of knowledge (Damm & Schindler, 2002). Further, there were other researchers who consider the same situation where Rosacker & Rosacker (2010) postulate that "…IT projects are far too often…wasteful, inefficient, mismanaged, expensive and behind schedule" (p. 578).

A. Purpose of the Study

Some researchers identified that "Most of the situations that the information and communications technology (ICT) initiatives are implemented via projects" (Cadle & Yeates, 2004). The effective management of such projects is challenging, where many factors affect the success of such projects. In the project management world, a considerable amount of research exists to describe the reasons behind the success and/or failure of projects in the information technology space. Reich (2007) explains that most of this research focuses on failures being caused by such things as lack of executive sponsorship, lack of project management methods, lack of change management processes, project scope, size, and project duration (Reich, 2007). As all of the projects are different and unique, it is still possible to classify projects into different categories in accordance with a need to use explicit and tacit knowledge in them (Koskinen, 2001).

Leseure & Brookes (2004) explains that "Knowledge is generated within one project and then lost. Failure to transfer this knowledge…leads to wasted activity and impaired project performance" (Leseure & Brookes, 2004). In the knowledge management prospect, the project can be seen in different aspects, such as knowledge management process, etc., as Sauer and Reich (2009) explain that "Projects may be seen as knowledge management processes" (Sauer & Reich, 2009).

As per Awad & Ghaziri (2004), KM is focused on the facilitation and generation of new knowledge, transferring existing knowledge, embedding knowledge in products, services, and processes,

developing an environment for facilitation of knowledge growth, and providing access to valuable knowledge form inside and outside of the company (As cited in Polyaninoya, 2011). As Prencipe & Tell (2001) explains that, Personalization as a knowledge-sharing mechanism has the inherent flexibility of transmitting tacit knowledge and allowing for discussions and sharing interpretations that may lead to the development of new knowledge (As cited in Polyaninoya, 2011). Magalhaes (2004) explains that tacit knowledge is gained through learning, experience, common sense, values, and beliefs. Tacit knowledge is considered to be more valuable, although it is more difficult to capture into a recorded, documented, or codified form (As cited in Polyaninoya, 2011). As Grant (1996) explains that, tacit knowledge is revealed through its application, as it cannot be codified and can only be observed through its application and acquired through practice. Tacit knowledge transfer between people is slow, costly, and uncertain (As cited in Polyaninoya, 2011). A person assigned to a project brings the knowledge he or she possesses at that time to the project team. This is the technical or managerial knowledge collected during all the former education, training, and participation in completed projects (Gasik, 2008) as Polyaninova (2011) explains that after completing the project, the team member attains a new level of knowledge. There are four types of knowledge important to the success of the IT projects process, domain, institutional, and cultural. Project team member capabilities and motivational factors are defined under the domain knowledge and the cultural knowledge. The third part of Reich's framework consists of knowledge-based risks in IT projects, where he has listed ten risks that can affect knowledge in IT projects. Two of these risks are "Poor knowledge integration" and "poor knowledge transfers within projects".

Thus, we argue that personalization captures new knowledge and shares the knowledge. It is projected members' capability and motivation to capture the project knowledge generated within the project during project implementation.

This paper contributes to existing knowledge as a conceptual review to synthesize how individual motivation factors and capabilities on knowledge capturing and sharing in IT projects are researched and claimed in future research directions. Present cases alongside the empirical contributions to signify how individual motivation factors and capabilities on knowledge capturing and sharing are referred to in behavioral studies whilst industry practices are also highlighted.

B. Methodology

This paper follows a deductive approach in which arguments and explanations are mainly supported by empirical evidence and associated theoretical contents. Alongside, authors reviewed journal articles

and industry publications to review the concepts and applications that pertained to the effectiveness of project knowledge management. The literature review was employed as the main research tool. This paper discusses cases found within the application of effectiveness of project knowledge management to import practice-related insights for the readers. Authors highlight some industry-specific issues and case evidence whilst specific concern is made on Sri Lankan industry practices. Paper is organized as a concept paper whilst arguments were empirically supported. Finally, the authors discuss and conclude the paper by postulating future research directions in line with the synthesized discussions.

II. THEORETICAL REVIEW ON INDIVIDUAL MOTIVATION FACTORS AND CAPABILITIES ON KNOWLEDGE CAPTURING AND SHARING IN IT PROJECTS

Reich (2007) has identified four knowledge categories that are vital to the success of IT projects: process knowledge, domain knowledge, institutional knowledge, and cultural knowledge. As per Reich (2007), Process knowledge refers to knowledge that the project team and sponsors have about the project structure, methodology, tasks, and timeframes. She further stated that "This kind of knowledge allows a team or subteam to self-organize since the team knows the outputs required and the time frames and can if empowered, decide how the work should best be accomplished" (Reich, 2007, p. 9). The domain knowledge includes the knowledge of the industry, firm, current situation, problems/opportunities, and potential situations (including technology and process) (Reich, 2007, p. 9). Institutional knowledge is a mix of history, power structure, and values of the organization (Reich, 2007, p. 9). Reich (2007) explain that cultural knowledge as "However in a broader context, with project teams being comprised of many disciplinary groups (e.g., web designers, organizational development experts, IT architects) and people from many cultural backgrounds, the concepts that cultural knowledge, both discipline-based and national, might be important is a very useful idea" (Reich, 2007, p. 9). Nonaka and Takeuchi (1995) base their model of KM on the separation of implicit and explicit knowledge and identify processes of transformation between these two types of knowledge. In the process of socialization, tacit knowledge is transformed into new tacit knowledge; in the process of externalization, this tacit knowledge is transformed into explicit knowledge (Hanisch, Linder, Muller & Wald, 2008). Research by Karlsen & Gottschalk (2004) addresses the topic of factors that affect knowledge transfer in projects (Karlsen & Gottschalk, 2004)

A seminal work in KM-related literature, which has become the cornerstone of knowledge creation and transfer theory, is the SECI model introduced by Nonaka and Takeuchi (1995). As Polyaninova (2011)

explains that, culture is one of the influencing factors for knowledge management. He further explains that; Culture within the organization has a big impact on KM processes. As people are responsible for producing the knowledge, they may not be willing to share that knowledge with the rest of the people in the organization. This problem is known as "knowledge hoarding". People persuade knowledge to be a power, and no one is willing to give it up. In order to overcome this problem, people's attitudes and behavior need to be changed. Organizations need to create incentives for their employees in order for them to collaborate and share the knowledge and to ensure that a successful Knowledge Management System (KMS) is put in place and used. Another problem regarding the knowledge workers is their ability or availability of time to contribute to the knowledge repositories (Davenport, 2005). As per Frey, Lindner, Muller & Wald (2009), Project Knowledge Management (PKM) is the management of knowledge in project situations and, thus, the link between the principles of KM and PM (As cited in Polyaninoya, 2011). As Awad & Ghaziri stated that, KM and PM components are very similar. PM components include system, people, and tools, and KM components include people, technology, and organizational factors (As cited in Polyaninoya, 2011). As Koskinen & Pihlanto (2008), the relation of KM and PM can be considered as KM in project environments (As cited in Karagoz, Korthaus & Augar, 2016).

As Reich et al. (2012) explain that, Knowledge management in the context of a project is the application of principles and processes designed to make relevant knowledge available to the project team. Effective knowledge management facilitates the creation and integration of knowledge, minimizes knowledge losses, and fills knowledge gaps throughout the duration of the project (Reich et al., 2012). According to Reich (2007), there are four types of knowledge important to the success of IT projects: process, domain, institutional, and cultural. Further, Reich (2004) stated that "We originally used the term "Knowledge Trap" to identify those times or events within an IT project in which there is a loss of project-specific knowledge, where the project lacks some relevant knowledge, or where knowledge is not created or applied optimally" (Reich, 2004). As per Reich (2007), there are four parts of the Knowledge Risk model. The second part of the model is the "Operational Project Process", which contains five knowledge risks in IT projects. That is the knowledge integration, knowledge transfer, loss of team members, lack of a knowledge map, and loss between phases (Reich, 2007, p.10). IT project managers and team members make a multitude of interrelated decisions (Reich et al., 2012). Further, the knowledge available to the team—that enables them to address complex problems efficiently and effectively. (Reich et al., 2012)

A. *Empirical Review on Influence of project knowledge management Scenarios*

"Firms that can successfully share knowledge across individuals and projects may find that ideas and experiences in one project can frequently solve the problems of another" (Boh, 2007, p.2). "Without the reuse of existing knowledge or the ability to create new knowledge from existing solutions and experiences, project organizations have to create solutions to every problem, which is clearly inefficient" (Love, Fong & Irani, 2005). Yoo & Kanawattanachai (2001) emphasize that project success was strongly influenced by each team member's knowledge of other team member's areas of expertise and by the team's ability to harness this knowledge to achieve the project's goals.

III. CASE REVIEW ON EFFECTIVENESS OF PROJECT KNOWLEDGE MANAGEMENT

As Reich (2007) proposed that, Knowledge management in the context of a project is the application of principles and processes designed to make relevant knowledge available to the project team. Effective knowledge management facilitates the creation and integration of knowledge losses and fills knowledge gaps throughout the duration of the project (Reich, 2007, p. 8). Some studies discuss knowledge related to project management strategies (Dissanayake & Wanninayake, 2010), whilst women's entrepreneurial knowledge had been investigated as a timely needed study in Sri Lanka (Dissanayake & Weerasiri, 2009).

A person assigned to a project brings the knowledge he or she possesses at that time to the project team. This is the technical or managerial knowledge collected during all the former education, training, and participation in completed projects (Gasik, 2008). Polyaninova (2011) explains that after completing the project, the team member attains a new level of knowledge. (Polyaninova, 2011). Further, Polyaninova (2011) explains that Projects accumulate a lot of intellectual knowledge, which can be later used by these same companies to add value, competitiveness and improve future projects' performance. Companies use Knowledge Management (KM) to create, identify and distribute knowledge and lessons learned within the organization. However, as projects have specific goals and unique deliverables that are never the same, this may lead to difficulty in efficiently capturing project knowledge. The use of KM in the project environment is gaining increased importance as it helps to improve the chances of project success. The success or failure of projects is highly dependent upon the ability and willingness of people to identify knowledge and share it within the organization. This characteristic is dependent on the culture, and environment organizations create for their employees.

Many organizations and project sponsors are not interest in the knowledge capturing and sharing of knowledge among the project team. This is one factor in making the future project successful. Since the IT projects are purely knowledge-based projects, capturing knowledge generated during the project is vital. Project-based organizations need to provide more focus on capture and share the knowledge generated during the project. "In spite of recent advances in our understanding of how to manage knowledge, its capture and transfer remain acute problems for project-based firms and organizations" (Hall & Sapsed, 2005). "Project knowledge management comprises processes that aim to generate, utilize, and distribute the micro-knowledge necessary for project execution and processes that are performed on the macro-knowledge of people at all organizational levels and that aim to increase the capabilities of direct or indirect participation of people in effective project execution or to increase their possibilities for influencing project execution" (Gasik, 2010). Leseure & Brookes (2004) designed a research project that would attempt to benchmark knowledge management practices within projects to help provide broader and more qualitative evidence of knowledge management methods in projects. The results of this research pointed to two main areas that could improve knowledge management in projects: collecting knowledge in projects; and managing tacit knowledge (Leseure & Brookes, 2004, p. 106).

Kasvi, Vartiainen, & Hailikari (2003) performed research on how knowledge is managed in projects and what knowledge management capabilities are required for proper knowledge management in projects (Kasvi, Vartiainen, & Hailikari, 2003). Further, Kasvi et al. (2003) emphasize that "knowledge management practices were weak and unsystematic" (Kasvi et al., 2003, p. 578) and that paper documents and interactions with colleagues were the most important sources of knowledge.

IV. CONCLUSION AND FURTHER RESEARCH DIRECTIONS

The knowledge capturing and sharing within the project is a challenge in a project environment. The capturing of tacit knowledge is difficult. There are different knowledge capturing methodologies use to capture the knowledge generated during project implementation. Knowledge capturing and sharing are part of the knowledge management process. The effectiveness of knowledge management in projects affected the success of the projects. This paper attempt to highlight that empirical studies revile that effectiveness of knowledge capture and share within the IT project is affected by individual motivation factors to capture and share the knowledge and individual capability to capture and share knowledge.

The effectiveness of knowledge capturing and sharing depends on the knowledge capturing methodology use during project implementation in IT

projects. Further research areas are open to identifying the most effective knowledge capturing and sharing methodology for IT projects. Where It projects are purely different from other projects and mainly based on knowledge.

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