

Influencing Factors of Knowledge Transfer in IT Outsourcing

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Abstract:- Information technology outsourcing (ITO) has become one of a critical success factor for any viable strategy in an increasingly global economy. However, it is reported in numerous studies that organizations are faced with risk due to the technology and market shift when exercising ITO. This is even so prevailing when the outsourcing consumer (OSC) are left with little or no knowledge on the product developed, implemented and maintained by the outsourcing service provider (OSP). Thus, from related works, this paper presented knowledge transfer processes (KTP) within the context of ITO environments composed of two related component: knowledge delivering and knowledge receiving or acquiring. Seventeen attributes are proposed based upon the predetermined key factors. The key factors are Knowledge provider (vendor), Knowledge to be transfer, Knowledge Receiver (client) and the Knowledge Infrastructure. The proposed framework yielded seventeen hypotheses representing seventeen attributes. In order to validate the framework, data are collected using survey and later statistically analyzed. The refined framework incorporating best practices yielded four key factors with two influencing attributes specified for the first factor, three influencing attribute for the second factor, two attributes for the third factor and six attributes for the fourth factor. This framework can be seen as an integration of several important elements involved in KTP, which need to be considered as an important aspect in facilitating KTP in an ITO environment. This paper is intended to help practitioners and researchers to visualize the process of knowledge transfer in IT outsourcing projects.

Keywords: - IT Outsourcing; Knowledge Transfer; Knowledge Provider; Knowledge Receiver; Outsourcing Provider; Outsourcing Consumer

1 Introduction

Today, Information Technology Outsourcing (ITO) both on and off shore are not just an option but a critical success factor for any viable strategy in an increasingly global economy [6]. Outsourcing is simply a result of maturing markets, the next step in the evolution of a truly global market place [13, 14]. However, it is reported in numerous studies that organizations are faced with risk due to the technology and market shift when exercising ITO [17, 31]. IT Outsourcing can be categorized into two types of dependencies which are: dependence for capacity and dependence for knowledge [12]. Depending for knowledge is far more risky for the outsourcing consumer (OSC) than depending for capacity [12]. From a user's point the disadvantages and risks of ITO is the loss of control over the knowledge on the product which will lead to deskilling and significant dependence on outsourcing service provider (OSP). This dependence can eventually result in higher costs, loss of control over technological direction or loss of

critical IT resources and skills. Potentially, the failure to employ an adequate knowledge transfer strategy and poor understanding of what knowledge management (KM) can prohibit IT organization from acquiring the expertise to solve new problems by reusing the same knowledge [7, 23].

Thus, it is important to make sure that there is knowledge transfer between OSP to OSC. Although knowledge transfers have been widely discussed by many academics and practitioners, there is relatively little information on factors influencing knowledge transfer especially in ITO. Therefore, the objectives of this paper is to propose the process of knowledge transfer in ITO and its factors based upon related works and best practices to manage knowledge successfully in ITO projects.

2 Related Works

The market for ITO services is growing rapidly and costs associated with external IT services are rising in most business and public organizations. It has become

one of a critical success factor for any viable strategy in an increasingly global economy. It has widely been understood as one of the major means of improving the competitiveness and effectiveness of organizations [20]. The working definition of IT outsourcing for this proposed research is the use of an outside company or professional to manage or develop a function or system formerly carried out inside a company, to manage a client organization's information technology assets, people and/or activities to a required standards over an agreed time period [13, 14]. Outsourcing of IT covers a range from communication network management, hardware/software maintenance, application management, information system management and business processes [27]. Outsourcing offers several advantages, such as cost reduction, cost savings, time savings, greater flexibility, greater productivity, core activities and key objectives focusing and process re-engineering. Managers outsource when they expect the market to be more cost efficient or when they believe skills, knowledge or experience are available via the market that are not available in-house [19].

However, the area of organizational competencies such as loss of IT expertise, loss of innovative capacity, loss of control of the activity and loss of competitive advantage appears to be quite vulnerable in the outsourcing context [5, 21]. The ability to align IT with the firm's strategy might also be hampered, thus affecting the firm's ability to maintain competitive advantage, and to use IT in an innovative fashion [11]. Whether outsourcing results in an increase or decrease in the overall risk profile of an organization will depend on the significance of the outsourced activity, the effectiveness of controls over outsourcing risk. Therefore there is a need to manage IT outsourcing especially the dependency over knowledge.

Davenport et al. [9] cites that knowledge transfer is the process of transmitting or presenting or sharing knowledge to a potential recipient. Absorptive capacity is defined as the ability to use or apply the knowledge received by the receiver [8, 2]. The transfer of knowledge is usually accompanied by an additional phase of knowledge application or practicing by the recipient. This additional phase is often fundamental to acquire those tacit and contextual aspects of knowledge that is not transmitted or acquired from the first phase of knowledge transfer [28]. In this context, knowledge is viewed as what the individual knows; the facts,

information's skill and understanding that one have gained especially through learning and experience [3]. Knowledge resides in several different locations or reservoirs, they encompass people, including individuals and groups; artifacts, including practice, technologies and repositories; and organizations entities, including organizational units, organizations and inter-organizational networks [16].

In ITO environment, knowledge is recognized as a fundamental asset for improving the competitiveness and effectiveness of organizations [4, 22, 26]. Meanwhile, KM can be defined as performing the activities involved in the management of knowledge source and actionable resources so as to enhance the efficiency, effectiveness, and innovativeness of organizational business processes [3, 10, 15, 18, 29]. From the theoretical framework it is found that there are several important issues in knowledge transfer that needs to be addressed namely absorptive capacity, distribution, reception and adaptation. In mapping these issues with existing models and ITO environments, several models were studied and the details are as follows:

Table 1: Knowledge Transfer Model and its description

Model	Description	Ref
SECI model	Spiral model of organization knowledge creation is relevant to the activities of generation, distribution & transfer. Knowledge internalization, the last quadrant identified as the model to represent absorptive capacity since internalization is related to learning by doing.	24, 25
Knowledge transfer model	This model examine the stages of knowledge transfer namely Initiation, implementation, ramp-up and integration.	29
KM solution framework	This model discusses on the infrastructure that includes organization culture and structure, people and technology	16

3 Research Methodology

Towards realizing the survey, a set of questionnaire was prepared. A pilot survey was conducted earlier with ten organizations to confirm the validity and the understanding of the questionnaire. The results of the pilot survey confirmed that the questionnaires were appropriate and valid. The questionnaires were then refined and the final questionnaire were then distributed. A sample size of 150 from 10 organizations where 130 questionnaires were retrieved, resulting in an 86.7 per cent response rate. Of the retrieved questionnaires, 101 questionnaires were usable. The surveys were divided into two sections; project’s characteristics and Knowledge Transfer in IT Outsourcing practices with 18 hypotheses to address 18 attributes.

4 Knowledge Transfer in IT Outsourcing Framework

In an outsourcing relationship, the vendor and the client need to transfer exchange and develop knowledge on continuous basis [14]. If this knowledge exchange is poorly structured, then misunderstandings leading to a poor service quality will occur [1, 16]. Basically, the process of knowledge transfer occurs between individual, groups and organizations [24, 30, 31].

Referring to Table 2, this research gears to knowledge internalization therefore the framework highlight four key factors involved in knowledge transfer process (KTP) [16, 24, 25, 29]. These factors are knowledge provider or OSP which represents the owner of the knowledge, knowledge receiver or OSC represents the person who receives the knowledge, knowledge to be transferred describes the explicit knowledge in which reside in people, artifact and organization entities and finally knowledge infrastructure represents all the enablers in facilitating the process of knowledge transfer. These factors are recognized as the main factor of effective KTP in ITO environment. The model also identifies five significant stages of learning process including the interaction between the knowledge provider (OSP) and receiver (OSC).

The KTP processes requires OSC to acquire knowledge that would be transferred by the OSP through KM infrastructure which ever convenient and fast communication technology. This information would then need to be interpreted and absorbed by the OSC members so that knowledge transfer can be accomplished successfully thru the interaction of both

the OSP experts and OSC technical groups or users. With respect to this framework several attributes are identified to measure the commitment of each factor in realizing KTP. These attributes and its description are as shown in table 2.

Table 2: Attributes for each factor

	Factor	Attribute
Effective KTP in ITO	Knowledge Provider/OSP	• Distribution capacity
		• Sharing motivation
	Knowledge Receiver/OSC	• Absorptive capacity
		• Perceived Benefits
		• Self Motivation
	Knowledge to be transfer	• Quality
		• Reliable
		• Timeliness
		• Accurate
	KM Infrastructure/ Enabler	• Sharing culture
		• Management support for KM
		• Document confidential status
		• Communication flow
• ICT Infrastructure		
• Posting		
• Training		
• Trust		
• Building design		

5 Findings and Discussions

In this study, ten (10) organizations were identified that practice the knowledge transfer into ITO environment. However, some attributes were found not significant.

5.1 Demographic profile

The survey respondents profile with regard to ICT Staff, involvement in IT outsourcing project and length of involvement in IT outsourcing activities as shown in Table 3.

Table 3: Respondents’ Profile

Respondent Profile		Percent
Staff Designation	IT manager	27.7
	IT Officer	40.6
	IT Assistant Officer	25.7

	Other IT staff	5.9
Involvement	yes	91.1
	No	8.9
Duration	not involve	8.9
	Less then 1 year	17.8
	1 to 2 years	27.7
	3 to 4 years	20.8
	5 and more years	24.8

5.2 Knowledge Transfer in ITO environment Practices

Based on the inferential findings as shown in table 4, with respect to the effective factor influencing KTP in ITO as presented in Table 2, some conclusions could be made as discussed below.

Table 4: Correlation between factors and attributes

Key Factors	Attributes	Pearson Correlation	Sig. \ (2-tailed)
Knowledge Provider/OSP	Distribution Capacity	.225	.024
	Sharing Motivation	.617	.000
Knowledge Receiver/OSC	Absorptive Capacity	.818	.000
	Perceived Benefit	.225	.024
	Self Motivation	.106	.293
Knowledge to be transfer	Quality	.815	.000
	Reliability	.255	.010
	Timeliness	.116	.249
	Accuracy	.351	.000
KM Infrastructure/ Enabler	Management Support	-.001	.993
	Sharing Culture	.426	.000
	Communication Flow	.538	.000
	Document Status	.898	.000
	ICT Infrastructure	.965	.000
	Staff Posting	.649	.000
	Training	.945	.000
	Trust	-0.51	.612
	Building Design	0.38	.709

Table 4 indicates that, there is a weak positive correlation (0.225) between the knowledge provider factor and the distribution capacity. Since the P-value is equal to $0.024 < 0.05$, thus confirm that there is significant correlated between distribution capacity and the knowledge provider factor. This shows that there is a minimum effort taken by vendor to facilitate knowledge transfer to client. The sharing motivation is define as the degree of the provider’s willingness to share and deliver the knowledge. Table 4 shows moderate positive correlation (0.617) between the knowledge provider factor and the sharing motivation. This show’s that, most of the vendor are wiling to share their knowledge with client but there is minimum initiatives been taken in order to make sure the focus client be knowledgeable. This may be due to the fact that vendor apprehend loss of customer if the client are more knowledgeable then the vendor. Hence, it can be summarized that both attribute are significantly correlated with knowledge provider factor with self motivation attribute having more influence in an effective KTP with value matrix (0.617) compare to distribution capacity attribute.

As for the second factor, Knowledge Receiver, it is found that two attributes have an influence in KTP attributes which are Absorptive Capacity (0.818) and Perceived Benefit (0.225). Self motivation seemed to have almost no correlation with the knowledge receiver factor. This might be driven by several causes. First, self motivation is very subjective and so much close to one’s attitude. Second, the vendor might refuse to share their knowledge which demotivated client to learn.

Knowledge to be transfer factor shows that out of four influencing measurement attributes proposed, only three are significantly correlated with the knowledge to transfer factor. The attribute are quality, accuracy and reliability of the knowledge document. The highest correlation value matrix is between knowledge to be transfer factor with quality (0.815) followed by accuracy (0.351) and reliability (0.255). This implies that quality is the predominant influencing attribute of the knowledge to be transferred. Meanwhile, timeliness has no influences to KTP in ITO. This may due to the fact that most of document is not updated and the delivery delay of project documentation at the end of the contract period.

Finally, Knowledge infrastructure factor indicates that there is no significant correlation between organizations culture factor and management support.

This may suggest that some management still have not realized the important of knowledge management in an organization. There is a significant positive moderate correlation (0.538) between organization structure and communication flow. This shows that complexity of communication flow influence the effectiveness of KTP. Besides that, the result shows that, there is a significantly positive high correlation (0.898) between organization structure and document status. This suggests that, documents status highly influenced the effectiveness of KTP. As for ICT infrastructure, the result shows that, there is a significantly positive highly correlation (0.965) between Information technology factor and ICT infrastructure. This shows IT is the most important enabler to facilitate KTP in ITO environments. The result exhibited that, there is a significantly positive moderate correlation (0.649) between people factor and staff posting. This shows that staff posting influence the effective of KTP. There is a significantly positive extremely high correlation (0.945) between people factor and training. This shows training is an important initiative to make sure that knowledge is transfer effectively in ITO. There is a no significantly correlation between people factor and trust. This could be that the client believed they could get the knowledge from any sources without the need to consider the validity of the knowledge source. The last attribute shows that there is no significant correlation between physical environment and knowledge transfer. Thus it shows physical environment is not a factor influencing KTP in ITO.

6 Conclusion

Knowledge transfer between vendor and client is a very important initiative in IT outsourcing activities after considering the responsibility that OSC has to take at the end of the outsourcing contract period. The KTP within the context of ITO environments can be interpreted as a phenomenon composed of two related component: knowledge delivering and knowledge receiving or acquiring. It is essential to determine the effective factor influencing the process of delivering and receiving of knowledge in ITO, so that action can be done to spur the knowledge transfer to the client for improving organization productivity. Therefore, this research attempts to solve the addressed problem, by developing the theoretical framework integrating the key factors influencing KTP in ITO environments through investigating existing studies on knowledge transfer, knowledge sharing and knowledge

management in different and similar domain. Eighteen attributes are defined based on the predetermined key factors, which are knowledge provider/OSP, knowledge receiver/OSC, knowledge to be transfer and the knowledge infrastructure or enabler. Consequently, it was clear that there is a significant relationship between the four main factors together with thirteen attributes (out of eighteen) evidently indicated the importance of these factors in influencing and ensuring successful KTP in ITO. This study is intended to help practitioners and researchers to visualize the process of knowledge transfer in IT outsourcing projects.

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