Knowledge Sharing Management Model (KSMM) for Software Development Outsourcing Vendors

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Abstract

Offshore software development outsourcing (OSDO) is an important paradigm in global software development. OSDO is a well known business strategy adopted by many organisations in developed countries by outsourcing their software development work to low-wages countries to get high quality software development at low cost. However outsourcing is not a risk free business. Vendor organisations need to address a number of factors for successful outcomes of the outsourcing relationships. Knowledge sharing management (KSM) is one of the key areas to be addressed by vendor organisations for successful outcomes of OSDO relationships. This research seeks to explore KSM in the context of OSDO relationships from vendors' perspective. The objective of this project is to design Knowledge sharing management model (KSMM) to assist outsourcing vendor organisations in managing and executing knowledge sharing management efficiently. This paper contributes to the design of planned structure for the development of KSMM.

Keywords: Global Software Development, Knowledge Sharing Management Model; Software Development Outsourcing Relationships

1. Introduction

"Software development outsourcing is a contract-based relationship between client and vendor organisations in which a client(s) contracts out all or part of its software development activities to a vendor(s), who provides agreed services in return for remuneration"[1]. Many organisations in the developed countries are outsourcing their software development projects to vendors at offshore locations to gain low-cost advantage and high quality software production. Our previous research shows that outsourcing gained a dramatic increase after 2001 and is still growing continuously due to economic downturn. OSDO offers many benefits like access to leading-edge technology, skilled human resource, cheaper and high quality software development. However, it also drew tending due to the complexity and challenges related to OSDO Vendors [2]. To avoid threats and to reap opportunities in an outsourcing relationships both client and vendor organisations need a mutual understanding and trustworthy relationships [3]. Khan et al., [1] have identified a number of critical success factors

(CSFs) to be addressed by vendor organisations for outsourcing success. The probability of success in outsourcing projects and achieving long-lasting relationships between clients and vendors depend on understanding and addressing different factors in software development outsourcing relationships [4]. We have identified in our previous research that knowledge sharing management (KSM) plays an important role in vendors' readiness for offshore software development outsourcing [1]. Knowledge integration is defined as the process of absorbing knowledge from outside the world and combining it to the technical and organisational skills, know-how, and expertise that build in the business and IS units of a firm [5]. KSM is an operation that helps enterprise find, select, organize, disseminate, and share important knowledge and expertise necessary for activities [6]. In the context of OSDO, however, clients without proper knowledge could encounter miserable performance [7]. KSM activities and schemes have been categorized in the literature in different fashions [8]. For example generation, codification and transfer; create, identify, collect, organize, share, adapt and apply [8].

The main objective of this research is to gain an in-depth and more thoroughly understanding of KSM in the context of OSDO relationships from vendor's perspective and to develop knowledge sharing management model as shown in Figure 1.

2. Background

OSDO is a well known business strategy adopted by many organisations in developed countries by outsourcing their software development work to low-wages countries [9]. OSDO offers many benefits, to client organisations in the developed countries, including access to skilled human resource, high quality software development and cheaper offshore resource options. Cheaper resource options help client organisations to reduce their baseline costs; this involves the downsizing of more expensive onshore resources to be replaced with cheaper offshore resources [10]. However OSDO is not a risk free activity. Research reveals that many companies that have tried outsourcing have failed to realize the expected outcomes [11]. Previous research on IT outsourcing has a focus on project success, which is related with achieving financial, managerial and technical expectations from IT outsourcing or the level of clients' satisfaction with their vendors [7]. We extended our research on IT outsourcing success by looking at the human behavioral dimensions that are relevant to knowledge sharing management from vendors to clients. Knowledge is a key resource for construction industry, but it inclines to be lost much across different phases or among different projects [12]. Knowledge transfer has been described as a process where information and skill between entities are consistently exchanged [13]. Outsourcing of knowledge intensifier and white-collar work is also increasing and it takes place in organisational core competency areas such as research and development

– an area that is potentially a key discriminator between an organisation and its competitors [14, 15].

A number of researchers have tried to address some of the issues of KSM in software development outsourcing, e.g. (Khan et al. 2009); (Joo Yeon Park et al. 2011); (Stefanie Betz et al. 2010):

- According to the study of [9], they mentioned in their findings of the study that knowledge sharing management plays an important role in offshore software development outsourcing relationships.

- Park et al [16], have articulated and extent the study of Khan et al [9], that knowledge sharing in IT offshore outsourcing environments, clients and vendors are able to confirm effective outsourcing relationships over time and are able to sustain good relationship.

- Betz and Oberweis [17], have mentioned the importance of knowledge sharing management. Their findings reveal that knowledge sharing management is the most critical success factor in software outsourcing project.

- According to Argote [18], knowledge is viewed as what the individual knows; the facts, information's skill and understanding that one have gained especially through learning and experience.

- According to Argote and Ingram [19], knowledge is recognised as a fundamental asset for improving the competitiveness and effectiveness of organisations. So the most important and effective assets inside an organisation is belonging to knowledge sharing management. They also argued that knowledge sharing is the process through which one unit is affected by the experiences of another.

- Cummings [20], articulates that knowledge sharing is 'the process through which knowledge is channeled between a source and a recipient'. Similarly its meaning within an organisation is 'an organisation that obtains access to its own and other organisation's knowledge'.

- Davenport [21], argue that "knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information".

- Park et al [16] argue that, for efficient IT knowledge sharing in an outsourcing situation, clients and vendors should contribute their ideas and capabilities to be successful.

- According to Rye, et. al., [22], "the behavior of disseminating ones acquired knowledge with other members within one's organisation".

- Similar research was conducted by [23] in which the authors concluded that, organisations recognise that knowledge constitutes a valuable intangible asset for creating and sustaining competitive advantage.

- According to Szulanski [24], knowledge sharing management is strongly related to developing a good relationship between vendor and client organisations.

- Soekijad and Andriessen [25] have categorised knowledge sharing process as knowledge creation, knowledge transfer and knowledge distribution.

This research will accompaniment work previously done in these studies. A number of studies, as mentioned above, have shed light on the importance of knowledge sharing management in the context of outsourcing success. However, nobody has used Systematic Literature Review [26] approach for the identification of critical success factors (CSFs) or Critical barriers (CBs) for KSM that are important for the success of offshore outsourcing project.

3. Aim and Objective

The objective of this project is to design Knowledge sharing management model (KSMM) to assist outsourcing vendor organisations in managing and executing knowledge sharing management efficiently.

To get this objective an empirical study will be conducted to explore what factors are to be considered during the knowledge sharing management in offshore software development outsourcing relationships. We aim to find the practices for successful knowledge sharing management and to bridge the gap between the software development outsourcing researchers and practitioners.

4. Research Questions

To understand knowledge sharing management in OSDO relationships from vendor's perspective, the following five research questions were formulated:

RQ1: What are the critical success factors, as identified in the literature, to be addressed by vendor organisations that influence/assist the knowledge sharing management in the context of offshore software outsourcing relationships?

RQ2: What are the barriers, as identified in the literature, faced by vendor organisations, in knowledge sharing management in the context of offshore software outsourcing relationships?

RQ3: What are the critical risks, as identified in real world practice, faced by vendors in the context of offshore software outsourcing relationships?

RQ 4: what are the critical success factors, as identified in real world practice, faced by vendors in the context of offshore software outsourcing relationships?

RQ5: What are the real world practices for the implementation of the identified factors?

The KSMM will be designed on an empirical analysis of the practitioners' experience and opinions of factors that should be considered for the effective management of knowledge sharing management in offshore software development outsourcing relationships.

We will automate the KSMM as a software tool to assist vendor organisations in assessing their KSM activities in outsourcing projects. The tool will generate the assessment reports of the different activities of the knowledge sharing management in the context of offshore software outsourcing relationships.

5. Research Methodology

5.1. Data Collection and Analysis

Two types of data will be collected in this research: firstly, the factors that have positive (critical success factors - CSFs) or negative (critical barrier - CBs) impact on the KSM; and secondly to find the practices for the proper implementation of these factors. Systematic literature review process [27, 28] will be used for identification of these factors. To find relevant data on the research questions, the systematic literature review help to investigate and assessing it by using the methical way from the primary studies [27, 29]. Systematic literature review is a mean of identifying, evaluating and interpreting all available research relevant to a particular research question, or topic [28]. SLR having a different type of scientific value which differentiates it from ordinary literature surveys. Systematic review is composed of three main phases, first one is planning, where the focus is on the development of the protocol on the basis of the research questions, second one is the implementation phase where the SLR guidelines are brought into practice and lastly the third phase is the reporting where the technical report writing is started [28]. The SLR may provide a high level of validity in decision, evaluating and summarizing all available facts on software development outsourcing.
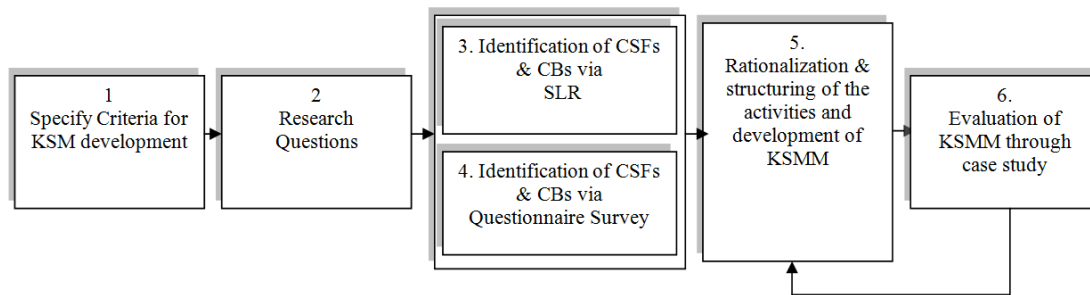

Figure 1. KSMM Development Cycle Activities Research Questions

A systematic literature review protocol was written first, validated and have been published [30].

5.2. Knowledge Sharing Management Model (KSMM) Development

The proposed model has six stages as shown in Figure 1.
First stage of the knowledge sharing management model is to specify the criteria for its success. The defined criteria setting comes from a review of the relevant literature

[31-33], Technology acceptance Model and SOVRM [34-36]. The criteria for consideration will be as follow:

- **User satisfaction:** outsourcing vendor will be satisfied from the result of the knowledge sharing management model to get the desired outcomes according to their requirements without any hesitations.

- **Ease of use:** The structure of the knowledge sharing management model will be flexible, easy to use and easy to understand.

The second stage is concerned with finalizing research questions and in the third and fourth stages the data will be collected and analyzed accordingly. Fifth stage of the model will perform rationalization and structuring of the results, and the development of the KSMM which will be based on empirical results. The final stage of the model is the evaluation stage which will be performed through case studies in order to assess the applicability of the KSMM in real world environment.

5.3. Knowledge Sharing Management Model (KSMM) Evaluation

For the evaluation of the KSMM, case study method will be used as this can give important information of real world [37, 38]. The aim is to find 5 outsourcing organisations (vendors) for evaluation of the KSMM.
The KSMM effectiveness will be evaluated through five case studies. Focus Group sessions [39] will be arranged with the participants for the purpose to get feedback about the KSMM. The main purpose of group session is to get the feedback from the researchers and experts of the outsourcing vendor organisations and to get more information about different issues which is not possible through interviews of the individual [39].

The expected finding of this project will be a knowledge sharing management model to assist outsourcing vendor organisations for the proper management of the KSM in offshore software development outsourcing relationships. This model will assist OSDO vendor organisations to find out the best way to manage knowledge between vendors and clients organisations.

6. Conclusion and Suggestion for Future Work

Knowledge sharing management is a key area in offshore software development outsourcing. In order to address properly KSM activities can result in successful outcomes of the outsourced project and long-lasting relationships between client and vendor organisations. KSMM will bridge the gap in the form of a model based on sound methodologies. The following advancement is made, in the development of the KSMM so far:

- Problem identification

- Research questions identification

- Research Methodology selection

- Structure of plan management model decision

- Evaluation method selection

- Development of SLR protocol

- Publication of the SLR protocol [30]

- Conduction and reporting of SLR in progress

This paper contributes to the design of planned structure for the development of KSMM. The eventual outcome of the research is the development of KSMM, as shown in Figure 1, to assist OSDO vendors in managing KSM activities efficiently. The KSMM proposed will bring together and advance the work that has been undertaken on frameworks and models for outsourcing relationships.

Acknowledgements

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