

Intercultural Challenges Mitigation Model for Software Development Outsourcing Vendors

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Abstract

Offshore software development outsourcing (OSDO) is an emerging business approach adopted by many software development organisations in developed countries. However significant outsourcing failure rates have also been reported. One of the major issues is cultural distance which should be taken into account by software outsourcing organisations (vendors) in order to develop high quality software products and in turn to establish long lasting relationships with client organisations. The objective of this project is to develop an Intercultural Challenges Mitigation Model (ICM) in order to help organisations (vendors) to address the intercultural challenges in OSDO relationships. Two types of data will be collected in this research project: firstly, to identify Intercultural challenges/factors faced by vendors in OSDO relationships via Systematic Literature Review (SLR); and secondly, how one can implement these intercultural challenges/factors in OSDO relationships. An empirical study will be conducted in order to seek opinions of software outsourcing experts about the guidelines or practices required to implement these factors in vendor organisations. The probable outcome of this project will be an Intercultural challenges mitigation model to help OSDO vendors in addressing and identifying intercultural challenges occur in the OSDO relationships.

Keywords: *Offshore software development outsourcing, Intercultural challenges mitigation model, vendor organizations*

1. Introduction

It is commonly observed that people of one society strangely perceive the acts of the people of another society. An act may have different meanings in different societies. Generally, from their life experiences people develop a set of rules and procedures for meeting their needs. Such kind of a set of rules and procedures along with a supportive set of ideas and values is called a culture. Culture is a very vast topic, you can find more than 164 definitions for culture alone [1, 2]. A well-known Sociologist and Anthropologist sir Edward Tylor (1871) defines culture as “Culture is that complex whole which includes knowledge, belief, art, morals, law, customs and any other capabilities and habits acquired by man as a member of society.” From the above definition it is clear that culture has a great impact on almost all aspects of our life. Similarly culture affects activities involve in software development outsourcing. In the field of software outsourcing, the vendors need to understand the culture of their target clients and its impact on software development lifecycle and their

relationships [3-5]. Developers must focus on the culture and linguistic requirements of the target countries and local groups including developers, customers, clients, and end-users [6]. There are many social and cultural differences between workers in the US and Asians in attitudes towards authority, work ethic, sense of time, and the styles of communication. For example, U.S. client companies normally prefer to specify every single detail items on the document and use informal telephone and email contact. In contrast, Japanese clients tend to prefer to use electronic media more formally and less frequently and also have preference on verbal communication rather than written documents [7]. It is also well known that most Asian employees usually do not say “No” and do not raise the voice of criticism in public meetings. Instead, Asian people usually say “I will see what I can do” or “I will look at it later”. Because of Asian people’s deference to authority, many western companies have difficulties with this “polite” behavior [8].

1.1. Existing Work

A number of researchers have tried to address the impact of intercultural challenges in OSDO as mentioned below:

Ita et al, [9] in their work on a “Process Framework for Global Software Engineering Teams”, identified culture as an important issue to be addressed and recognized to successfully manage distributed teams across different cultures. If cultural diversity is not given proper attention and measures taken to address them it can have serious negative repercussions on the operation of global teams.

Surveys conducted at US and Jordan reveals that culture plays an important role in affecting software piracy, and individual behavior in general. Results of the study show that tendency towards software piracy for gender varies from culture to culture [10].

Bannerman, et. al., [11] identified four coordination challenges namely temporal, geographical and socio-cultural distance in global software development. Socio-cultural challenge impinges on the effective coordination due to inconsistent work practices and reduced cooperation arising from misunderstanding.

Gopal, et. al., [12] used a structured survey approach for collecting data from leading Indian software outsourcing firms in their research on coordination and performance in GSD. The result suggests that cultural differences between the vendor team and the client will lead to some misalignment in expectations about the project and less mutual understanding, and lower software quality.

Abufardeh, et. al., [6] focused on the impact of cultural and linguistic aspects of global software development. They found that multi-lingual and multi-cultural aspects are very critical to the success of the GSD projects. These aspects affect directly the quality of the software, as well as the GSD process itself. It is argued that cultural influences must be thoroughly studied, fully understood and should be considered throughout the software development lifecycle.

Casey [13] worked on multinational organization which outsourced a part of their software development work from Ireland to Malaysia. The research found that cross-cultural issues such as gender resulted in key Malaysian personnel being forced to leave the organization. Religion negatively affected the cooperation among multi-cultural team members. Similarly difference in power and control resulted in delay of the outsourced projects.

Another research on the impact of culture was conducted by Casey [14]. The research aimed to educate Graduate and Post Graduate students about importance of culture and its impact on the GSD projects. The results of interviews, conducted from different experienced students, revealed that many students recognized the importance of culture in GSD.

Ali Babar, et. al., [15] study indicates that cultural understanding is a vital factor for gaining trust in the initial phase of outsourcing relationships. 100% interviewees considered cultural understanding as a critical factor for building initial trust. One of interviewees elaborated on the importance of cultural understanding:

“Ability to communicate in a client’s native language and familiarity with his/her culture can provide the biggest advantages or barriers to achieving initial trust.”

According to Holmstrom, et. al., [16] GSD involves stakeholders from different national and organizational cultures which presents a variety of challenges to the development team. The empirical study conducted at three US based companies, operating at Ireland, identified that socio-cultural issues such as political and religious values, cause misunderstanding and conflicts within projects.

MacGregor, et. al., [17] found, in their research, that many problems faced by GSD projects are associated with human issues rather than technical issues. These include communication and collaboration among developers with distinct cultural backgrounds which are essential the elements in GSD projects. Intercultural factors affect the working relationships of software engineers. It has been argued, in the stated research that cross cultural problems can lead to miscommunication, misunderstanding, frustration, and underutilization of talents, presenting significant risks to the software development process.

Koh, et. al., [18] study indicates that Conflict is inevitable in teams, and cultural misunderstandings often contribute to more disagreements and disputes, as members from different cultures handle conflict differently. Similarly language differences and differences in communication styles can lead to misunderstanding.

Mohapatra, et. al., [19] identified that cultural differences have a negative effect on the coordination effectiveness in GSD projects.

Nicholson and Sahay [8] in their study examined some political and cultural issues in Globalization of software development.

In another research conducted at UK and India, Sahay, et. al., [20] describes different problems related to transfer of UK culture to India. They also described the role of power and control during the outsourcing business.

Oza [21] in his research on Indian software outsourcing companies, identified that cultural differences in offshore outsourcing relationships is one of the major difficulties for vendors to be managed. Vendors face various kinds of cultural issues in outsourcing relationships. The research reports the opinion of one vendor as follow:

“What you say and mean in India and in another country could be entirely different. We need to overcome those challenges. I think it requires a lot of work, both by the outsourcing client and the vendor to ensure the matching of minds. We invest a lot to make it happen”.

Setamanit, et. al., [22] identified that culture plays an important role in trust building among teams. People from the same culture develop trust more quickly than people from different cultures.

Teagarden, et. al., [23] conducted a research on knowledge sharing among Chinese and Indian Multinational corporations (MNCs). He discussed that professional culture is a barrier in knowledge sharing among MNCs in China and India.

2. Aims and Objectives

The objective of this project is to develop Intercultural Challenges Mitigation Model (ICMM) in order to identify the intercultural challenges/problems faced by vendors in OSDO relationships. The model will assist the outsourcing organizations (vendors) to know about their cultural synchronization with their clients as well as the potential intercultural challenges that may have a negative impact on offshore software development outsourcing

relationships. Similarly ICCMM will identify the cultural diversity of vendor's organization from the corresponding client organization and will propose solutions to minimize the cultural diversity. In order to achieve this objective an empirical study will be conducted to explore the potential intercultural challenges face by vendors in offshore software development outsourcing relationships. We aim to narrow the gap between software development outsourcing research and practice in such a way that is accessible to both practitioners and researchers.

3. Research Questions

To understand intercultural challenges in OSDO relationships from vendor's perspective, the following two questions were formulated.

RQ1: What intercultural challenges or problems, as identified in the literature, are faced by vendors in offshore software development outsourcing relationships?

RQ2: What intercultural challenges or problems, as identified in the real practice, are faced by vendors in offshore software development outsourcing relationships?

The intercultural challenges mitigation model will be developed based on an empirical analysis of practitioner's experiences and the perceptions of factors that can have a positive or negative impact on software outsourcing vendors in offshore software development outsourcing relationships.

We will automate the ICCMM in the form of a software tool in order to facilitate software outsourcing vendors in identifying and addressing intercultural challenges in offshore software development outsourcing. Similarly the ICCMM will propose solutions of overcome the intercultural challenges faced by vendor organizations in OSDO relationships. This tool will perform different activities and will generate different assessment reports for the software outsourcing vendors.

4. Research Methodology

4.1 Data Collection and Analysis

Two types of data will be collected in this research project: firstly, intercultural challenges/factors that can have a negative impact on software outsourcing vendors in offshore software development outsourcing relationships; and secondly, how one can implement these challenges/factors.

For the identification of intercultural challenges, a systematic literature reviews process has been used [24, 25]. A systematic review is a defined and methodical way of identifying, assessing, and analyzing published primary studies in order to investigate a specific research question [26, 27]. Systematic reviews differ from ordinary literature surveys being formally planned and methodically executed [3]. They are intended to be independently replicable, and so have a different type of scientific value than ordinary literature surveys. In finding, evaluating, and summarizing all available evidence on software development outsourcing, a systematic review may provide a greater level of validity in its findings than might be possible in any one of the studies surveyed in the systematic review. A systematic review protocol was designed first in order to perform the systematic literature review [28].

For "how to implement" intercultural challenges in offshore software development outsourcing relationships, an empirical study will be conducted in order to seek opinions of software outsourcing experts about the guidelines or practices required to implement these factors in the vendor organizations. These experts will be selected on the basis of their

experience in the software development outsourcing industry and/or list of publications in the area of software development outsourcing.

4.2 Intercultural Challenges Mitigation Model (ICMM)

Five stages will be used to design this model as shown in Figure 1. A similar approach has also been used for the design of Software Outsourcing Vendors' Readiness Model [29].

The first stage in the development of ICMM is to set criteria for its success. The motivation for setting these criteria comes from our previous project on software outsourcing vendor readiness model [29]. The following two criteria will be used.

- User satisfaction: end-users need to be satisfied with the results of the ICMM. End-users should be able to use the ICMM to achieve specified goals according to their needs and expectations without confusion or ambiguity.
- Ease of use: complex models and standards are unlikely to be adopted by the organizations as they require resources, training and effort. The structure of the ICMM should be flexible and easy to follow.

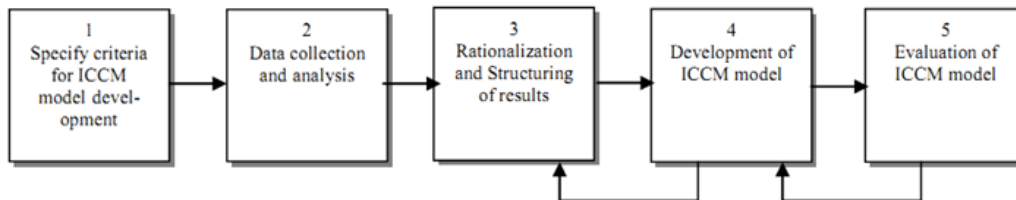


Figure 1. ICMM Development Stages

Data has been collected and analyzed in stage 2. Stage 3 is the stage where rationalization and structuring of results will be performed. Based on the empirical findings, in stage 3, the ICMM will be developed. In the final stage an evaluation of the ICMM will be performed.

Figure 2 shows a planned structure of the ICMM. It also shows the relationship between ICMM levels, intercultural challenges/factors and different practices used to implement intercultural challenges. The structure of the ICMM framework will be built upon the following three dimensions:

- ICMM levels dimension
- Intercultural challenges dimension
- Implementation dimension

The primary motivation for building these dimensions for ICMM emanates from our previous work in the field of software outsourcing in which we have designed and evaluated the readiness model for software outsourcing vendors [29, 30]. The categorization of intercultural challenges will lead us to design different ICMM levels for software development outsourcing organizations. The ICMM levels will contain different intercultural challenges. Under each intercultural challenge different practices will be designed that will guide how to implement each factor.

The ICCMM framework in Figure 2 shows that organizations should address each intercultural challenge in order to achieve a certain ICCMM level.

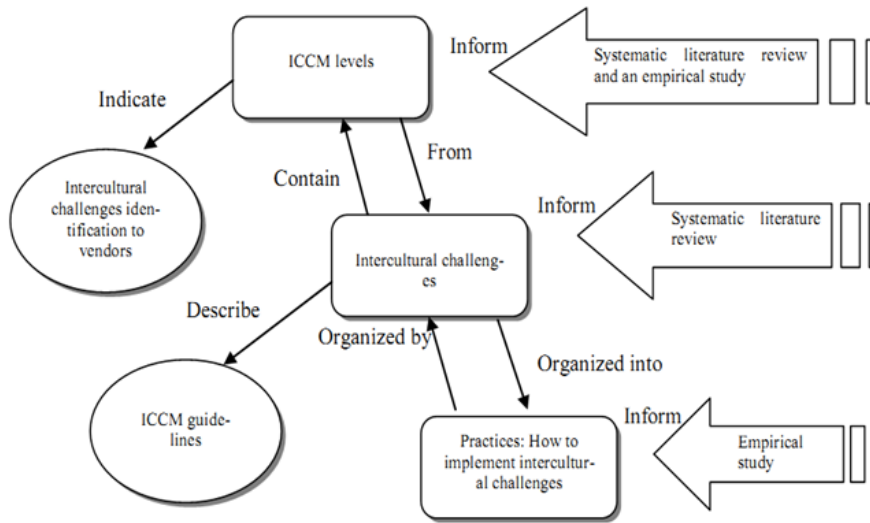


Figure 2. The ICCMM Structure

4.3 ICCMM Evaluation

We aim to find five outsourcing organizations (vendors) for the evaluation of the ICCMM. The case study method will be used to evaluate the ICCMM as it is considered a powerful evaluation tool and can provide useful real world information [25]. Five case studies will be conducted where ICCMM will be used to evaluate its effectiveness in software development outsourcing. At the end of these case studies, focus group sessions [31] will be conducted with the participants in order to obtain feedback about the ICCMM.

In order to structure the focus group sessions the criteria described in section 4.2 will be used, i.e. ease of use and user satisfaction. We have chosen focus group sessions for feedback because the data from focus groups is mainly from the interaction between the members in the group without any suggestion or help from the researchers. The other reason is that the existence of subjects in a group of peers allows them to be more open about issues discussed than they will be in individual interviews [31].

5. Timeliness and Novelty

Offshore software outsourcing involves people from different geographical locations and cultural backgrounds. This increases the need for research on the impact of national and cross cultural issues [8]. Many researchers have declared culture important for multinational companies [32, 33].

In our previous research we identified culture as a critical factor for vendor organizations in offshore software development outsourcing vendors [3, 4, 34]. The importance of culture in offshore software development cannot be ignored. This is because cultural issues can “make and break an offshore project” [35].

However, despite the importance of culture in offshore software development outsourcing relationships, little empirical research has been carried out on intercultural challenges face by vendors in offshore software development outsourcing relationships practices in general and different aspects of organization’s (vendor) for software development outsourcing in

particular. An empirical study in this area is expected to provide quite useful insight about the challenges/factors that may play a negative role in outsourcing relationships.

The probable outcome of this project will be an Intercultural Challenges Mitigation Model to assist software practitioners in addressing and identifying intercultural challenges among vendors and clients in the offshore software development outsourcing relationships. This model should assist outsourcing vendors in minimizing the cultural diversity in OSDO relationships.

This model should also help vendor organizations improving their software development outsourcing capabilities. Software development outsourcing capabilities improvement provides marketing advantage to organizations and helps them to compete internationally.

6. Research Carried Up To-date

We have made the following progress so far:

- Identification of problem
- Identification of research questions
- Selection of research methodology
- Decision on planned structure of the ICCMM
- Selection of evaluation method
- Conduction of systematic literature review
- Empirical study in progress

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