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Mum Effect as an Offshore Outsourcing Risk: A Study of Differences in Perceptions

A.S.M. SAJEEV[1,*] AND SAKGASIT RAMINGWONG

School of Science & Technology, University of New England, Armidale, NSW 2351, Australia
[1]*Present address: School of Innovation, Design & Engineering, Malardalen University, Vasteras, Sweden.*
[*]*Corresponding author: sajeev@turing.une.edu.au*

Mum effect is the risk arising from project members' reluctance to report negative information. We investigate the cultural factors contributing to this risk in offshore outsourcing. The study was conducted in Thailand with participation from both students and IT professionals. In order to understand the influence of the IT work environment on the risks, we used the student data as a control sample since students and professionals share the same cultural background but only the professionals have the work experience in the IT industry. We use three of Hofstede's cultural characteristics (power distance (PD), long-term orientation and individualism) and three mum effect factors (fear of consequences, communication gap and team solidarity). Our findings show that PD (i.e. inequality based on seniority and other status symbols) has a significant influence on a mum effect factor. Professionals correlate it with team solidarity (Pearson's $r = 0.7$, $p < 0.001$) indicating that PD with superiors is likely to influence team members to be protective of each other. There were also significant differences between students' and professionals' mean response to PD ($t(75) = -2.97$, $p = 0.004$), fear of consequences ($t(75) = -3.67$, $p < 0.001$) and communication gap ($t(75) = -3.5$, $p = 0.001$), with professionals producing lower mean values, indicating that the work environment within the IT companies is possibly less risky than the general culture.

Keywords: offshore outsourcing; risks; software engineering projects; IT outsourcing; culture

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1. INTRODUCTION

Offshore outsourcing of IT projects has become a multibillion dollar industry [1,2]. The benefits of outsourcing are mainly related to cost savings including the attraction of cheap labour [3]. While the source countries for outsourcing are largely western (USA, UK and Western Europe), the attractive destination countries are largely Asian (India, China, Malaysia, etc.) [4]. Nearshore outsourcing is another trend where the main attraction is the geographic proximity between the supplier and client countries [5]; Latin American countries form a nearshore cluster for the USA, and similarly, the East European countries for Western Europe.

Many researchers have studied cultural differences between countries and civilizations of which Hofstede's work is one of the most prominent [6–8]. These studies were largely in the context of understanding those differences rather than identifying them as risks (for example, see [9]). Offshore outsourcing will need to deal with risks arising from cultural differences that in house development or even local outsourcing did not have to worry about [10,11].

Ferguson *et al*. [12] identified several risks in international outsourcing such as unstable political environments and different intellectual property laws. Krishna *et al*. [13] added that other cross-cultural issues ranging from mindset to language have considerable impacts on the project. There are also reports of client resistance to offshore firms because of unfamiliarity and uncertainties regarding ethics and information security. On the contrary, the Financial Service Authority [14] of the United Kingdom has released a report indicating that offshoring to India poses the same risk, if not lower, as inshore outsourcing within UK.

Narayanaswamy and Henry [15] have proposed management strategies for offshoring under different cultural systems.

Communication and management, cooperation and coordination as well as the complex nature of software engineering are referred as major difficulties in international outsourcing. They also propose that the influence of control systems can vary depending on the software development scenarios. For instance, using group managed contract control will have a positive influence for high collectivist countries such as Indonesia, China and Singapore.

Cultural factors can influence outsourcing risks in different ways. One is when the difference itself is a risk. An example of this is punctuality; in some cultures the concept of time does not have the same value as in others with the potential to cause project delays. A second influence is when cultural differences change the level of risks which may already exist in mono-cultural outsourcing. In this paper, we are interested in the latter situation where we would like to study the influence of cultural differences in risks that exist in any case. Mum effect is one such risk.

1.1. Mum effect

Mum effect is the risk arising from people's reluctance to communicate negative information. This phenomenon was first studied by Rosen and Tesser [16] in sociology. In information technology, the risk occurs when project members fail to speak out critical information which eventually leads to delays and cost overruns. Failure of some major projects has been attributed to mum effect. A prominent example of this is the CONFIRM project which was a large scale travel reservation system. The project resulted in a 125-million-dollar total disaster. It was later found that the management team deliberately covered up serious technical and performance problems and the auditors who discovered them also failed to speak out [17].

We have developed a model for the causes of mum effect identifying three major factors: communication gap, fear of consequences and team solidarity [18]. Fear of being punished including risking one's career has been found to be a major reason for people to remain silent [19]. Failure to speak out can also occur if there are no easy communication channels within the organization to convey negative information. For instance, hierarchical organizational structures where information flows up through a series of levels and then down through another series of levels hinder non-traditional communication including activities such as 'whistle blowing'. Similarly, teams that are closely knit together, while encouraging group work and team spirit, can lead to team members being reluctant to say anything that could potentially harm the team's reputation or damage the relationship among team members.

1.2. Hofstede's cultural factors

Hofstede in his well-known work [8] identified power distance (PD), individualism (IDV), long-term orientation (LTO), masculinity and uncertainty avoidance as five factors that distinguish different cultures. Recently, he has added a sixth factor, namely, indulgence [20]; however, it seems data is yet to be collected on this factor. His original data is from a survey of employees of IBM subsidiaries in over 50 countries. The subjects are thus people working for an IT multinational company with the only cultural differentiation from one subsidiary to another being their nationality. Although some have criticized Hofstede's analysis, for instance, on the grounds that employees of IBM subsidiaries are not a representative sample of the population, it provides the most comprehensive picture so far. Besides, as reported in [10], the validity of the cultural dimensions has been confirmed by other researchers [21–23]. Sondergaard [23], for instance, concluded that 'the differences predicted by Hofstede's dimensions were largely confirmed' after an analysis of 61 replications from published and unpublished material. Similarly, Appendix 6 in [24] lists about 200 non-IBM studies that support the cultural differences measured by Hofstede's dimensions.

After looking at Hofstede's data on the culture of source countries (predominantly Western) and destination countries (predominantly Asian) for offshore outsourcing, we found that there is a significant difference ($p < 0.05$) between the two in PD, IDV and LTO, but not with masculinity and uncertainty avoidance. Therefore, we use PD, IDV and LTO as the cultural factors in this study.

PD indicates inequality of distribution of power based on status, education, wealth, seniority and other similar aspects in a society or organization. A high PD indicates a large gap between people based on their positions of power. For example, in a high PD country the subordinates will be very unlikely to express an open disagreement with their supervisor.

IDV is the degree of societal interpersonal relationship. People from highly individualistic cultures primarily emphasize self interest. In contrast, people from low individualistic cultures tend to show collectivism and pursue group interest.

LTO indicates the perceived value of long-term commitment. People from cultures of high LTO tend to encourage perseverance whereas people from low LTO cultures expect rapid results.

The first aim of this study is to investigate relationships between cultural dimensions and mum effect factors; as explained above, the cultural dimensions used are PD, IDV and LTO, while the mum effect factors identified are fear of consequences, communication gap and team solidarity. The second aim is to investigate any differences from the general culture that IT professionals perceive in their work environment.

2. METHOD OF RESEARCH

The venue of this pilot study was Thailand. It is one of the five most attractive locations for offshore services [4]. Besides, Hofstede's measurement of Thailand's cultural dimensions [25] matches closely with the mean Asian values.

A sample of 77 participants (30 IT professionals and 47 third year computer engineering students) was surveyed using anonymous and voluntary questionnaires. Their response was recorded on a five point Likert scale. To look for any perceived differences in the work environment, we used data from participating IT students as a control sample since students and professionals share the same cultural background but only the professionals have the work experience in the IT industry.

Statistical techniques using SPSS v16 were used to analyse the responses. To test the significance of the differences between the two group means, we used an independent-samples t test. The level of significance was set at 0.05. Since we were testing six means, we applied Bonferroni's correction to reduce the chances of type 1 error [26]. The corrected alpha level was 0.008 for each test, so that the overall type 1 error probability would remain at 0.05. Levene's test was used to verify homogeneity of variances and values of η^2 were calculated to determine the practical significance of the findings.

To test for correlation between the cultural and mum effect factors, Pearson's product moment correlation method was used. The level of significance required was 0.05. Since we have three cultural factors and three mum effect factors, the number of correlation hypotheses were nine. We applied Bonferroni's correction to get a revised significance level of 0.006 for each test, so that the overall alpha error probability would remain at 0.05.

2.1. The participants

The sample of professionals was from the IT industry in Thailand. This included private companies, public universities and government departments mostly from Bangkok and Chiang Mai, the two largest provinces of Thailand. Of the respondents 67% were male and 33% were female; 63% had a master's degree or better and the rest had a bachelor degree. All participants had at least one year work experience, with 83% having more than 4 years work experience; 50% of the participants had at least 9 years experience; 93% of the respondents had worked with foreigners, but only 30% of the total had worked on offshored projects.

The student sample was from third year computer engineering undergraduate students from a major Thai University. Of the student participants 77% were male and 23% were female with an average age of 21 years. Students did not have any significant work experience or interaction with foreigners. Using IT students as a control group in this study has the advantage that this group is close to the IT practitioners with one significant difference, that is, the control group lacks work experience in the IT industry. A limitation of using IT students, however, is that they are likely to be at a different socio-economic level than the general population. We did not consider this as a problem because we gave a higher priority for the control group being as close as possible to the experimental group except for the IT work experience factor.

The survey was conducted separately for the two groups: the students and the professionals. For practical reasons, the survey of students was conducted first. There was a few months' gap before the survey of IT professionals were conducted; we do not consider that the gap has affected the conclusions of this study since we are measuring factors that are unlikely to be affected by a short time gap. The survey for professionals was part of a pilot study towards an elaborate survey on cultural risks. However, the analysis in this paper includes only the list of questions that were common to both groups.

2.2. The questionnaire

The questionnaire was administered in Thai language. The English translation is given here. In order to address any acquiescence bias (i.e. the tendency to answer questions in one direction, for example, agreement), some questions were reversed. An 'R' within brackets indicates a reverse question; responses to such questions were transformed before the analysis was undertaken. Participants were asked to use a five-point Likert scale where the response varied from 'strongly disagree' to 'strongly agree'. The PD was assessed by the items:

- You are not afraid to express your difference of opinion towards your supervisors (R).
- You have difficulties in communicating with people of higher seniority, age, wealth or social rank.

IDV was measured by the items:

- For you, group objectives are more important than your personal objectives (R).
- You do not hesitate to damage team relationships if you disagree with the group decision.

LTO was measured by the items:

- For you, long-term objectives are more important than short-term objectives.
- You prefer sticking to traditions more than rapid changes.

Communication gap was assessed by the items:

- You would not ask your supervisors even if you do not clearly understand their instructions.
- You are reluctant to speak in a foreign language/You avoid as much as possible the use of a foreign language.

Fear of consequences was assessed by the items:

- You would rather keep silence if you think your views can affect your job position/You will always do the right thing even when it could adversely affect your career (R).
- You would not speak if it might lead to a bad consequence/You would not commit to an action if you think it might lead to a bad consequence for you.

Team solidarity was assessed by the items:

- In general, you would not express your opinion if you think it can damage your relationship with your group/You try to avoid all kind of internal confrontation.
- You would not hesitate to expose your team-mates mistakes to your supervisor (R)/You always protect your team members even when they make mistakes.

There were a few items where the question to the first group was slightly different to that of the second group. They are indicated by the separator '/' above.

3. RESULTS

Mean values: Table 1 shows the mean values (± SEM) for the two groups. An independent samples t test showed that the differences in means between the two groups were statistically significant for PD ($t(75) = -2.97$, $p = 0.004$, $\eta^2 = 0.11$), fear of consequences ($t(75) = -3.67$, $p < 0.001$, $\eta^2 = 0.15$) and communication gap ($t(75) = -3.5$, $p = 0.001$, $\eta^2 = 0.14$). Thus, professionals on an average experienced less PD, fear of consequences and communication gap than students. An η^2 value of 0.14 is considered as a large effect, 0.06 as a medium effect and 0.01 as a small effect [26]; thus the practical significance of the difference is also high for fear of consequences and communication gap and medium for PD. Figure 1 shows the error bars at 95% confidence interval for the significant factors.

TABLE 1. Mean ± SEM for cultural and risk factors.

Factor	IT professionals	IT students
PD	2.57 ± 0.13	3.02 ± 0.09
IDV	2.25 ± 0.15	2.21 ± 0.08
LTO	3.15 ± 0.14	3.03 ± 0.09
Fear of consequences	3.1 ± 0.12	3.7 ± 0.11
Communication gap	2.29 ± 0.16	2.97 ± 0.11
Team solidarity	2.93 ± 0.11	3.34 ± 0.11

The professionals' mean for team solidarity ($t(75) = -2.51$, $p = 0.014$, $\eta^2 = 0.08$) was less than that of students which was significant at the 0.05 alpha level, but not at the corrected 0.008 level. Similarly, professionals on an average showed a slightly higher mean for IDV and LTO than students, however, these two values were not statistically significant.

3.1. Correlations from the student sample

Next we analysed the student sample to check for correlation between the cultural and mum effect factors. There was a statistically significant but moderate positive correlation between PD and communication gap in a two-tailed test ($r = 0.39$, $p = 0.006$). The coefficient of determination, $r^2 = 0.16$ which means 16% of the variance of one can be explained by the other. This is considered a small effect.

There was no significant correlation between LTO and any of the mum effect factors. With IDV, there was a negative correlation between one of the questions (namely, reverse of the question: for you, group objectives are more important than personal objectives) and team solidarity. The correlation is moderate ($r = -0.5$, $p < 0.001$) and the effect is small ($r^2 = 0.25$).

3.2. Correlations from the professional sample

Finally, we analysed the professionals sample to check for correlation between the cultural and mum effect factors. There is a significant and strong correlation between PD and team solidarity ($r = 0.71$, $p < 0.001$). The effect size, r^2 is 0.5. That is, 50% of the variance in one is explained by the other which is a strong effect [27].

We also observed a moderate correlation between PD and communication gap ($r = 0.46$, $p = 0.01$), a moderate correlation between PD and fear of consequences ($r = 0.4$, $p = 0.03$), and a moderate correlation between LTO and communication gap ($r = 0.39$, $p = 0.04$). These three observations were significant at the 0.05 level. While we cannot accept them as significant after Bonferroni's correction to our alpha level, the observations are mentioned here as a candidate for further research.

4. INTERPRETATION OF RESULTS

The differences between the responses in the two groups indicate the differences between what happens in the Thai IT industry and what, in this case, students from the same culture presumed would happen without having got the first-hand knowledge of the organizational culture. Hofstede's data shows that PD in Asian cultures is high. Therefore, it is reasonable that students tend to assume similar levels of PD in the workforce. However, the response from the IT professionals showed that their experience of PD is lower, on the average. The reality in the workforce as expressed by professionals on other factors (fear of consequences, communication gap and team solidarity) are also on the average less severe than as perceived by the control group. This probably is a welcome sign in terms of these factors influence as a risk in offshore outsourcing.

For both students and professionals, PD turns out to be more relevant than LTO and IDV in influencing mum effect factors. As mentioned before, studies on cultural dimensions have shown higher levels of PD and LTO and a lower level of IDV in Asian cultures, as opposed to the source countries of outsourced IT projects which mainly have the Western culture [24]. The main observation from our research is that PD plays an important role in mum effect factors and therefore it is worthwhile to look at organizational behaviour in destination

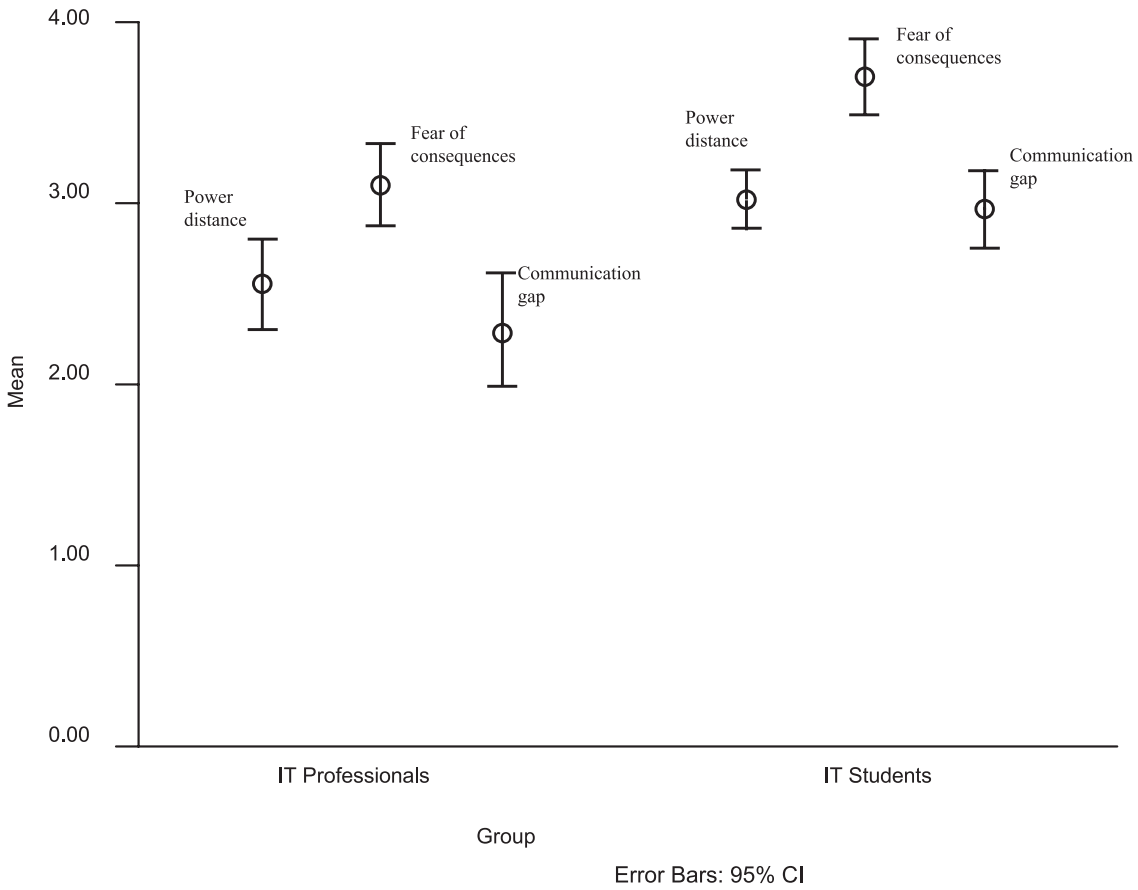

FIGURE 1. Mean and confidence intervals for significant differences.

companies to see how the power structure is organized. While students associated PD with increase of the communication gap, the professionals associated it with higher-team solidarity. For students it seems the superior status of teachers gets translated into difficulties in open discourse with teachers including questioning or contradicting their views. This communication gap is consistent with the observation of Anderson [28] and others as quoted in [29] on Asian students' general reluctance to give their views or raise questions if that is perceived as expressing a disagreement.

On the other hand, in the workforce, people at similar levels tend to identify with each other and use each other as a support structure when the PD with superiors is higher. The team solidarity in turn could prevent a worker from speaking out if it could affect the team relationship. This indicates a tendency to remain silent in order to protect team-mates more than fearing consequences of one's own action.

Other researchers on mum effect, have identified fear of consequences as a strongly influential factor of mum effect [19]; however in our study, we could not establish a conclusive relationship between fear of consequences and the cultural factors. While the fear still could cause mum effect, one of the conclusions from our study is that the cultural characteristics of the subjects are probably not the reason of this cause. This is consistent with Tan *et al*. [10] conclusions that organizational culture (i.e. whether reporting bad news gets punished or rewarded) is more influential on people from an individualistic culture such as in the West than from a collectivistic culture such as in Asia; they used the USA and Singapore for their research.

5. LIMITATIONS OF THE STUDY

There are several limitations to this study. The participation of professionals was in a pilot survey as part of an extensive survey analysing offshore outsourcing risks. This meant that four out of the 16 questions, as indicated in Section 2.2, were not identical. Since the non-identical questions are very close to their corresponding original questions, we do not consider that this had affected the conclusions. While our sample sizes can be considered reasonable for a pilot study such as the one reported in this paper, further studies are required with larger samples in order to confirm the observations.

Hofstede who designed the cultural indices for PD, IDV and LTO (among others) have explained that since these are country-level cultural measures, his questions do not necessarily correlate across individuals [30]. They have shown

that the reliability (using Cronbach's alpha) when measured over country mean scores is 0.7 or above. The Cronbach's alpha for the questions on mum effect factors were 0.5 or above with the professional sample, and except for communication gap questions, 0.5 or above in the students sample as well. While some authors consider 0.5 as acceptable for similar studies [31], others recommend a Cronbach's alpha of 0.6 [27] or 0.7 [26].

In order to generalize the findings into other settings, we will need similar studies to be conducted in those settings. However, our findings are significant for the following reasons: (1) Thailand itself is an attractive destination for IT outsourcing [4] and (2) a number of other Asian countries such as Philippines and Singapore belong to the same cultural cluster as Thailand thus indicating the possibility of generalizing the results to those countries. (The clusters were determined using agglomerative clustering with Hofstede's values for PD, IDV and LTO as input; the resulting dendrogram was cut at the level of three clusters.)

6. CONCLUSIONS

Offshore outsourcing is an increasingly popular option for many companies in the developed world. While its benefits such as cost savings are relatively better understood, the risks are not studied well. Since most of the source countries are in the West, and the major destination countries are Asian, cultural differences pose a major risk. In this paper we studied factors affecting one such risk, namely, mum effect. We looked at what cultural dimensions have major effects on the risk factors. We surveyed IT professionals, and used students as a control sample to see the variations in the IT industry from general perceptions in the culture. Both groups identified PD as the major cultural dimension that influences mum effect risk factors. However, the IT professionals showed significantly lower PD, communication gap and fear of consequences. We interpreted these differences as a positive sign that the work environment in the IT companies is more conducive to offshore outsourcing than what the general culture would otherwise have provided.

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