The Role of Socio-Cultural and Technological Factors in Adopting the Project Management Office (PMO)

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Abstract

The purpose of this paper is to develop and empirically test a conceptual model comprising organisational innovation dimensions and characteristics within public and private project-oriented organisations operating in Saudi Arabia. Data for the study were collected through a large-scale survey targeting professional project managers working for organisations which had either adopted, or intended to adopt, the Project Management Office (PMO). Responses were statistically analysed to assess the relationships between four variables related to the diffusion of organisational innovations, namely; socio-culture, technology, organisational climate for innovation, and innovation characteristics. The findings suggest that participative culture and, technology availability and implementation intensifies organisational climate for innovation. They also reveal compelling evidence in support of the moderating role of technology on the relationship between the country's socio-culture and organisational climate for innovation. Equally important, the findings confirm the notion that organisational innovation characteristics play a crucial role in the intention to adopt a particular innovation.

Keywords: Innovation, organisational climate, PMO, socio-culture.

Introduction

According to Burgess, Shaw, and Mattos (2005), the core competency of any organisation is organisational innovations. The introduction of an organisational innovation through business practices usually involves new methods to conduct work and operate. The link between innovativeness and projects undertaken is intimate; therefore, integrated advanced project management (such as the PMO) is recommended to address challenges faced by project managers in improving organisations' performance (Geraldi et al., 2008;Thiry & Deguire, 2007). The PMO can also be seen as a business strategy supporting innovativeness in the sense that it integrates managerial and operational mandates (Aubry, Hobbs, & Thuillier, 2007), thus improving productivity (Dooley & O'Sullivan, 2007). The PMO introduces changes to the organisation, ensuring its competitiveness; hence, it is an organisational innovation (Aubry et al., 2010; Hobbs, Aubry, & Thuillier, 2008).

From the above it is clear that the PMO is an ideal candidate to represent innovation in this research. The Project Management Office (PMO) – a relatively new practice enhancing organisational project management (Aubry et al., 2010) – is used in this paper as a representative of 'organisational innovation' as the PMO fits well with the following definition of organisational innovation: *the adoption of a useful application which comprises new rules, processes and structure* (Hobbs, Aubry, and Thuillier, 2008).

The central focus of this paper is on innovation diffusion in project-oriented organisations operating in Saudi Arabia in order to identify the factors affecting the level

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of innovation adoption. Not surprisingly, a number of external and internal factors are expected to, positively or negatively; affect the level of innovation diffusion at the organisational level.

In the context of the above, this paper develops and empirically tests a conceptual model incorporating key elements of four areas of study which are related to the diffusion of organisational innovations, namely; national culture, technology, organisational climate for innovation, and innovation characteristics. The paper is organised as follows: it looks at relevant theory background, describes the proposed conceptual model, outlines the adopted research methodology, reports on study findings, and finally it draws some conclusions.

National Culture and Technology

The dominant culture theory of Hofstede (2001) divides the national culture into five dimensions: 1) *power distance*, which means power is distributed unequally; 2) *uncertainty avoidance*, which means the culture's members feel threatened by uncertainty; 3) *individualism* means tasks prevail over relationships; 4) *masculinity* means gender roles are separated; and 5) *long-term orientation* means the degree of tradition in a specific culture and to what extent these traditions are connected to its past and future. As the tendency to explore new ideas comes with greater freedom to express opinions (Vecchi & Brennan, 2009), a country which has a high power distance and/or high uncertainty avoidance, creative behaviour is expected to be limited by strict rules and minimal interaction among social groups. In a conservative society (such that of Saudi Arabia), striving to maintain the status quo makes it difficult to implement innovation. Anecdotal evidence suggests that Arabian cultural beliefs have a strong influence on Information Technology (IT) diffusion (Straub, Loch, & Hill, 2003). This evidence is supported by earlier studies who identify the diffusion of technology in Saudi Arabia as hindered by cultural and social barriers, as well as technical problems, such as lack of expertise (AL-Turki & Tang, 1998) and lack of infrastructure and broadband services. Accordingly, this paper investigates the influence of socio-cultural and technological factors on innovation diffusion.

Organisational Climate for Innovation

Organisational climate is related to the work environment in the organisation, including the behaviour and feelings of the members. These feelings are subjective to those who influence the organisation through power-management (Denison, 1996). It is widely reported that organisational climate influences the diffusion of innovations within organisations (Dackert, Lööv, & Mårtensson, 2004; Dulaimi, Nepal, & Park, 2005). Moreover, the innovation success or failure is related to how a particular innovation is adopted, because organisational climate also influences the innovation's characteristics (Peansupap & Walker, 2005).

Moreover, several studies have indicated that organisational context influences innovativeness within an organisation. Contextual factors (leaders, their attitude towards change, decision-making decentralisation) and intra-group factors (support system from management, organisational committees, employee exposure to innovation and improvement, employee diversity and satisfaction) are determinants of an innovative organisational climate. Management's exposure, experience and background, as well as its attitude towards change, shapes the subordinates' perception and attitude to innovation. It is important to have leaders whose skills involve risk-taking and calculation, as well as openness to new concepts (Mohamed, 2002). Creating a management culture that has higher congruency with manager perceptions and organisational readiness may be considered a more beneficial means of promoting diffusion of innovations within the

project management discipline. Accordingly, this paper argues that socio-cultural and technological factors at the country level influence the climate for innovation, and hence the innovation diffusion at the organisation level.

Innovation (PMO) Characteristics

Rogers (2003) posits five perceived characteristics for innovation which influence its adoption: relative advantages, compatibility, complexity, observability and trialability. However, among these five, only relative advantages, compatibility, and complexity were found the most relevant (Dillon & Morris, 1996; Hsiu-Fen & Gwo-Guang, 2006). These three identified characteristics are also more relevant to this paper for several reasons. First, since the PMO has long-term impact, management is less concerned with observability of the PMO. Second, the PMO involves significant organisational change which is difficult to reverse. Third, relative advantages, compatibility and complexity have consistently been found to be important influences of behavioural intention (Yi et al., 2006).

Conceptual Model

Extending the above discussion, the objective of this paper is to identify causal relationships between organisational innovation diffusion dimensions and characteristics. To achieve this, a conceptual model was first developed. As presented in figure 1, the model proposed that socio-culture (SOCL) and technology (TECH) have relationships with organisational climate for innovation (OCI), organisational climate for innovation has a relationship with innovation characteristics, and then innovation characteristics (PMO Relative Advantages, PMO Compatibility and PMO Complexity) determine the intention to implement the PMO (IIPMO). Put differently, a hypothesised causal relationship is assumed to exist between: 1) the SOCL construct and the OCI construct; 2) the TECH construct and the OCI construct; 3) OCI and the PMO characteristics (PMORA, PMOCT and PMOCX); and 4) PMO characteristics and the intention to implement the PMO (IIPMO).

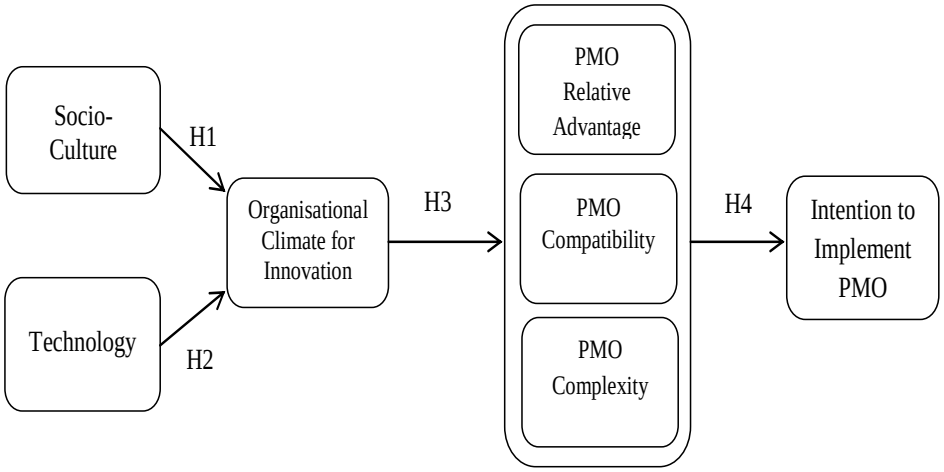

Figure 1. Conceptual Model

Research Methodology

The causal relationships between the constructs, and their effect on the intention to implement the PMO, were studied through quantitative analysis. Data collection for the analysis was gathered through a questionnaire survey conducted in Saudi Arabia over a two-month period with the collaboration of the Project Management Institute-Arabian Gulf Chapter (PMI-AGC).

The SOCL construct was operationalised using a predefined questionnaire adopted by reported studies (e.g. Wang & Liu, 2007). Similarly, the OCI construct was operationalised using the 'support for innovation and resource supply' measures developed by Scott and Bruce (1994) and adopted by several studies (e.g. Dulaimi, Nepal, & Park, 2005). The IIPMO was measured using a three-item scale employed by (Hsiu-Fen & Gwo-Guang, 2006). Terms such as 'needed', 'acceptable', and 'likely' were used to assess the organisation's intention to implement the PMO. These items were measured with a five-point Likert scale, ranging from 1 (very needless, very unacceptable, and very unlikely) to 5 (very needed, very acceptable, and very likely). The current paper used a 'behavioural intention' scale, over an 'actual use' scale, as the IIPMO dependent variable for two reasons. First, according to Ajzen and Fishbein (1980, as cited in Yi et al., 2006), intention has an important effect on the behaviour to mediate the influence of other determinants on behaviour. Second, even though the PMO is becoming more popular worldwide, it is still regarded as an emerging organisational innovation in Saudi Arabia.

One major task in this research was to develop an appropriate questionnaire for the TECH construct and the three PMO characteristics constructs (PMORA, PMOCT and PMOCX). No existing questionnaires were adequate to deal with the areas of project management and innovation which were specific to this study. The results are a Technology scale with 13 items and the PMO scale with 27 items. The PMO scale is divided into: 1) the PMO's Relative Advantages scale with 10 items; 2) the PMO's Compatibility scale with seven items; and 3) the PMO's Complexity scale with 10 items.

All items were measured with a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), except for the fifth section which solicited the respondents' background information. Five-point scales were considered suitable for the multivariate analysis techniques adopted in this paper (Hair, 2006; Neuman, 2006).

In this paper, the unit of analysis was at the organisational level in Saudi Arabia ((because most recent studies on innovation use organisation as the unit of analysis (Phonkaew, 2001); hence this study collected organisations' perceptions regarding all seven constructs. The candidate sampling frame comprised 223 Saudi public and private project-based organisations. To avoid potential bias in the data, no more than five valid feedback questionnaires were chosen from each organisation (Thiagarajan & Zairi, 1998).

Data Examination

For a distribution to be considered normal, its skewness and kurtosis should fall between +2.00 and -2.00 (Garson, 2011). Skewness of all variables, ranging from 0.01 to 1.13, and for kurtosis values ranging from 0.04 to 1.38, fell within the recommended range from +2.00 to -2.00. Moreover, any cases with absolute value of z-scores (|z|) greater than 3.29 were considered potential outliers (Tabachnick & Fidell, 2007). In this study there were no indications for outlier values greater than 3.29. In addition, the standard deviation values of all variables in this study were not large, ranging from 0.85 to 1.30, while the standard error values were relatively small when compared with the statistical mean values, ranging from 0.05 to 0.08. Therefore, the mean value can be used as a representative score for each variable in the data, and the small values of the standard error suggest that the sample used

in this study was sufficiently representative of the population (Field, 2009). Furthermore, a one-way Analysis of Variance (ANOVA) was performed to determine whether the differences in the opinions of these groups of respondents were statistically significant and meaningful. The results of ANOVA revealed that the data distribution was not distorted significantly by the different opinions of specific groups. Hence, the data set could be treated as a single sample.

Data Analysis

For data reliability, Hair (2006) recommends that values of 0.60 to 0.70 are at the lower limit of acceptability for the alpha coefficient. The values of the alpha coefficient of all seven scales, ranging from 0.836 to 0.954, which were well above the acceptable lower limit. In addition, according to Pallant (2007), a value of the corrected item-total correlation of less than 0.30 indicates that the variable is measuring something different from the construct as a whole. The results show that most of the variables within each construct were greater than 0.30, with the exception of the eight variables within the SOCL construct and one within the OCI construct. These nine variables out of 89 variables were eliminated from both constructs.

According to Pallant (2007), the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), and Bartlett's test of sphericity, are generally applied to determine data factorability of such a matrix. The results show that the values of KMO ranged from 0.689 to 0.928, making them well above the minimum acceptable level of 0.60 (Tabachnick & Fidell, 2007), and thus indicating sampling adequacy. Bartlett's test of sphericity statistic for each construct was large and significant at the 0.0005 level, indicating that there were adequate relationships between the variables included in the analysis. Finally, all anti-image correlation values ranged from 0.492 to 0.946. These results confirmed the factorability of the exploratory factor analysis (EFA) conducted for each construct (Hair, 2006; Pallant, 2007).

To identify the structure among the measurement variables, the VARIMAX method for orthogonal rotation under the component factor model was chosen to give a clear separation of the factors. Regarding sample size, the 223 cases in this study were adequate for conducting the EFA (i.e., greater than 100 (Hair et al., 2006)). EFA was performed separately for each of the seven constructs using the SPSS program. The factor loadings of all variables were significant and well above the 0.50 threshold level without being loaded equally highly on more than one factor (i.e. cross loadings). Nevertheless, six variables out of 80 variables were dropped from TECH and OCI constructs due to their low factors.

Relationship Identification

Structural equation modelling (SEM) was employed primarily to determine whether a theoretical model is valid by specifying, estimating and evaluating the linear relationships among a set of variables (Shah & Goldstein, 2006), version 19 of AMOS was used. Regarding sample size, the 223 cases in this study were adequate for conducting the confirmatory factor analysis (CFA) (i.e., greater than 200 (Kline, 2005)). All variables loadings, ranging from 0.48 to 0.91 were greater than or close to the threshold level of 0.50 and were all significant at $p < 0.001$, demonstrating convergent validity. The correlation coefficient between each pair of factors was less than 0.85, thus confirming the discriminate valid of the seven constructs (Kline, 2005). The model exhibited a good level of fit ($\chi^2 = 663.572$; $df = 293$; $\chi^2/df = 2.26$; GFI = 0.82; IFI = 0.89; TLI = 0.88; CFI = 0.89; and RMSEA = 0.08). (Hair et al., 2006). The results of the factor structures demonstrated adequate reliability, validity and uni-dimensionality.

Seven out of the eight path coefficients were statistically significant and were considered meaningful (ranging from -0.29 to 0.72), See Figure 2. The SOCL construct had a positive influence on the OCI construct (0.56, $p < 0.001$), thus supporting H1. The TECH construct had a positive influence on the OCI construct (0.47, $p < 0.001$), thus supporting H2. All PMO constructs were found to be influenced by the OCI construct. The OCI construct had an equal positive influence on both PMO relative advantages and compatibility (0.48, $p < 0.001$), whereas OCI had a negative influence on PMO complexity construct (-0.29, $p < 0.001$), thus supporting H3. Additionally, PMO relative advantages and PMO compatibility constructs had nearly equal positive influence on the intention to implement PMO construct (0.30, $p < 0.001$) and (0.32, $p < 0.001$) respectively. PMOCX construct was not related to the intention to implement PMO construct (-0.07, $p < 0.001$), thus H4 was partially supported. These results suggest that all the seven paths within the developed conceptual model were all supported by the data, except one path (PMOCX to IIPMO). In addition, SOCL was found to positively influence the TECH construct (0.72, $p < 0.001$) and both SOCL and TECH were found to positively influence the OCI construct. This pattern of relationships suggests that TECH may be an intervening construct, mediating the relationship between the SOCL and OCI constructs.

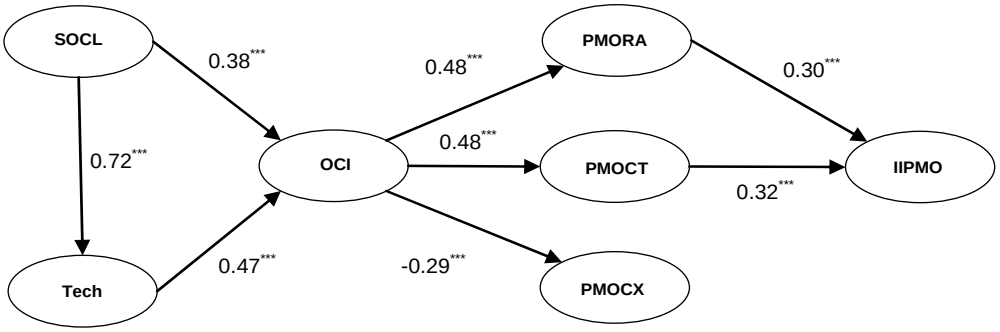

Figure 2. Structural model with standardised path coefficients

Multiple regression analysis was also performed to test the proposed relationships between the seven constructs. The regression results of the relationships between SOCL, TECH and OCI, which indicate that both SOCL and TECH are positively related to OCI, R^2 values are 0.312 and 0.244 respectively. The regression results of the relationships between OCI and PMO three constructs indicate that OCI and PMO constructs are positively related, R^2 values are 0.103, 0.141 and 0.015 respectively. The regression results of the relationships between PMO three constructs and IIPMO indicate that PMO constructs related to IIPMO, R^2 values are 0.143, 0.128 and 0.005 respectively.

The more detailed picture on these relationships was revealed by the findings of the regression analyses at the factor level. The results indicate that within Socio-Culture, participative culture is a significant predictor of both managerial support climate and operational support climate factors within OCI construct, whereas collectivist culture and hierarchical culture within SOCL construct are significant predictors of the status quo factor within OCI construct. The results also indicate that the technology availability and implementation factor is a significant predictor of all OCI factors (managerial support climate, operational support climate and status quo), whereas technology research and development factor is a significant predictor of only managerial support climate and operational support climate.

The results also indicate that within the OCI construct, managerial support climate factor is a significant predictor of PMORA and PMOCT, while the status quo factor is a significant predictor of PMOCX. The results indicate that PMORA and PMOCT had significant predictive power over IIPMO, while surprisingly PMOCX had no predicting power over IIPMO.

Discussion

The results of this study suggest that at the country level, both socio-cultural and technological factors in Saudi Arabia are positively related to organisational climate for innovation. The obtained results reveal that participative culture factor has greater influence on organisational climate for innovation, especially managerial support climate and operational support climate. Whereas collectivist culture and hierarchical culture factors have an active predicting power upon the variance of status quo. Prior studies on Saudi Arabia (see for example, Evangellos, 2004) identified some barriers to employees' creativity. First, task completion is the priority of Saudi managers; therefore, there is less creativity. There is no room for flexibility, constructive criticism or public evaluation. Another barrier is the decision-making mechanism. Decisions are made independently and without consulting subordinates, and are not delegated to a lower level in the hierarchy. Prior studies have indicated that creativity is encouraged by organisations which utilise a participative management style, employee engagement in decision-making, effective communication channels, supportive risks and democratic practices (Sharadindu & Sharma, 2009).

This study also reveals that technology availability and implementation, and research and development activities have a strong influence on organisational climate for innovation factors, especially managerial support climate and operational support climate, and they have less predicting power upon the variance of maintain the status quo. From the above relationships it can be reasonably deduced that technology's usage brings changes into organisations, which may conflict with management's cultural values. It then becomes difficult to accept (Johnson & Clayton, 1998) because it may threaten top hierarchy status.

The study finds that organisational climate for innovation has a direct influence on organisational innovation characteristics and the PMO in particular. In line with prior studies, the obtained results revealed that organisational climate for innovation has a positive influence on perceived relative advantages and compatibility, and a negative influence on complexity of organisational innovation (Hsiu-Fen & Gwo-Guang, 2006). The study further reveals that managerial support climate has an active predicting power only upon the variance of PMO relative advantages and PMO compatibility. The status quo factor has an active, but limited, predicting power upon the variance of PMO complexity. It appears that the operational support climate factor is passive and has no predicting power upon the variances of innovation characteristics and the PMO in particular. There have been underlying assumptions about the influence of adopting the PMO on the perception of managerial power-loss, even if managers fully understand its benefits. The PMO hands over some top management control to a centralised entity and inevitably faces resistance. This can lead to lack of project effectiveness; consequently, PMO adoption is at risk (Pellegrinelli & Garagna, 2009). It seems that compatibility plays an important role in the organisation's decision to adopt a particular innovation, since it is the most sensitive among the three characteristics (Lowry, 2002).

For the relationship between PMO characteristics and intention to implement PMO, the current study reveals that both PMO relative advantages and PMO compatibility have positive and statistically significant relationships with the intention to implement the PMO.

In contrast, PMO complexity has no influence or predicting power on the intention to implement the PMO. The results of the present study are consistent with Lowry (2002) suggestion that an innovation's perceived advantage and compatibility are most significant and its complexity is less so.

Several explanations may be posited for these findings. First, in Saudi Arabia organisation's decisions are made in isolation from the operational environment; in other words, making a decision is not a two-way process between management and staff members. This could be a result of the country's hierarchical culture. Asad and Ali (2008) stressed that a key barrier against creativity in Saudi Arabian organisation is the lack of communication channels between an organisation's levels. Second, organisational innovations would affect the management environment only, which gives top management the sole right to decide whether to accept them. Under such conditions, a gap is more likely to exist between the managerial and operational environments within Saudi Arabian organisations, reducing the likelihood of implementing innovations. Furthermore, top management do not consider the operational environment an important element of the decision-making process. It seems that maintaining the status quo is a priority in the decision-making process in Saudi Arabia. Hence, before implementing any changes to the work environment, an organisational innovation's advantages and compatibility should work in conjunction with the current decision-makers' status quo, and not contradict it. Changes may also be manipulated to conform to the status quo; therefore, the eventual change will be under control.

In addition, PMO complexity has a negative and statistically significant correlation with the status quo factor, and a passive predicting power upon the variance of the intention to implement the PMO. Therefore, it can be deduced that that the more complex and ambiguous the new system, the more the status quo is maintained. Top management becomes the source of problem-solving and conflict resolution. This approach may justify the lack of effective concern over the innovation's cost. In sum, it seems that status quo has been perceived as a source of power. Aubry et al. (2010) stated that to avoid this problem, it is important to examine the organisation's politics in the sense that it integrates the PMO characteristics. The current study suggests that the reverse should be practical in the Saudi context. The PMO characteristics should integrate with the organisation politics and power system in order to facilitate the adoption process.

Concluding Remarks

The findings suggest that participative culture and, technology availability and implementation intensifies organisational climate for innovation. They also reveal compelling evidence in support of the moderating role of technology on the relationship between the country's socio-culture and organisational climate for innovation. Equally important, the findings confirm the notion that organisational innovation characteristics play a crucial role in the intention to adopt a particular innovation. From the above discussion, these relationships represent the status quo in its profound format. First, a hierarchical culture supports the status quo, with the assistance of collectivist culture, allowing it to hang over the entire group, team, organisation, or even the whole country. Second, the maintaining status quo factor has a positive and statistically significant correlation with managerial and operational support climate factors; all the three factors support each other. Third, PMO complexity has a negative and statistically significant correlation with status quo, in which complexity of a new system or practice is another incentive to maintain the status quo.

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