



National cultural distance, organizational culture, and adaptation of management innovations in foreign subsidiaries: A fuzzy set analysis of TQM implementation in Saudi Arabia

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ABSTRACT

This paper examines the effects of organizational culture and national cultural distance between the headquarters and the subsidiary on the adaptation of management innovations in multinational enterprises (MNEs). Data on Total Quality Management (TQM) implementations were collected from a sample of 126 MNEs operating in Saudi Arabia and analyzed using fuzzy-set qualitative comparative analysis (fs-QCA). The findings highlight the critical roles that national and organizational cultures jointly play in the adaptation of a management innovation. The results suggest that different configurations of organizational culture and national cultural distance result in different levels of fidelity and extensiveness of the implementation when management innovations are transferred from MNE headquarters to subsidiaries. More specifically, our findings show that a greater level of national cultural distance is not necessarily a barrier to the transfer of a management innovation within an MNE and that the organizational culture can offset the effect of national cultural distance.

1. Introduction

Management innovation has been argued to be one of the most important and sustainable sources of competitive advantage for firms (Hamel, 2006) and is an increasingly important issue for firms as they seek to improve their productivity and competitiveness in the face of global competition. Following Mol and Birkinshaw (p.1269, 2009), we define management innovation as “the introduction of management practices that are new to the firm and intended to enhance firm performance”. Most previous studies have focused on various aspects of *adoption* of management innovations (e.g. Abrahamson, 1991); and consider successful transfer to have taken place when the practice is adopted. However, Rogers (2003) suggests that new technology or management innovations are not usually adopted in their original form by organizations but altered or “adapted” by organizations in the transfer process. In other words, they are likely to be both *adapted* and *adopted*. Ansari, Fiss, and Zajac (2010, p.71) define the *adaptation* of management innovations as “the process by which an adopter strives to create a better fit between an external practice and adopter’s particular needs to increase its ‘zone of acceptance’ during implementation”. In this paper, we examine how organizational culture, as well as national cultural distance between the headquarters and the subsidiary, affect both the adoption and the adaptation of management

innovations transferred within MNEs.

In the innovation diffusion literature, it has been argued that the adaptation of management innovations in MNEs is affected by two cultural factors. On the one hand, the international management literature has reported extensively on the effects of national cultural distance on the adaptation of management innovations, with a focus on the adaptation practices of MNEs in cross-national contexts (Ansari, Reinecke, & Spaan, 2014; Canato, Ravasi, & Phillips, 2013; Fiss, Kennedy, & Davis, 2012; Kostova, 1999). On the other hand, previous management scholars (e.g. Ansari et al., 2010; Canato et al., 2013; Zu, Robbins, & Fredendall, 2009) have stressed the important role of organizational culture, in particular, the fit between an organizational culture and a business practice in the transfer of the business practice. These studies have found direct relationships between some dimensions of organizational culture, such as commonly held values, beliefs and attitudes, work practices and behaviors on the one hand, and the implementation and the adaptation of management practices on the other (Zu et al., 2009). Although the importance of these cultural factors at the organizational and national levels in the adaptation of management innovations has long been accepted in the literature, surprisingly their joint effects on the adaptation of management practices have rarely been studied in an MNE context.

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In this study, we explore how national cultural distance and organizational culture jointly impact the cross-border transfer of management innovations using the example of transfer of Total Quality Management (TQM) practices from MNEs' headquarters to their subsidiaries operating in Saudi Arabia. We make two main contributions to the extant literature in this study. First, research on adaptation of management innovations has concentrated mainly on one level of analysis, whether it is the organizational level (Ansari et al., 2010; Canato et al., 2013) or the national level (e.g. Jensen & Szulanski, 2004; Kostova & Roth, 2002). Our study contributes to this line of research by exploring the interactions across multiple levels of culture and their impacts on the adaptation of management innovations. Second, unlike prior studies in this stream of research that have used case studies (Ansari et al., 2014; Canato et al., 2013), or conventional quantitative models (Ax & Greve, 2017; Bortolotti, Boscari, & Danese, 2015), we use Qualitative Comparative Analysis (QCA) (Fiss, 2011; Ragin, 1994) to identify multiple cultural configurations that lead to the same outcomes. Such an approach enables us to examine how various configurations based on different national and organizational culture profiles affect the fidelity and extensiveness of the practice transfer, thus going beyond previous studies that have largely focused on the impact of the "degree" of cultural fit on the adaptation of management innovation (Canato et al., 2013), or the role of cultural fit in determining the timing of adoption of certain innovation practices among firms (Ansari et al., 2010; Ax & Greve, 2017).

The structure of the rest of the paper is as follows. It begins with a review of the literature on the adaptation of management innovation, in particular, the roles that national and organizational cultures play in the adaptation process. This is followed by a description of the methodology used in this study and the results of our analysis. Finally, we discuss the results and conclude with some suggestions for further research.

2. Literature review

2.1. Adoption and adaptation of management innovations

There is now an extensive literature on the adoption of management innovations (e.g. Abrahamson, 1991; Ax & Greve, 2017; Damanpour, 1987; Jabeen & Behery, 2017). These studies have offered considerable insights into the patterns of innovation diffusion among organizations as well as why and how practices are transferred. However, what happens to such practices after their adoption and implementation has been less researched. Lounsbury and Crumley (2007) pointed out that "part of the problem is that diffusion studies treat practices as objects that are either adopted or not, essentially leading to the 'black-boxing' of practice" (p. 993). Gaining a better understanding of the adaptation process is particularly important because most management innovations are "adapted" or altered following adoption (Canato et al., 2013) as the adopter attempts to create a fit between the adopted practices and the current organization practices (Zhu & Kraemer, 2005).

According to Fiss et al. (2012), the adaptation process involves changes when a practice is interpreted and framed in the organization over time. As Frambach and Schillewaert (2002) note, the "innovation process can only be considered a success when the innovation is accepted and integrated into the organization and the target adopters demonstrate commitment by continuing to use the product over a period of time" (p.164). Therefore, it has been increasingly recognized by researchers that adaptation needs to be studied in conjunction with adoption to fully capture the changes that happen to the management practice. Further, while some prior studies have tended to examine the implementation of management practices based on a single dimension (e.g. Jensen & Szulanski, 2004; Kennedy & Fiss, 2009), a number of more recent studies (e.g. Ansari et al., 2014; Fiss et al., 2012) have followed the conceptualization of practice implementation by Ansari et al. (2010) based on two dimensions, including fidelity and

extensiveness. According to Ansari et al. (2010), the dimension of fidelity "relates to whether the adapted practice resembles or deviates in kind from the features of the previous version of the practice as it is transmitted" (p.71); while the dimension of extensiveness is concerned with "whether the degree of practice implementation is greater or lesser than that of the previous version of the practice" (p.72).

2.2. The role of national culture distance in the adaptation of management innovations

National cultural distance between the headquarters and subsidiaries of MNEs has been identified as a major consideration in the transfer of management innovation (Ansari et al., 2014; Jensen & Szulanski, 2004; Kostova & Roth, 2002). It has been shown that national cultural distance, which reflects the degree to which the national culture in one country differs from that of another country (Hofstede, 2005), affects the implementation of practices in MNEs. For example, Kostova (1999) developed a model of practice transfer within MNEs and argued that national institutional distance, based on the national cultural and institutional differences between the headquarters and subsidiary countries, increases the likelihood of adaptation, rather than adoption, of management practices. The argument is supported by Jensen and Szulanski (2004), who found that knowledge transfer within MNEs was negatively affected by cultural distance. In the same vein, Simonin (1999) found that cultural distance between nations increases the ambiguity of the transfer of best practices between a parent company and its subsidiaries.

When distinct cultural differences exist between the parent company and its subsidiaries, the transfer of management practices tends to be more challenging (Horwitz, Kamoche, & Chew, 2002). Hence, to effectively transfer practices in an MNE context where the national culture of the host country differs significantly from that of the home country, adaptation is necessary to ensure the suitability of the practice in the new context. For example, Lawler, Chen, and Bae (2000) investigated the transfer of high-performance work systems (HPWS) to subsidiaries in three countries in Eastern and Southwest Asia and found that the practices required adaptation to the new cultural contexts. Similarly, Lunnan et al. (2005) explored how a Norwegian multinational firm implemented a new performance management practice. To facilitate the innovation transfer, the multinational company had to remove certain elements from this best practice model due to cultural differences and to slowly introduce the elements of the original practice to the subsidiaries.

2.3. Organizational culture and its "fit" in the adaptation of management innovations

Organizational culture (OC) represents the pre-existing cultural values and assumptions of an organization (Yeung, Brockbank, & Ulrich, 1991). According to a cultural perspective, management practices embody cultural values and practices (Detert, Schroeder, & Mauriel, 2000). When implementing a new managerial practice, those within an organization need to understand the existing organizational culture concerning its unique daily practices and the system of values and beliefs (Babatunde & Sui Pheng, 2015). A direct relationship between the organizational culture and the implementation of management innovations has been identified by previous researchers (Al-Khalifa & Aspinwall, 2000; Babatunde & Sui Pheng, 2015; Gallea & Ghobadian, 2004; Prajogo & McDermott, 2005; Zu et al., 2009). For example, Zbaracki (1998) studied the relationship between the rhetoric and reality of Total Quality Management (TQM) in use and found management practices are adapted differently inside culturally diverse organizations owing to hidden cultural dynamics. Bortolotti et al. (2015) found that an OC profile with features of high institutional collectivism, future orientation, a humane orientation, and a low level of assertiveness, facilitates the successful implementation of lean

management. Ultimately, the organizational culture of an organization may facilitate or constrain the interpretation of a management practice in its implementation by the organization, leading to modification of the applied practice to align with members' cultural standards.

In this sense, Ansari et al. (2010) argue that adaptation is typically a response to the absence of a cultural fit between the organization and the practice being adopted, where the cultural fit is defined as “the degree to which the characteristics of a diffusing practice are compatible with the cultural values, beliefs, and practices of potential adopters” (Ansari et al., 2010, p.78). According to Ansari et al. (2010) and Canato et al. (2013), when there is an incompatibility between the management practice and the organizational culture, the environment is not conducive for the implementation of the practice; and consequently, an adaptation of the practice is necessary.

Previous studies have shown how the initial interpretation of a given practice and the later implementation of the practice in the organization are subject to the degree of organizational culture fit (e.g. Baird, Jia Hu, & Reeve, 2011; Gimenez-Espin, Jiménez-Jiménez, & Martínez-Costa, 2013; Prajogo & McDermott, 2005; Zu et al., 2009). However, few of these studies have taken into account the external social context of the organization (Oliver, 1997), which is particularly important in international settings (Leonard-Barton, 1988). In this paper, we examine this question through the example of Total Quality Management practices in MNEs.

2.4. The transfer of TQM as a management innovation

Total Quality Management (TQM) has been recognized for its potential to enhance competitive outcomes for organizations through continual improvement. TQM is a broad managerial philosophy based on quality and productivity management principles (Deming, 1986) which focuses on internal guidelines and process standards to eliminate errors in business processes and enhance customer satisfaction. To support these aims, TQM advocates a comprehensive organization-wide framework in the form of specific organizational practices, tools, techniques, and systems. TQM is best known as a standardized management innovation; however, there is evidence in the literature that TQM practices differ significantly across organizations, with each organization having individual TQM profiles. Both national culture and organizational culture have been identified as critical factors that lead to differences in TQM implementation (Zu et al., 2009). For example, TQM has been shown to be more effective in specific national cultures. Based on the Hofstede (2005) model, previous studies have shown that national cultures with high levels of uncertainty avoidance, a strong inclination towards formal organizational structures and well-defined rules are most supportive of TQM (Kull & Wacker, 2010; Lagrosen, 2002; Nguyen & Aoyama, 2015; Tata & Prasad, 1998). A further study by Lagrosen (2003) found that national cultures that are featured with high collectivism and low uncertainty avoidance were more focused on a customer orientation model, while countries characterized by high uncertainty avoidance focused less on business processes. Snell and Hui (2000) noted that countries characterized by high power distance were more likely to rely on procedures and routines. Anwar and Jabnoun (2006) introduced a contingency model that related Hofstede (2005) dimensions of national culture to TQM. According to this model, various TQM practices, including quality control, quality assurance, continuous improvement, or total customer satisfaction, tend to be implemented more effectively in a national culture characterized by “high power distance”, “high uncertainty avoidance”, “low power distance and low uncertainty avoidance” or “low uncertainty avoidance, low power distance and low collectivism” respectively.

Further research on the implementation of TQM practices has also revealed how these practices are frequently modified when they are being implemented due to organizational culture (Baird et al., 2011; Mohammad Mosadegh Rad, 2006; Prajogo & McDermott, 2005; Zu et al., 2009). Other studies have identified the features of an “ideal”

culture for TQM such as building teams, promoting pride in workmanship, encouraging participative management, installing leaders not supervisors, creating a sense of safety and promoting a lasting orientation to TQM practices (Al-Khalifa & Aspinwall, 2000; Chang & Wiebe, 1996; Dellana & Hauser, 1999; Deming, 1986; Detert et al., 2000; Gimenez-Espin et al., 2013; Saha & Hardie, 2005). They concluded that difficulties in the process of implementation can partly be explained by a lack of organizational culture fit (Naor, Linderman, & Schroeder, 2010) and that, to implement TQM successfully, employees may have to change their organizational culture values (Kirkman & Shapiro, 2001).

To summarize, previous studies have highlighted the roles of both national and organizational culture on the adaptation of management practices in general and, in particular, on TQM; however, the question of how national cultural distance and organizational culture interact in the adaptation process remains unanswered.

3. Methodology

3.1. Research context

To shed light on how national cultural distance and organizational culture affect the adoption and adaptation of management innovations within MNEs, our study focuses on the transfer of TQM practices within MNEs from headquarters to subsidiaries in Saudi Arabia. We chose MNEs operating in Saudi Arabia for two reasons. First, in the context of the transfer of Western management practices to Arab countries, researchers have attributed the relatively low spread of TQM practices in the Arab region to the national cultures that do not support this specific management practice (Al-Khalifa & Aspinwall, 2000; Haffar, Al-Karaghoul, & Ghoneim, 2013). Other studies have shown that TQM management practices sometimes need to be adapted due to cultural differences (e.g. Al-Husan, Al-Hussan, & Perkins, 2014). Alsmadi, Lehaney, and Khan (2012) explored the implementation of Six Sigma in the top 100 firms in Saudi Arabia and found that most firms did not fully implement Six Sigma; instead, firms were selective in choosing to implement tools that fit well with their cultures. The culture of Saudi Arabia is unique, having been influenced by Arab and Bedouin customs as well as Islamic religion, laws, and political administration (e.g. Bjerke & Al-Meer, 1993; Hofstede, 2005). In the national culture framework of Hofstede (2005), Saudi Arabia is characterized by high power distance, high uncertainty avoidance, and strong collectivism. Siddique and Zia (2016) suggest that these cultural features are associated with many organizational characteristics observed in Saudi firms, such as employees' resistance to change, less tolerance of innovative ideas, the acceptance of conservative wisdom, and obedience to authority. Second, the Saudi Arabian economy has undergone a significant transformation during the past few decades, attracting significant foreign investments. According to the most recent figures by the Saudi Arabia General Investment Authority (SAGIA) released in 2016, the number of MNEs in Saudi Arabia has reached 7707 firms compared to 820 in 2000. This makes a study of the transfer of management practices in foreign subsidiaries in Saudi Arabia of practical as well as theoretical interest.

3.2. The sample

For this study, contact details of 500 multinational enterprises operating in Saudi Arabia were provided by the Saudi Foreign Investment Authority (SFIA). Each of these firms was contacted by telephone or personal visit, and 347 firms that have implemented TQM programs were identified. An online questionnaire was sent to these firms and 126 completed questionnaires were received between January and March 2016, resulting in a 36.6% response rate. The online questionnaire includes 65 Likert-scaled questions (Appendix 1).

3.3. Configurational analysis

We adopted a configurational approach in this study. An organizational configuration represents “any multidimensional constellation of conceptually distinct characteristics that commonly occur together” (Meyer, Tsui, & Hinings, 1175, 1993). Based on a holistic approach, a configurational analysis focuses on the patterns of multiple variables and how these variables interact over time (Meyer et al., 1993).

We employed fuzzy-set qualitative comparative analysis (fs-QCA) in this research to analyze the cultural configurations leading to TQM adaptation. QCA is a specific type of configurational method developed by Ragin (1994) that is based on a mixture of qualitative and quantitative techniques. Unlike a correlation approach, QCA is focused on ‘cases’ that lead to an outcome rather than ‘variables’ in a regression analysis. QCA seeks to understand complex units, in which a case consists of a set of variables. In organization studies, a configuration of cases involves combinations of organizational factors or contextual characteristics called conditions that might yield the outcome of interest. The advantage of QCA over other correlation methods is its capability to identify combinations of multiple causes, which is challenging to do using regression analysis (Ragin, 2008). Ragin (2000) introduced fuzzy-set QCA (fs-QCA) as an improvement to the traditional QCA method in which the membership of the variables in the cases are fuzzy instead of having crisp boundaries. This improvement enables social science researchers to study the relationships between combinations of variables derived from their membership in fuzzy sets.

For this research, the configurational approach based on QCA offers three major benefits. First, it defines the multiple interaction effects of the causal relationships between organizational culture and national cultural distance on the one hand and the outcomes of TQM implementation on the other simultaneously. Second, the QCA method also identifies multiple scenarios that lead to either adaptation or no adaptation of TQM. Finally, the QCA reveals the influence of cultural variables in terms of their “necessity” and “sufficiency” in the implementation of TQM.

3.4. Variables

3.4.1. Fidelity and extensiveness of practice transfer

Following Ansari et al. (2010), we assessed the adoption and adaptation of TQM practices according to two key indicators. First, following previous studies (Ahire, Landeros, & Golhar, 1995; Curkovic, Melnyk, Calantone, & Handfield, 2000; Curkovic, Shawnee, & Droge, 2000; Lau, Zhao, & Xiao, 2004), we measured *adaptation of TQM practices* using the Malcolm Baldrige National Quality Award (MBNQA) Criteria. These criteria, which have been employed by previous studies to articulate the content of standardized TQM practices (Ahire et al., 1995), provide a measure of the adherence to TQM standards. Thus, the fidelity of TQM practices relative to standard TQM practices can be seen as a lack of adaptation. Second, we measured *the adoption of the practice* within the subsidiary according to the extent to which the TQM practices have been applied to the firm’s practices (Kennedy & Fiss, 2009). The operationalization of extensiveness of TQM is based on the construct developed by Kennedy and Fiss (2009), which includes the following three indicators: the management’s perception of the extent to which TQM’s philosophy, principles, and methods are implemented; the effort devoted to training managers and employees towards applying TQM; and the number of quality improvement tools used by the organization.

3.4.2. National cultural distance

We relied on the fourth wave of the World Value Survey (WVS) by Inglehart, Haerpfer, Moreno, Welzel, Kizilova, Diez-Medrano, Lagos, Norris, and Ponarin (2014) to obtain cultural scores in which two broad dimensions of national culture are created following Inglehart et al. (2014). The first one is Traditional vs. Secular-rational authority (TSR),

which distinguishes between societies that emphasize religion, respect to authority and traditional family values and those that place less emphasis on religion, authority and traditional family values. The second dimension is Survival vs. Self-expression values (SSE), which distinguishes between societies that emphasize hard work and self-denial (Survival values) and those that place more emphasis on quality of life issues (Self-expression values). Members of high SSE cultures find foreigners and outsiders, ethnic diversity and cultural change to be threatening. We measured the national cultural distance between the country in which the MNE is headquartered and Saudi Arabia using the cultural distance index developed by White and Tadesse (2008). The White and Tadesse index has been used and validated in many studies (e.g., Tadesse & White, 2010; White, 2015). Following White and Tadesse (2008), we calculated the national cultural distance using the following formula

$$CD = \sqrt{(TSR_j - TSR_i)^2 + (SSE_j - SSE_i)^2}$$

where TSR_j and SSE_j are the parent country scores for Traditional vs. Secular-rational authority and Survival vs. Self-expression respectively and TSR_i and SSE_i are the Saudi Arabia scores for Traditional vs. Secular-rational authority and Survival vs. Self-expression respectively.

3.4.3. Organizational cultural fit

Following Harrington and Guimaraes (2005), we identified the organizational culture type using a questionnaire based on the Quinn (1988) Competing Values Framework (CVF) and the subsequently modified CVF by Yeung, Brockbank, and Ulrich (1991). This identifies four distinctive organizational culture types, including group, developmental, rational and hierarchical organizational cultures. A group culture emphasizes flexibility and internal orientation within an organization which promotes human resource development and participation. A developmental culture also focuses on flexibility but is oriented towards the external environment and promotes innovation and growth. A rational culture is focused on the external environment but is more control-oriented. A hierarchical culture is oriented towards control and the internal environment. Previous studies based on the CVF to examine the organizational cultural fit with the TQM implementation (e.g. Karimi & Abdul Kadir, 2012; Prajogo & McDermott, 2005; Prajogo & McDermott, 2011; Zu et al., 2009) have shown that an ideal organizational culture for TQM is characterized by high characteristics of any of these culture types. These findings suggest that each type of organizational culture possesses features that support the core principles of TQM practices, allowing for effective implementation of TQM.

3.5. Analysis

3.5.1. Data calibration

An important step in fs-QCA is data calibration to determine the most appropriate cut-off points for set membership. We employed the direct calibration method (Ragin, 2000) to transform the variables into set membership, based on the mean scores for each variable. In line with previous researchers (e.g. Felício, Duarte, & Rodrigues, 2016; Fiss, 2011; Schneider & Wagemann, 2012), the following cut off points were used: 0.90 or higher represents the full membership threshold; 0.10 or lower represents the full non-membership threshold; and 0.5 represents the cross over point for fuzzy sets. To check the robustness of the calibration method, we also tested the thresholds based on the median scores for each variable and found no significant difference in the outcomes.

3.5.2. Analysis of necessary conditions

Next, an analysis of necessary conditions was performed to determine if any of the conditions can be considered necessary for the adoption/adaptation outcome. A necessary condition is defined as a critical factor without which the outcome will not occur. According to

Table 1
Necessary conditions analysis for fidelity and extensiveness of transfer.

| | High fidelity | | Low fidelity | | High extensiveness | | Low extensiveness | |
|-------------------|---------------|----------|--------------|----------|--------------------|----------|-------------------|----------|
| | Consistency | Coverage | Consistency | Coverage | Consistency | Coverage | Consistency | Coverage |
| Group | 0.860 | 0.826 | 0.792 | 0.829 | 0.826 | 0.635 | 0.716 | 0.656 |
| Developmental | 0.843 | 0.820 | 0.787 | 0.814 | 0.802 | 0.634 | 0.706 | 0.639 |
| Hierarchical | 0.846 | 0.818 | 0.795 | 0.827 | 0.799 | 0.660 | 0.715 | 0.651 |
| Rational | 0.856 | 0.828 | 0.783 | 0.817 | 0.788 | 0.636 | 0.695 | 0.635 |
| Cultural distance | 0.771 | 0.691 | 0.818 | 0.696 | 0.784 | 0.6221 | 0.602 | 0.696 |

Table 2
Truth table for fidelity.

| g | d | h | r | cd | no. of cases | consistency |
|---|---|---|---|----|--------------|-------------|
| 1 | 1 | 1 | 1 | 0 | 3 | 0.969 |
| 1 | 1 | 1 | 1 | 1 | 14 | 0.964 |
| 1 | 0 | 0 | 1 | 0 | 1 | 0.962 |
| 1 | 1 | 0 | 1 | 1 | 1 | 0.962 |
| 0 | 1 | 1 | 0 | 0 | 1 | 0.948 |
| 1 | 1 | 0 | 0 | 0 | 5 | 0.938 |
| 0 | 0 | 1 | 1 | 1 | 2 | 0.929 |
| 0 | 0 | 1 | 1 | 0 | 2 | 0.924 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0.914 |
| 0 | 1 | 0 | 0 | 1 | 2 | 0.910 |
| 0 | 0 | 1 | 0 | 1 | 1 | 0.908 |
| 1 | 0 | 0 | 0 | 1 | 1 | 0.893 |
| 0 | 0 | 0 | 1 | 0 | 3 | 0.887 |
| 0 | 0 | 0 | 0 | 1 | 5 | 0.851 |
| 0 | 0 | 0 | 0 | 0 | 13 | 0.697 |

Fiss (2007) and Ragin (2008), the absence or presence of a condition is considered to be necessary for the outcome if the consistency score is more than 0.9. The consistency score measures the degree to which a particular rule or outcome is affiliated in each case, where a high consistency suggests that more cases meet this rule. Following this rule, the necessary condition was tested for the occurrence and non-occurrence of adoption/adaptation in TQM practices. The results are presented in Table 2. These results showed that none of the conditions is necessary for the fidelity of the practice because consistency scores range from 0.771 to 0.860, which is less than the rule of thumb of 0.90 recommended by Ragin (2008). Moreover, the analysis of necessary conditions for extensiveness showed that none of the conditions is necessary for the extensiveness of the practice because the consistency scores for all conditions range from 0.602 to 0.826. Although lower consistency scores have been used in some previous studies (Schneider et al., 2010), to be cautious, we used a higher consistency score. Therefore, according to the test results shown in Table 1, we concluded that none of the organizational culture variables or cultural distance is a necessary condition for adoption/adaptation as well as for non-adoption/non-adaptation.

3.5.3. Analysis of sufficient conditions

Next, we analyzed sufficient conditions. A sufficient condition is defined as a condition that will produce the outcome. These were identified in fs-QCA by making use of a truth table algorithm, which plots all logically possible and empirically occurring combinations of fuzzy sets under study (Ragin, 2000, 2008). Tables 2 and 3 present the truth table analyses which produced 30 configurations for fidelity and extensiveness. As shown in the tables, the consistency score for configurations ranged from 0.968 to 0.697. In this study, we follow previous studies which recommend a consistency threshold at 0.75 or above (Fiss, 2011; Ragin, 2000).

In the following configuration tables, we report the parsimonious solution produced by the fs-QCA analysis and denote the presence and absence of cultural adaptation mechanisms within each configuration following Fiss (2011). The contributing conditions are denoted by “●”

Table 3
Truth table for extensiveness.

| g | d | h | r | cd | no. of cases | consistency |
|---|---|---|---|----|--------------|-------------|
| 1 | 1 | 0 | 1 | 1 | 1 | 0.964 |
| 0 | 0 | 1 | 0 | 1 | 1 | 0.958 |
| 1 | 0 | 0 | 0 | 1 | 1 | 0.954 |
| 1 | 1 | 1 | 1 | 1 | 14 | 0.947 |
| 0 | 1 | 1 | 0 | 0 | 1 | 0.946 |
| 1 | 0 | 0 | 1 | 0 | 1 | 0.943 |
| 1 | 1 | 1 | 1 | 1 | 0 | 0.936 |
| 0 | 0 | 0 | 1 | 0 | 3 | 0.929 |
| 0 | 0 | 1 | 1 | 0 | 2 | 0.928 |
| 0 | 0 | 1 | 1 | 1 | 2 | 0.927 |
| 0 | 1 | 0 | 0 | 1 | 2 | 0.927 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0.920 |
| 0 | 0 | 0 | 0 | 1 | 5 | 0.917 |
| 1 | 1 | 0 | 0 | 0 | 5 | 0.907 |
| 0 | 0 | 0 | 0 | 0 | 13 | 0.789 |

indicating the presence of high level of the condition, “○” indicating the presence of low level of condition, and blank indicating that the presence or the absence of the condition does not matter. The results of QCA may be asymmetric, where an “explanation for the non-occurrence of the outcome cannot automatically be derived from the explanation for the occurrence of the outcome” (Schneider & Wagemann, 2012, p. 6). Therefore, the conditions for non-outcome are not necessarily the opposite of conditions for the outcome.

3.5.4. Conservative analysis of truth table for fidelity

According to the parsimonious solutions presented in Table 4, several configurations lead to either adaptations or no adaptations of TQM practices. Four configurations lead to a high fidelity of TQM practices (i.e. no adaptation). Moreover, three configurations (2a–2c) lead to low fidelity (i.e. adaptation) of TQM practices.

Table 4
Configurations for high and low fidelity.

| | Solution | | | | | | |
|-------------------------------------|---------------|------|------|------|--------------|------|------|
| | High fidelity | | | | Low fidelity | | |
| | 1a | 1b | 1c | 1d | 2a | 2b | 2c |
| Organizational culture | | | | | | | |
| Group | ● | | | | | ○ | |
| Developmental | | ● | | | | | ○ |
| Hierarchical | | | ● | | | | ○ |
| Rational | | | | ● | | | |
| National culture | | | | | | | |
| National culture distance | | | | | | | |
| Consistency | 0.82 | 0.81 | 0.92 | 0.97 | 0.83 | 0.84 | 0.83 |
| Raw Coverage | 0.88 | 0.89 | 0.78 | 0.72 | 0.76 | 0.73 | 0.54 |
| Overall Solution Consistency | 0.86 | | | | 0.76 | | |
| Overall Solution Coverage | 0.68 | | | | 0.90 | | |

“●” indicates the presence of high levels of the condition; small “○” indicates the presence of low levels of the condition; blank indicates the presence or absence of the condition doesn’t matter.

Table 5
Configurations for high and low extensiveness.

| | Solution | | | | | | |
|-------------------------------------|--------------------|------|------|------|-------------------|------|------|
| | High extensiveness | | | | Low extensiveness | | |
| | 3a | 3b | 3c | 3d | 4a | 4b | 4c |
| Organizational culture | | | | | | | |
| Group | ● | | | | ○ | | |
| Developmental | | ● | | | | | |
| Hierarchical | | | | | | ○ | |
| Rational | | | | ● | | | |
| National culture | | | | | | | |
| National culture distance | | | ○ | | | | ● |
| Consistency | 0.78 | 0.76 | 0.78 | 0.94 | 0.81 | 0.84 | 0.82 |
| Raw Coverage | 0.84 | 0.84 | 0.48 | 0.71 | 0.63 | 0.55 | 0.79 |
| Overall Solution Consistency | 0.77 | | | | 0.82 | | |
| Overall Solution Coverage | 0.89 | | | | 0.83 | | |

“●” indicates the presence of the high levels of the condition; “○” indicates the presence of low levels of the condition. blank indicates the presence or absence of the condition doesn’t matter.

Configuration 1a in Table 4 shows that subsidiaries of firms that are characterized by a strong group, developmental, hierarchical, or rational organizational culture all provide an environment that promotes the transfer of TQM practices with high fidelity. What is noteworthy is the absence of configurations that have the presence of high or low national cultural distance as a condition, suggesting that national cultural distance does not lead to a high or low level of fidelity in TQM practice transfer, and all organizational cultures separately are sufficient for high fidelity.

On the other hand, configurations that lead subsidiaries to adapt TQM practices (low fidelity) are presented in 2a–2c in Table 4. In configuration 2a, for instance, low group organizational culture leads to low fidelity of TQM practice transfer. What is noteworthy is the absence of configurations with high values for any of the organizational cultures, suggesting that a low level of fidelity in adaptation is unlikely when features of any of the organizational cultures are high, regardless of the national cultural distance.

3.5.5. Conservative analysis of truth table for extensiveness

According to the conservative solutions presented in Table 5, several configurations lead to high extensiveness of transferred TQM practices. Four configurations (3a–3d) lead to high extensiveness of TQM practices; while three configurations (4a–4c) provide an environment leading to low extensiveness of TQM. For example, subsidiaries of firms that are characterized by high group organizational culture (3a) offer an environment that supports extensive implementation of TQM.

It is noteworthy that organizations showing high values of national cultural distance are absent in cases with high extensiveness. However, high extensiveness of the transferred practice is possible where there is either low national cultural distance or else there is a high developmental, group, or rational organizational culture.

As for configurations that lead to a low level of TQM practices, a lack of group organizational culture (4a), for example, tends to lead to less extensive TQM. However, when there is a high national cultural distance between the MNE headquarters and subsidiaries, the extensiveness of TQM practices tends to be low. Here, it is noteworthy that high national cultural distance leads to low extensiveness of the management practice, while low national cultural distance leads to high extensiveness. This suggests that national cultural distance can be an important factor that determines the extensiveness of the transferred practice. Nevertheless, the absence of high levels of any organizational culture in subsidiaries that show low extensiveness of the transferred

management innovation suggests that low extensiveness of TQM is unlikely to occur when the strength of any of the organizational cultures is high.

3.5.6. Robustness tests

As national culture is complex and difficult to measure using a single measure (Groseschl & Doherty, 2000), we also tested the two dimensions of the WVS variable (i.e. Traditional versus Secular-Rational and Survival versus Self-Expression) separately as robustness tests. The results with the TSR measures (shown in Appendix 2) are similar to those with the overall WVS measures, confirming that low national culture distance is a sufficient condition for transfer. However, the results using the SSE measures (shown in Appendix 3) do not show that low national culture distance is a sufficient condition. We also repeated the analysis using the Hofstede (2005) measures of cultural distance. Appendices 4 and 5 show the same configurations as those identified using the WVS measures except for national culture distance, which does not appear in any of the configurations.

4. Discussion

The results reveal the role of national cultural distance and organizational culture in determining the adaptation of management innovations in MNEs and show that national culture and organizational culture need to be viewed jointly, rather than separately as in previous studies (e.g. Ansari et al., 2010; Canato et al., 2013; Kostova & Roth, 2002; Kostova, 1999). This reflects calls by scholars (e.g. Fiss, 2011; Woodside, 2013) who urge the use of a configurational approach in investigating the relationship between predictors and outcomes of interest.

Furthermore, they show that organizational culture can offset the effects of national cultural distance. Our findings are consistent with previous research by Recht and Wilderom (1998) who argued that organizational culture tends to play a more substantial role in the successful transfer of Kaizen than national culture differences. This is also echoed by Naor et al. (2010) who found in their studies of transfer of manufacturing practices that organizational culture has more of an effect on manufacturing performance than national culture. Hence, we propose:

Proposition 1. *In the adaptation of a management innovation, where the national cultural distance between MNE headquarters and a subsidiary is high, it can be offset by a supportive organizational culture.*

The finding that the optimal configurations for fidelity and extensiveness of the transferred practices are different confirms the importance of distinguishing between the two dimensions in studies of adoption and adaptation of management practices. High and low national cultural distance only appear as sufficient conditions in the configurations for extensiveness, suggesting that national cultural distance between the MNE headquarters and subsidiary mainly affects the extensiveness of the transferred management practices but not the fidelity of the transferred practice. This finding can provide an explanation for why some researchers (e.g. Cheung, Myers, & Mentzer, 2010; Leyer, Kronsbein, Willis, Chakraborty, & Moormann, 2016) did not find a correlation between cultural differences and adaptation of transferred practices as these researchers mainly focused on the fidelity of the management innovation but did not consider the extensiveness of transfer. This finding leads us to propose:

Proposition 2. *Low national cultural distance is sufficient for high extensiveness and high national cultural distance is sufficient for low extensiveness of a management innovation transferred from the MNE headquarters to a subsidiary but they are not sufficient for either high or low fidelity of the transferred management innovation.*

However, the findings also show that MNEs can transfer management innovations with both high fidelity and high extensiveness when

they have high levels of developmental, group, or rational organizational cultures. This suggests that as far as TQM implementation is concerned, these three organizational cultures can be considered as substitutes (Misangyi & Acharya, 2014). Therefore, we propose:

Proposition 3. *A high level of group, developmental or rational organizational culture is sufficient for both high fidelity and high extensiveness of a management innovation transferred from the headquarters of an MNE to a subsidiary.*

On the other hand, while a high level of hierarchical culture can result in high fidelity of the transferred practice, the absence of hierarchical culture as a condition in the optimal configurations for extensiveness indicates that a hierarchical culture (high or low) on its own is not sufficient to bring about high extensiveness of the practice. In other words, in organizations with a highly hierarchical culture, the management practice can be enforced with high fidelity due to the characteristics of this cultural type, which emphasizes rules and regulations, and standardization to achieve control and stability (Prajogo & McDermott, 2005). However, practices will not be extensively implemented due to the incompatibility of hierarchical culture, which discourages employee involvement in decision-making, with TQM practices, which emphasize participatory management (Al-Khalifa & Aspinwall, 2000; Dedoussis, 2004). This suggests that while hierarchical cultures might be good for controlling how the practices are implemented, they may not be so good for encouraging their widespread diffusion within the organization. These findings allow us to propose:

Proposition 4. *A high level of hierarchical organizational culture is sufficient for high fidelity of a management innovation transferred from the MNE headquarters to a subsidiary but is not sufficient to bring about high extensiveness of the management innovation within the subsidiary.*

5. Conclusion

In conclusion, we find that the degree of adaptation of management innovations transferred within MNEs from the headquarters to subsidiaries depends on both the organizational culture and national cultural distance between the MNE headquarters and subsidiary, although a supportive organizational culture can offset the effects of national cultural distance. Moreover, we find that the conditions for fidelity and extensiveness of transfer of management innovations may differ, suggesting that it is important to distinguish the two dimensions of fidelity and extensiveness of the practice in studies of the transfer of management innovations within MNEs.

5.1. Theoretical implications

Theoretically, our findings contribute to research on adaptation of management innovations by examining the cultural factors that impact the transfer of management practices within MNEs. More specifically, our study sheds new light on the transfer of management practices by taking into account the joint effects of cultural factors at both the organizational and national levels. Our findings, based on the analysis of several cultural configurations, indicate that the interaction between organizational culture and national culture can promote or hinder the implementation of transferred management practices in cross-national

contexts and that organizational culture can offset national cultural distance between the headquarters and subsidiary. For instance, our analysis shows that organizational culture appears to influence both the fidelity and the extensiveness of the practice within the subsidiary, whereas national culture distance only influences the extensiveness of the practice.

5.2. Practical implications

Practically, this study identified several configurations of organizational cultures and national cultural distance that allow the transfer of practices without the need for modification as well as configurations that potentially require adaptation of practices. These configurations can be beneficial to MNEs interested in transferring their practices abroad as it can help them identify subsidiary locations where adopting standard practices may be most problematic. For instance, our study suggests that MNEs that lack a strong group, developmental or hierarchical culture may experience low fidelity of the practice in the subsidiary while subsidiaries in countries that are culturally distant from the headquarters may show low extensiveness of the practice. National cultural distance is not easily controllable by the MNE, except for the initial subsidiary location choice, but our study did find that the effects of the organizational culture on fidelity of the practice can outweigh the effects of national cultural distance so it does suggest that MNEs might be able to facilitate fidelity of transferred practices by strengthening certain features of their group, developmental or rational organizational cultures.

5.3. Limitations and further research

Clearly, there are limitations in our study and our findings should be seen as an exploratory first step towards further research on the effects of national cultural distance and organizational cultures on the transfer of management practices in MNEs. Like any study, our study is limited by the data available and our findings do not preclude the possible effects of other factors that we were unable to examine. One limitation of our study is that owing to difficulties in data access, we only examined TQM implementations in the Saudi Arabian subsidiaries of MNEs and we assumed that TQM was implemented in the headquarters according to best practices. Future research might attempt to collect data in the headquarters and subsidiaries in different countries. Owing to time limitations, we were also only able to collect data from each company at one point in time, so we were unable to examine the potential changes in practices and organizational culture that happen over time. Future research might examine this question where such data is available. The robustness tests we carried out using subdimensions of the WVS measures and the Hofstede measures of culture also showed that the results may vary depending on the different national culture dimensions and measures that are used, highlighting the need in future studies to pay more attention to the subdimensions of national culture and the measures used.

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Appendix 1. Survey

An investigation of Total Quality Management (TQM) implementation in foreign companies working in Saudi Arabia**Part I. Please fill in the following general information about you and your firm.**

1. Which of the followings best describe your current position or job title in the company:
Data entry level TQM officer Manager Other (please specify)
2. How many years have you been working in this company?
Less than 2 years 2-5 years More than 5 years
3. Have you been involved in TQM activities or practices?
Yes No
4. Are you a representative of the company's Headquarter (HQ)?
Yes No
5. Which of the classification best describe your firm's industry? *Please type (X) in the appropriate box.*

| | | |
|---|---|---|
| Oil and Gas <input type="checkbox"/> | Banking/Financial services <input type="checkbox"/> | Food and Beverages <input type="checkbox"/> |
| Petrochemicals <input type="checkbox"/> | Medical/ Pharmaceutical <input type="checkbox"/> | Fashion <input type="checkbox"/> |
| Construction <input type="checkbox"/> | Telecoms/Communication <input type="checkbox"/> | |
| Insurance <input type="checkbox"/> | IT/Computers/software <input type="checkbox"/> | Others, please specify: |
6. What is the location of your firm?
Riyadh Jeddah Eastern Region
7. How long has your firm been operating in Saudi?
Less than 2 years 2-5 years 6-10 years More than 10 years
8. What is the percentage of total expatriates, employed by your firm in Saudi Arabia?
Less than 5% 5-10 % 11-20 % More than 20%
9. According to you, what is the percentage of expatriates in the top management? *“Top management refers to highest level of organizational management who have the day-to-day responsibilities of managing your company”*
Less than 5% 5-10 % 11-20 % More than 20%
10. The type and duration of quality management activities adopted by your firm is:

| | | | | |
|-----------|--------------------------------------|--|------------------------------------|--|
| TQM | Not applied <input type="checkbox"/> | Less than 2 years <input type="checkbox"/> | 2-7 years <input type="checkbox"/> | More than 7 years <input type="checkbox"/> |
| Six Sigma | Not applied <input type="checkbox"/> | Less than 2 years <input type="checkbox"/> | 2-7 years <input type="checkbox"/> | More than 7 years <input type="checkbox"/> |
| ISO 9000 | Not applied <input type="checkbox"/> | Less than 2 years <input type="checkbox"/> | 2-7 years <input type="checkbox"/> | More than 7 years <input type="checkbox"/> |

11. How long has it been since your HQ started to implement TQM?

.....

12. What is your firm’s country of origin? *Please type the name.*

.....

13. Does your company operate in any other country besides Saudi Arabia? *If yes, Please list*

.....

14. What is the total number of employees?

- i. Internationally:
- ii. In Saudi Arabia:

15. Do you avail the services of consultants for quality purposes?

Yes. No.

Part II. Organizational Culture

This section is to identify the organizational cultural type at your organization. Please indicate the appropriate response (from Strongly disagree, Disagree, Neutral, Agree, Strongly agree) by typing "X" in the box for each statement depending on how strongly you agree the statement describes your ORGANIZATION.

| | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 16. Employees rate my organization as a very personal place, like an extended family where people seem to share a lot of themselves. | <input type="checkbox"/> |
| 17. Employees agree that the glue that holds my organization together is based on loyalty and tradition as the feeling of commitment runs high. | <input type="checkbox"/> |
| 18. My organization promotes morale in pursuit of the company’s benefit. | <input type="checkbox"/> |
| 19. My organization offers a very dynamic and entrepreneurial place which allows people to stick their necks out and take risks. | <input type="checkbox"/> |
| 20. My organization places emphasis on being first with products and services where commitment to innovation and development is rated high. | <input type="checkbox"/> |
| 21. My organization places emphasis on growth through developing new ideas, generating new products or services. | <input type="checkbox"/> |

| | | | | | | |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 22. | My organization is a very formal and structured place where people pay attention to procedures to get things done. | <input type="checkbox"/> |
| 23. | It is important to follow rules and policies in my organization. | <input type="checkbox"/> |
| 24. | My organization emphasizes efficiency, permanence and stability. | <input type="checkbox"/> |
| 25. | My organization is a very production oriented place where people are concerned with getting the job done. | <input type="checkbox"/> |
| 26. | My organization gives emphasis to tasks and goal accomplishment, the employees share production and achievement orientation. | <input type="checkbox"/> |
| 27. | Accomplishing goals is important in my organization whereby emphasis is laid on outcomes and achievement. | <input type="checkbox"/> |

Part III: TQM Implementation Accuracy

This section is to identify the accuracy of TQM implementation at your organization. In your opinion, please indicate the appropriate response (from: Strongly disagree, Disagree, Neutral, Agree, Strongly agree) by typing "X" in the box for each statement depending on how similar the statement is to your ORGANIZATION.

Leadership:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 28. | Employees know and are well aware of the organization's mission and what it is trying to accomplish. | <input type="checkbox"/> |
| 29. | The leadership team uses the organization's values to guide the organization and its employees. | <input type="checkbox"/> |
| 30. | The leadership team works to create a work environment that encourages employees to perform their duties. | <input type="checkbox"/> |
| 31. | The leadership team disseminates information about the organization. | <input type="checkbox"/> |
| 32. | The leadership team encourages learning that will facilitate the advancement in careers of all employees. | <input type="checkbox"/> |
| 33. | The leadership team informs and reaffirms important aspects of work to the employees. | <input type="checkbox"/> |
| 34. | Employee opinion and feedback is an important aspect for the leadership team. | <input type="checkbox"/> |

Strategic Planning:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 35. | Employees are encouraged to share their ideas for future planning. | <input type="checkbox"/> |
| 36. | Employees are aware of the organizational plans that will affect them and their work. | <input type="checkbox"/> |
| 37. | Employees are made aware of the reporting procedures to inform the progress of their work group's part of the plan. | <input type="checkbox"/> |

Customer & Market Focus:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 38. | The employees recognize their most important customers. | <input type="checkbox"/> |
| 39. | Employees interact with their customers. | <input type="checkbox"/> |
| 40. | The customers communicate their needs and wants to the employees. | <input type="checkbox"/> |
| 41. | Employees seek feedback from the customers and inquire if the customers are satisfied or dissatisfied with their work. | <input type="checkbox"/> |
| 42. | Employees are permitted to make decisions to resolve issues faced by their customers. | <input type="checkbox"/> |

Measurement, Analysis and Knowledge Management:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 43. | Employees know how to measure the quality of their work. | <input type="checkbox"/> |
| 44. | Employees are familiar with ways to analyse and review the quality of their work and identify the changes needed. | <input type="checkbox"/> |
| 45. | Employees make decisions about their work based on the measurement and review analysis. | <input type="checkbox"/> |
| 46. | Employees know how the measures they use in their work fit into my organization's overall measures of improvement. | <input type="checkbox"/> |
| 47. | All important information needed to do their work is available to the employees. | <input type="checkbox"/> |
| 48. | All information needed about how my organization is performing is available to the employees. | <input type="checkbox"/> |

Human Resource Focus:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|--|-------------------|----------|---------|-------|----------------|
|--|--|-------------------|----------|---------|-------|----------------|

| | | | | | | |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 49. | Employees have the liberty to make changes to improve their work. | <input type="checkbox"/> |
| 50. | Employees work together as a team. | <input type="checkbox"/> |
| 51. | Employees are encouraged and empowered to develop their job skills to advance their careers. | <input type="checkbox"/> |
| 52. | Employees are acknowledged for their work. | <input type="checkbox"/> |
| 53. | Employees have a safe workplace. | <input type="checkbox"/> |
| 54. | Employees are valued by the managers and the organization. | <input type="checkbox"/> |

Process Management:

| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 55. | Employees are provided everything they need to do their jobs. | <input type="checkbox"/> |
| 56. | Employees gather information (data) about the quality of their work. | <input type="checkbox"/> |
| 57. | The organization has good systems in place for completing work. | <input type="checkbox"/> |
| 58. | Employees can exercise control over their personal work process. | <input type="checkbox"/> |

Part IV: TQM Implementation Extensiveness

This section is to identify the intensity of TQM implementation at your organization. In your opinion, please answer the following questions by typing "X" sign in the box.

TQM integration:

| | | 0% | 25% | 50% | 75% | %100 |
|-----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 59. | The percentage of employees who understand TQM philosophy, principles and methods is | <input type="checkbox"/> |
| 60. | The level of TQM philosophy, principles and methods integrated across the organization’s daily work is | <input type="checkbox"/> |
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
| 61. | The understanding of TQM philosophy, principles and methods among your employees is the same at the HQ and the subsidiaries. | <input type="checkbox"/> |

TQM Training for employees:

62. Provide your best estimate for the following questions by typing the number in the appropriate space:
- a. Total number of employees in the organization:
 - i. Senior Managerial Level: (.....)
 - ii. Full time Equivalent Personnel: (.....)
 - b. Number participating in formal quality improvement training:
 - i. Senior Managerial Level: (.....)
 - ii. Full time Equivalent Personnel: (.....)
 - c. Number who have participated in quality improvement teams:
 - i. Senior Managerial Level: (.....)
 - ii. Full time Equivalent Personnel: (.....)

Use of TQM Tools by Departments/Teams:

63. Does your organization, its departments and teams use the following TQM tools:

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| i. Pareto diagrams | <input type="checkbox"/> |
| ii. Cause and effect ‘fishbone’ diagrams | <input type="checkbox"/> |
| iii. Control charts | <input type="checkbox"/> |
| iv. Run charts | <input type="checkbox"/> |
| v. Histograms | <input type="checkbox"/> |
| vi. Scatter diagrams | <input type="checkbox"/> |
| vii. Process flow charts | <input type="checkbox"/> |
| viii. Affinity diagrams | <input type="checkbox"/> |
| ix. Nominal group methods | <input type="checkbox"/> |
| ixx. Brainstorming | <input type="checkbox"/> |

Thank you for your cooperation and participating in this questionnaire...

Appendix 2. Configurations for extensiveness using TSR dimension of cultural distance

| | Solution | | | | | |
|-------------------------------------|--------------------|------|------|-------------------|------|------|
| | High extensiveness | | | Low extensiveness | | |
| | 1a | 1b | 1c | 2a | 2b | 2c |
| Organizational culture | | | | ○ | | |
| Group | ● | | | | | |
| Developmental | | | | | | |
| Hierarchical | | | | | ○ | |
| Rational | | ● | | | | |
| National culture | | | | | | |
| National culture distance using TSR | | | ○ | | | ● |
| Consistency | 0.84 | 0.84 | 0.81 | 0.81 | 0.84 | 0.81 |
| Raw Coverage | 0.68 | 0.61 | 0.74 | 0.63 | 0.55 | 0.57 |

| | | |
|------------------------------|------|------|
| Overall Solution Consistency | 0.89 | 0.85 |
| Overall Solution Coverage | 0.76 | 0.79 |

“●” indicates the presence of high levels of the condition; small “○” indicates the presence of low levels of the condition; blank indicates the presence or absence of the condition doesn’t matter.

Appendix 3. Configurations for extensiveness using SEE dimension of cultural distance

| | Solution | | | | | |
|-------------------------------------|--------------------|------|------|-------------------|------|------|
| | High extensiveness | | | Low extensiveness | | |
| | 1a | 1b | 1c | 2a | 2b | 2c |
| Organizational culture | | | | | | |
| Group | | | | ○ | | |
| Developmental | ● | | | | ○ | |
| Hierarchical | | ● | | | | ○ |
| Rational | | | ● | | | |
| National culture | | | | | | |
| National culture distance using SEE | | | | | | |
| Consistency | 0.84 | 0.88 | 0.84 | 0.81 | 0.80 | 0.84 |
| Raw Coverage | 0.66 | 0.64 | 0.61 | 0.62 | 0.60 | 0.55 |
| Overall Solution Consistency | 0.87 | | | 0.76 | | |
| Overall Solution Coverage | 0.59 | | | 0.76 | | |

“●” indicates the presence of high levels of the condition; small “○” indicates the presence of low levels of the condition; blank indicates the presence or absence of the condition doesn’t matter.

Appendix 4. Configurations for fidelity using Hofstede measure of cultural distance

| | Solution | | | | | | |
|-------------------------------------|---------------|------|------|------|--------------|------|------|
| | High fidelity | | | | Low fidelity | | |
| | 1a | 1b | 1c | 1d | 2a | 2b | 2c |
| Organizational culture | | | | | | | |
| Group | ● | | | | ○ | | |
| Developmental | | ● | | | | ○ | |
| Hierarchical | | | ● | | | | ○ |
| Rational | | | | ● | | | |
| National culture | | | | | | | |
| National culture distance | | | | | | | |
| Consistency | 0.83 | 0.81 | 0.82 | 0.81 | 0.83 | 0.81 | 0.83 |
| Raw Coverage | 0.85 | 0.84 | 0.85 | 0.84 | 0.79 | 0.78 | 0.79 |
| Overall Solution Consistency | 0.85 | | | | 0.79 | | |
| Overall Solution Coverage | 0.71 | | | | 0.87 | | |

“●” indicates the presence of high levels of the condition; small “○” indicates the presence of low levels of the condition; blank indicates the presence or absence of the condition doesn’t matter.

Appendix 5. Configurations for extensiveness using Hofstede measure of cultural distance

| | Solution | | | | | | |
|-------------------------------------|--------------------|------|------|------|-------------------|------|------|
| | High extensiveness | | | | Low extensiveness | | |
| | 1a | 1b | 1c | 1d | 2a | 2b | 2c |
| Organizational culture | | | | | | | |
| Group | ● | | | | ○ | | |
| Developmental | | ● | | | | ○ | |
| Hierarchical | | | ● | | | | ○ |
| Rational | | | | ● | | | |
| National culture | | | | | | | |
| National culture distance | | | | | | | |
| Consistency | 0.84 | 0.84 | 0.88 | 0.91 | 0.81 | 0.84 | 0.83 |
| Raw Coverage | 0.76 | 0.66 | 0.64 | 0.61 | 0.62 | 0.60 | 0.54 |
| Overall Solution Consistency | 0.87 | | | | 0.76 | | |
| Overall Solution Coverage | 0.58 | | | | 0.90 | | |

“●” indicates the presence of high levels of the condition; small “○” indicates the presence of low levels of the condition; blank indicates the presence or absence of the condition doesn’t matter.

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