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Citation: Abdelrahman, Mahmoud, Kurt, Yusuf and Papamichail, K. Nadia (2019) The Effect of Organisational Culture on KMSs Usage, Knowledge Sharing & Organisational Effectiveness. In: Academy of Management Annual Meeting 2019 (USA -Boston), August 2019, Academy of Management - USA, Boston 2019.

URL: <https://journals.aom.org/doi/abs/10.5465/AMBPP.201...>
<<https://journals.aom.org/doi/abs/10.5465/AMBPP.2019.15818abstract>>

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The Effect of Organisational Culture on KMSs Usage, Knowledge Sharing & Organisational Effectiveness

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To cite this paper please use the following details:

Abdelrahman, M., Kurt, Y., & Papamichail, K. N. (2019, August). The Effect of Organisational Culture on KMSs Usage, Knowledge Sharing & Organisational Effectiveness. In *Academy of Management Proceedings* (Vol. 2019, No. 1, p. 15818). Briarcliff Manor, NY 10510: Academy of Management.

Published Online: 1 Aug 2019 - <https://doi.org/10.5465/AMBPP.2019.15818>

ABSTRACT

This paper examines organisational culture as an antecedent of knowledge management systems (KMSs) usage and knowledge sharing, which in turn affects organisational effectiveness in the context of multinational corporations (MNCs). It demonstrates how organisational culture affects perceived usefulness and perceived ease of use of KMSs that in turn influences knowledge sharing, which is hypothesised as the driver of organisational effectiveness in our conceptual model. The data were collected from a sample of 221 respondents via online questionnaire and analysed through employing PLS-SEM. The empirical results show that organisational culture positively affects the participants' perceptions regarding the ease of use and particularly the usefulness of using KMSs. Furthermore, KMSs usage fosters knowledge sharing, and in turn organisational effectiveness. The findings extend existing knowledge through introducing organisational culture as an important determinant of KMSs usage, knowledge sharing and hence organisational effectiveness.

Keywords:

Organisational Culture, Knowledge Management Systems, Knowledge Sharing, Organisational Effectiveness

1. INTRODUCTION

In the current global market, knowledge are considered as a source of competitive advantage and have become a crucial factor for MNCs. Effective knowledge sharing (KS) between different units overseas has been a challenge for MNCs, as there are so many unprecedented challenges facing managers outside their organisations along with environmental “forces for change”, such as globalisation, emerging technologies, best business practices, government regulations, politics, competitive global financial markets, limited availability of knowledge workers, and higher worker turnover rates (Cuffe, 2007; Haas and Cummings, 2015; Tippmann *et al.*, 2017, Park *et al.*, 2018, Turulja and Bajgorić, 2018). Furthermore, MNCs are searching for appropriate ways to manage and use their knowledge effectively and efficiently (Ordóñez de Pablos, 2006). In this highly competitive global environment, MNCs are now recognising an urgent need to institutionalise KS as a means of obtaining the best value from all available knowledge assets (Goh, 2007).

Kostova *et al.* (2008, p.997) point out that “MNCs have complex internal environments, with spatial, cultural, and organisational distance, language barriers, inter-unit power struggles and possible inconsistencies and conflict among the interests, values, practices, and routines used in the various parts of the organisation”. Therefore, KS in the complex environment between MNCs units requires particular coordination mechanisms and tools to facilitate KS (Ghoshal and Bartlett, 1995; Gupta and Govindarajan, 2000; and Sia *et al.*, 2010). Accordingly, the performance of MNCs depends significantly on their ability to coordinate geographically dispersed knowledge resources. One of the most important reasons for the failure of KMSs in organisation is the failure to consider how the organisational and interpersonal contexts influence KS (Voelpel *et al.*, 2005; Wang and Noe, 2010).

In this vein, Forte *et al.*, (2016) and Pool *et al.*, (2014) highlight the importance of OC and its effect on KS and organisational performance, as the OC and its traits (involvement, consistency, adaptability and mission) are significant predictors of employees' attitudes and intentions with regard to knowledge sharing. Salehzadeh *et al.*, (2017) also emphasized the development of an effective OC, and how it can facilitate the process of KS in organisations, which in results can lead to the increased organisational performance.

Accordingly, the main aim of this study is to examine the effect of organisational culture on knowledge sharing by using KMSs to support Organisational Effectiveness (OE) in MNCs. We begin this paper by discussing Organisational Culture and its implication on Knowledge Management Systems and Knowledge Sharing in MNCs. Then, we outline the methodology and data collection of the study followed by the analysis. The final sections are the discussion and conclusions.

2. THEORETICAL AND LITERATURE BACKGROUND

2.1 Knowledge-Based View (KBV)

In the current economy “where the only certainty is uncertainty” the one sure source of lasting competitive advantage is knowledge (Nonaka, 1995). The KBV of the organisation is at the centre of the resource based view (RBV) (Conner and Prahalad, 1996; Grant, 1996; Zheng *et al.*, 2010), indicating that the most important source of an organisation's sustainable competitive advantage is its ability to create and utilise knowledge (Grant, 1996; Kogut and Zander, 1992; Nonaka, 1995; Prahalad and Hamel, 1990). The KBV points out the importance of understanding the organisational processes to access and utilise knowledge owned by its employees (Grant, 1996). It

has developed the view of the firm as a bundle of resources from the RBV, focusing on the most strategically valuable and perhaps the only source of competitive advantage.

Some researchers use RBV and KBV interchangeably. However, they are different because the KBV is considered as a development of the RBV, and it does not apply the RBV logic (Barney, 2001). The KBV focuses on knowledge as the most and possibly the only strategically important resource, but the RBV perceives a firm as a bundle of unique resources and capabilities, one of which is knowledge. Moreover, the KBV is seen in many studies as a development of several research streams, including the RBV and organisational learning theories (Grant, 1996; Eisenhardt and Santos, 2002; Foss *et al.*, 2010; Michailova and Minbaeva, 2012; Minbaeva *et al.*, 2003). Grant (1996), stresses that effective coordination among organisational members is the challenge of the KBV, as their knowledge is specialised and needs to be integrated. Grant and Baden-Fuller (1995) define the KBV as “an emerging theory of the existence, organisation and competitive advantage of the firm, which is based upon the role of firms in creating, storing and applying knowledge”. This knowledge will have competitive effects when they are difficult to be replicated by competitors (Minbaeva *et al.*, 2003). It is embedded in and present throughout organisational culture, policies, practices, systems and employees (Michailova and Minbaeva, 2012).

The KBV treats KS through the organisational capacity to integrate knowledge within existing structures of the organisation and share the integrated knowledge between individuals (Michailova and Minbaeva, 2012). It emphasises the importance of considering knowledge characteristics. For example, Szulanski (1996) explores the knowledge characteristics that influence the degree of KS by identifying motivational factors and knowledge-related factors that create internal “stickiness” of knowledge in organisations and impede their internal sharing. KS does not occur automatically; it may require substantial organisational efforts aimed at encouraging close relationships between organisations’ members (Michailova and Minbaeva, 2012).

Accordingly, organisations should invest in systems which are symbolised by continuous social interactions, communication of ideas, sharing of knowledge and other acts associated with the social character of learning (Minbaeva *et al.*, 2003). The KBV considers the organisation as a set of knowledge-assets and the role of the organisation is creating, organising and deploying these assets to create value from them (Grant, 1996). Also, information technology (IT) is important for organisations in making the best use of these resources. Alavi and Leidner (2001) point out that IT can play a significant role in the KBV of the firm when information systems are used to synthesise and enhance inter- and intra- KM. Thus, organisational culture and KMSs can be perceived as the organisation's plan of deploying and sharing knowledge assets. Thus, to better understand knowledge as a competitive resource and link it with KS, this study aims to extend the KBV in the context of KS.

2.2 Technology Acceptance Model (TAM)

Since the initiation of information systems (IS) there has been on-going research to explore and examine the factors that persuade individuals to accept and use technological systems. This issue is important for MNCs because they attempt to use KMSs to connect all employees and branches together all over the world. Understanding the influence of these factors will enable managers, system designers and developers to understand and consider users' perceptions towards a given technological system.

To understand the importance of users' acceptance of technology in organisations, numerous IS researchers have explored and developed models. The most widely used model Technology Acceptance Model (TAM), developed by Davis (1989, 1993). TAM explains individuals' behaviour based on perceived usefulness (PU) and perceived ease of use (PEU) towards a particular

technological system; this will determine the actual use of the technology. In this model both constructs PU and PEU are significantly correlated with intended use and actual system usage (Davis, 1986, 1989).

Davis (1989) defines PEU as “the degree to which a person believes that using a particular system would be free of effort” and PU as “the degree to which a person believes that using a particular system would enhance his or her job performance”. Davis (1993) and Venkatesh *et al.* (2003) explain through the technology acceptance model the impact of individuals’ perceptions regarding their perceived ease of use towards a particular technological system that determines the actual use of this technology. The TAM also demonstrated that it is individuals’ perceptions based on their perceived usefulness towards a particular technological system that determine the actual use of this technology (Davis, 1989, 1993; Venkatesh *et al.*, 2003).

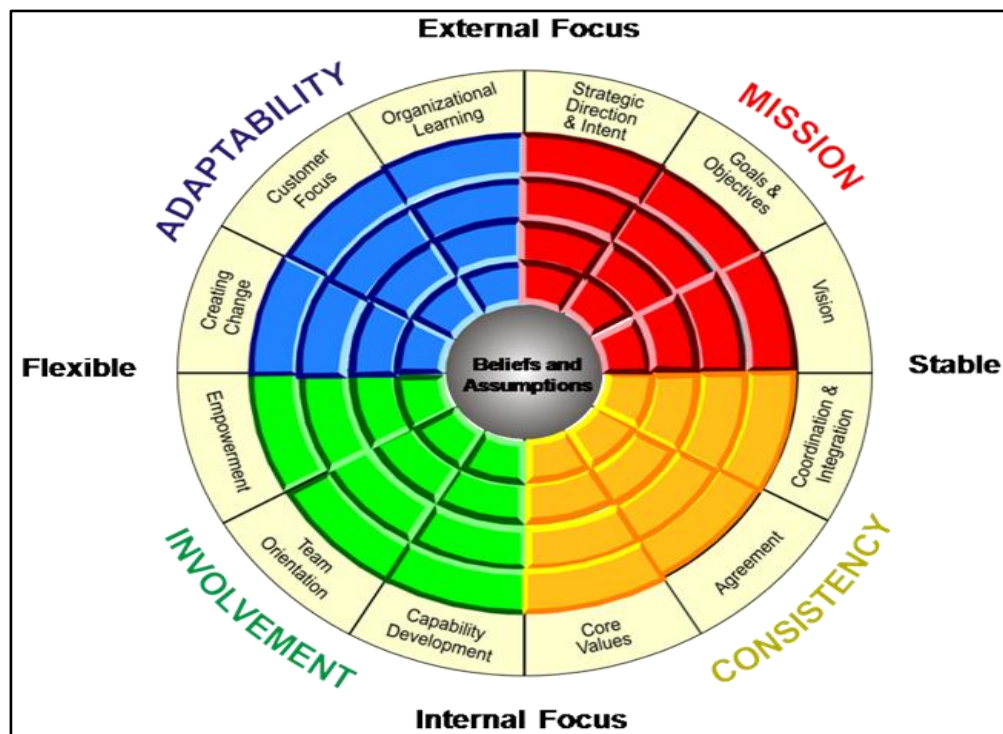
2.3 Organisational Culture

Since the 1980s, OC has become a business phenomenon which helps organisations to adapt to the external environment and support OE (Daft, 2009; Denison 1990; Zheng *et al.*, 2010). Schein (2012) states that OC refers to shared basic assumptions, norms and values in the organisation. Moreover, it constitutes an environment where organisational activities can take place (Zheng *et al.*, 2010). Schein (1985, P.12) defines OC as “A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems”.

OC is a substantial source of competitive advantage and several empirical researchers have shown that it is a significant factor in OE (Barney, 1991; Gordon and DiTomaso, 1992; Wilkins and Ouchi, 1983; Zheng *et al.*, 2010). In particular, Denison and his colleagues identified and validated four

dimensions of OC that are conducive to OE: adaptability, consistency, involvement and mission (Denison, 1990; Denison and Mishra, 1995; Fey and Denison, 2003). The Denison model measures four critical traits of culture and each of these traits is further broken down into three indices; see (Figure 1).

FIGURE 1
Denison Organisational Culture Model (Source: Fey and Denison, 2003)



Adaptability refers to “the degree to which an organisation has the ability to alter behaviour, structures, and systems in order to survive in the wake of environmental changes”. The indices of the adaptability trait are creating change; customer focus; and organisational learning. *Consistency* refers to “the extent to which beliefs, values, and expectations are held consistently by members”, and its indices are: coordination and integration; core values; and agreement. *Involvement* refers to

“the level of participation by an organisation’s members in decision-making”; its indices are: empowerment; teamwork; and capability development. *Mission* refers to “the existence of a shared definition of the organisation’s purpose”, with indices strategic direction and intent; goals and objectives; and vision. In this research, this model of organisational culture was used to measure OC.

2.4 Knowledge Sharing

KS is important in organisations and KM cannot be effective unless it is shared. As a result, there are plenty of tools available for KS, but their use requires a cultural change which some employees might be hesitant to make. Therefore, culture is an important factor and needs to be considered in KS because, although it can foster sharing and collaboration, it must be handled sensitively with respect to the natural resistance of people and the existing culture toward change inside organisations (Chong and Chong, 2009). Davenport and Prusak (2000) define KS as “The process by which knowledge is transferred from one person to another, from individuals to groups, or from one group to another group”.

KM in organisations enhances communication and sharing between organisational members, and enriches the interpretation and the coordinating actions between them. Accordingly, a cooperative OC must be created in such organisations to allow effective KS and communication between employees (Courtney, 2001). OC that emphasises competition between employees may pose a barrier to KS while cooperation between teams helps in creating trust, which is an essential condition for KS (Schepers and Van den Berg, 2007; Wang, 2004; Wang and Noe, 2010; Willem and Scarbrough, 2006).

OC may help enhance KS which may in turn reinforce the culture (Wang and Noe, 2010). Effective KS is not moving knowledge from one location to another, but the basic notion is that the sharing of viable knowledge should assist with collaborative problem solving between people, directly and indirectly, supported by networks and tools (Wang and Noe, 2010).

2.5 Knowledge Management Systems (KMSs)

Technology plays a vital role in business, as it helps employees to access the knowledge they need when they need it, and provides the tools with which decision makers and users can leverage their knowledge in the context of their work (Chong and Chong, 2009; Bals *et al.* 2007). Over the past three decades, many organisations have developed information technology-based systems (IT-based systems) designed specifically to facilitate the sharing, integration and utilisation of knowledge, referred to as KMSs (Nielsen and Michailova, 2007). Alavi and Leidner (2001) define KMSs as “Information Technology based systems developed to support and enhance the organisational processes of knowledge creation, storage/retrieval, transfer, and application”. These systems are part of the agenda in many of today's leading MNCs (Abdelrahman and Papamichail, 2016; Nielsen and Michailova, 2007).

Organisations across all sectors recognise the critical role of effective KMSs in their future success (Shin, 2004). MNCs are always looking for support from their IT departments to utilise, facilitate and use their existing knowledge effectively and efficiently (Montazemi *et al.*, 2012). Kostova *et al.* (2008) point out that “MNCs have complex internal environments, with spatial, cultural, and organisational distance, language barriers, inter-unit power struggles and possible inconsistencies and conflict among the interests, values, practices, and routines used in the various

parts of the organisation”. Therefore, KS in the complex environment between MNCs units requires particular coordination mechanisms and tools to facilitate KS (Ghoshal and Bartlett, 1995; Gupta and Govindarajan, 2000; and Sia *et al.*, 2010). Moreover, KMSs can facilitate knowledge management (KM) by ensuring knowledge flows from the person(s) who know to the person(s) who need to know throughout the organisation (Bose, 2004).

2.6 Organisational Effectiveness

KS across organisations’ units is a critical driver of a firm’s performance, especially in MNCs (Ghoshal and Bartlett, 1994; Inkpen and Dinur, 1998; Prahalad and Hamel, 1990). OE is the degree to which an organisation realises its goals, as the ultimate goal of any organisation is to achieve a high level of OE (Daft, 2009; Zheng *et al.*, 2010). Argote and Ingram (2000) state “It is what the organisation comes to know that explains its performance”. Zheng *et al.* (2010) highlight the importance of KM and remark that “how well knowledge is managed contributes to organisational effectiveness”. Moreover, research has shown that knowledge management strategies are positively related to an organisation’s performance.

MNCs have a significant advantage in having employees from different nationalities and backgrounds, who contribute to OE through their different knowledge and expertise. Mäkelä *et al.* (2012) believe that the existence of MNCs is closely related to their ability to take advantage of differences in knowledge and expertise around the world in terms of exploiting existing repositories of knowledge and combining them to create new knowledge.

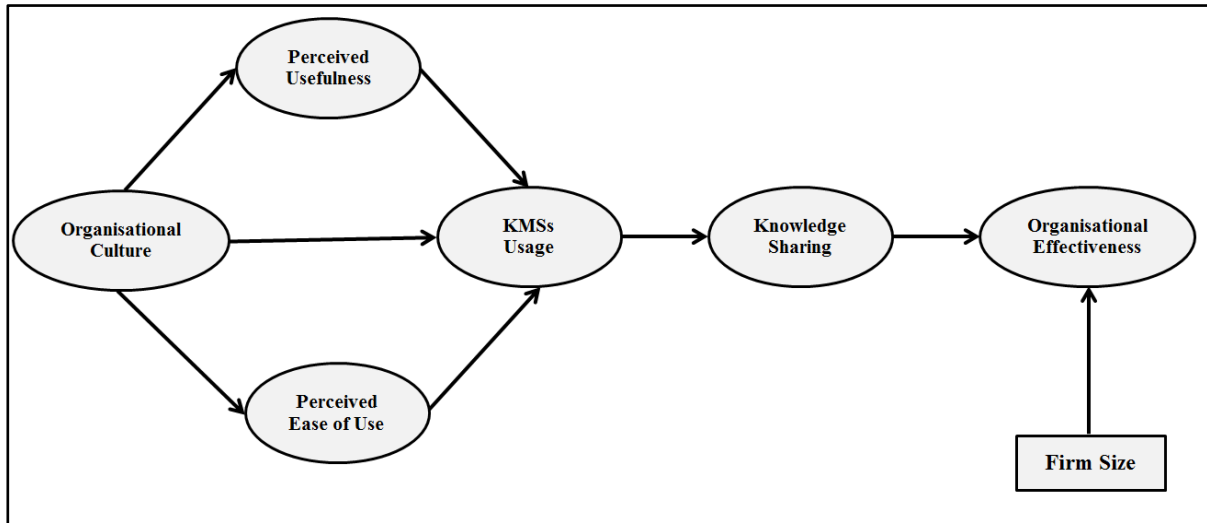
Furthermore, Montazemi *et al.* (2012) emphasise that the effective sharing of organisational knowledge is particularly relevant for MNCs, as organisations’ knowledge is considered a significant source of competitive advantage in their global strategy. Therefore, in order to succeed in the global information society, MNCs need to identify, evaluate, create, evolve and develop their

knowledge assets since knowledge is one of their meaningful economic resources (Metaxiotis *et al.*, 2003).

3. RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

Based on literature review, the proposed research model of this study explores and conceptualises the causal relationships among six variables that are central to this research study: organisational culture, perceived ease of use, perceived usefulness, knowledge management systems usage, knowledge sharing, and organisational effectiveness (Figure - 2).

FIGURE 2
Proposed research model and hypotheses



Building on the relevant literature, the following seven hypotheses were developed in association with the research model to be tested and analysed.

The first three hypotheses test the effect of organisational culture on perceived usefulness (H1), perceived ease of use (H2) and knowledge management systems usage (H3). Organisational

culture affects the behaviour of knowledge workers in forming and adhering to KS, and using the knowledge in the context of KMSs (Huber, 2001). Alavi *et al.* (2006) emphasise the importance and influence of organisational culture on the use of KMSs and the outcomes of such use, stressing that “any differences in cultural values within firms will lead to divergent organisational and individual outcomes from KMSs use”. Kankanhalli *et al.* (2005) believe that organisational culture supports KS by using KMSs through different reward and incentive policies. Research has also shown that organisations with cultures emphasising innovation are more likely to use KMSs and facilitate KS through subjective norms that encourage sharing (Bock *et al.*, 2005; Ruppel and Harrington, 2001). Abdelrahman and Papamichail (2016), highlight that OC has a significant role that affects the PEU, PU and KMSs usage in MNCs. They are also advised to create a favourable environment or OC to enable employees in all branches and at all levels to utilise their knowledge resources by using KMSs. Therefore, it is hypothesised that:

- **H1:** *There is a positive relationship between Organisational Culture and the Perceived Usefulness of Knowledge Management Systems in MNCs.*
- **H2:** *There is a positive relationship between Organisational Culture and the Perceived Ease of Use of Knowledge Management Systems in MNCs.*
- **H3:** *There is a positive relationship between Organisational Culture and Knowledge Management System usage in MNCs.*

Hypotheses four and five test the effect of perceived usefulness on knowledge management systems usage (H4) and the effect of perceived ease of use on knowledge management systems usage (H5). Davis (1989, 1993) and Venkatesh *et al.* (2003) explain through the technology acceptance model the impact of individuals’ perceptions regarding their perceived ease of use towards a particular technological system that determines the actual use of this technology. In the

TAM, perceived ease of use was significantly correlated with intended use and actual system usage. TAM also demonstrated that it is individuals' perceptions based on their perceived usefulness towards a particular technological system that determine the actual use of this technology. In this model, perceived usefulness was significantly correlated with intended use and actual system usage (Davis, 1989, 1993; Venkatesh *et al.*, 2003). Therefore, it is hypothesised that:

- **H4:** *There is a positive and significant relationship between the Perceived Usefulness and Knowledge Management System usage in MNCs.*
- **H5:** *There is a positive relationship between the Perceived Ease of Use and Knowledge Management System usage in MNCs.*

Hypothesis six tests the influence of knowledge management systems usage on knowledge sharing (H6). KMSs enhance the quality of KM by supplying tools for effective storage and sharing of knowledge, and through facilitating knowledge creation and KS (Shin, 2004). Bolloju *et al.* (2002) stressed that in order to assist the creation of new knowledge effectively; KMSs must support not only the creation, but also the gathering, organisation and sharing of existing knowledge. Furthermore, Holm *et al.* (2001) pointed out that in MNCs, knowledge can be generated in various parts and shared with diverse parts of an interconnected network of organisational units. Dennis and Vessey (2005) state that KMSs succeed in playing a vital and dynamic role in enabling employees in MNCs easily to find expertise residing in the organisation and to support interactions toward KS. Therefore, it is hypothesised that:

- **H6:** *There is a positive relationship between Knowledge Management System usage and Knowledge Sharing in MNCs.*

Lastly, hypothesis seven tests the influence of knowledge sharing on organisational effectiveness (H7). KS between organisational units and employees can create significant learning benefits and is a powerful mechanism for improving an organisation's productivity and increasing its survival prospects (Riege, 2007). Moreover, it enables employees to share, contribute and add value to knowledge applications and enrich the competitive advantage of the organisation (Jackson *et al.*, 2006). KS can reduce production costs, help in developing new products and projects, improve team performance and the organisation's innovation capabilities, and increase sales and revenue (Collins and Smith, 2006; Cummings, 2004; Hansen, 2002; Lin, 2007; Mesmer-Magnus and DeChurch, 2009). Furthermore, Montazemi *et al.* (2012) emphasise that the effective sharing of organisational knowledge is particularly relevant for MNCs, as organisations' knowledge is considered a significant source of competitive advantage in their global strategy.

- *H7: There is a positive relationship between Knowledge Sharing and Organisational Effectiveness in MNCs.*

4. DATA COLLECTION AND ANALYSIS

This study uses an online questionnaire to collect data from 221 participants represent a diverse cross-section of businesses and different managerial levels who are using KMSs and share knowledge in MNCs.

4.1 Measurement

The questionnaire was developed based on literature review and the survey items were adapted from existing instruments used in previous research and it uses 7-point Likert scale statements. Items measuring organisational culture were adapted from Denison and his colleagues: Denison

(1990), Denison and Mishra (1995), and Fey and Denison (2003); they included four dimensions: adaptability, consistency, involvement and mission. The perceived ease of use and perceived usefulness measures were adapted from Adams *et al.* (1992) and Davis (1989; 1993). Measures assessing KMSs usage were adapted from Davis (1993), He *et al.* (2009) and Leidner and Elam (1993, 1995). In line with Michailova and Minbaeva (2012) and Minbaeva *et al.* (2003), knowledge sharing was measured. Perceptual measures were used in this study to measure organisational effectiveness; measures were adapted from Denison (1990), Denison and Mishra (1995), and Fey and Denison (2003). Firm size was used as a control variable and measured by the total number full time employees working in the MNC.

4.2 Analysis and Findings of the Study

4.2.1 PLS analysis

We employed PLS-SEM to analyze our data, using the SmartPLS 3 software (Ringle, Wende, & Becker, 2015). The following features made PLS-SEM the most appropriate data analysis technique for our research. Firstly, PLS-SEM is one of the most appropriate techniques for examining exploratory research models where the objective is to explain variance (Fornell & Bookstein, 1982; Hair, Sarstedt, Pieper, & Ringle, 2012; Henseler, Ringle, & Sinkovics, 2009; Richter, Sinkovics, Ringle, & Schlägel, 2016). To the best of our knowledge, this is a first attempt to introduce the relationships among organisational culture, perceived usefulness, perceived ease of use, knowledge management systems and organisational effectiveness. We aim to explore previously untested relationships between these constructs by using a ‘soft-modeling’ approach (Wold, 1980). Hence, given its exploratory and theory-building nature, PLS-SEM is the most

appropriate method for this research. Secondly, we have developed a complex model in terms of the number of relationships for which PLS offers robust solutions (Hair, Hult, Ringle, & Sarstedt, 2017).

4.2.2 Assessment of the measurement model

We assessed the measurement model with reflective indicators by evaluating reliability and validity. We examined internal reliability using Cronbach's alpha and composite reliability (CR) (Nunnally, 1978; Werts, Linn, & Jöreskog, 1974). The Cronbach's alpha scores were all above 0.7 ranging from 0.860 to 0.955, which confirms internal reliability (Nunnally, 1978). The CR scores were all above 0.8, ranging from 0.897 to 0.964, which again suggests that the composite measurement items have sufficient reliability (Hair *et al.*, 2017; Nunnally & Bernstein, 1994). We also assessed the reliability of each latent variable. We followed the minimum cut-off criterion of 0.5 for the indicator's outer loadings (Anderson & Gerbing, 1988; Hair, Ringle, & Sarstedt, 2011). The absolute standardized first-order outer loadings ranged from 0.603 to 0.950, with most items exceeding the value of 0.7. To assess the validity of the constructs, we examined convergent and discriminant validity. Convergent validity was assessed following Fornell and Larcker (1981b), who suggest that an average variance extracted (AVE) of at least 0.5 indicates sufficient convergent validity. All constructs showed AVE values greater than the 0.5 threshold, ranging from 0.592 to 0.876, confirming convergent validity (Fornell & Larcker, 1981a). We assessed discriminant validity using the Fornell-Larcker and heterotrait-monotrait (HTMT) criteria. The Fornell-Larcker criterion postulates that a latent variable shares more variance with its assigned indicators than with any other latent variable (Fornell & Larcker, 1981b). As shown below, since the AVE of each latent variable is greater than the latent variable's highest squared correlation with any other latent variable, discriminant validity is also established in Table (1). The HTMT ratios of the correlations

are part of a new criterion developed by Henseler, Ringle, and Sarstedt (2014) to assess discriminant validity. The HTMT results presented in Table (2) are all below the threshold of 0.90, which again confirms discriminant validity (Hair *et al.*, 2017; Henseler *et al.*, 2014).

TABLE 1
Discriminant Validity- Fornell-Lacker

	1	2	3	4	5	6
1. KMSs Usage	0.936					
2. Knowledge Sharing	0.330	0.849				
3. Organisational Effectiveness	0.344	0.336	0.772			
4. Organisational Culture	0.265	0.466	0.482	0.770		
5. Perceived Ease of Use	0.323	0.152	0.326	0.162	0.903	
6. Perceived Usefulness	0.353	0.267	0.352	0.249	0.523	0.889

Note: Bold diagonal figures are the square roots of AVE

TABLE 2
Discriminant Validity- Heterotrait-Monotrait (HTMT)

	1	2	3	4	5	6
1. KMSs Usage						
2. Knowledge Sharing	0.379					
3. Organisational Effectiveness	0.393	0.384				
4. Organisational Culture	0.281	0.508	0.539			
5. Perceived Ease of Use	0.352	0.172	0.343	0.162		
6. Perceived Usefulness	0.379	0.301	0.38	0.253	0.549	

4.2.3 Structural model results and hypothesis testing

We now proceed with the structural model assessment given the reliable and valid measurement model estimation. The coefficient of determination (R^2) of the endogenous latent variables is a vital element of evaluating the predictive power of the structural model. The R^2 value of export performance is 0.186, indicating the model has above the acceptable level of predictive power (Chin, 1998; Cohen, 1988; Ringle, Sarstedt, & Straub, 2012). We assessed the effect size (f^2 , the change in R^2) in order to examine the impact of an independent latent variable on a dependent latent variable (Chin, 2010; Hair *et al.*, 2017). f^2 values of 0.02, 0.15, and 0.35 are considered small, medium, and large effect sizes (Chin, 2010; Cohen, 1988). The effect size of knowledge sharing on organizational effectiveness is 0.128, which demonstrates medium effect size.

We followed the bootstrapping technique to test the hypotheses and assess the path coefficients' significance (Hair *et al.*, 2017; Henseler *et al.*, 2009). We ran a 5000 times resampling of the 221 observations. The path coefficients from organisational culture to perceived usefulness, perceived ease of use and knowledge management systems usage are -0.249 ($t= 3.150$, $p< 0.01$), 0.162 ($t= 1.897$, $p< 0.1$) and 0.183 ($t= 2.629$, $p< 0.01$) respectively, which support H1, H2 and H3. The path coefficients from perceived usefulness and perceived ease of use to knowledge management systems usage are 0.212 ($t= 2.633$, $p<0.05$) and 0.183 ($t= 2.060$, $p<0.05$) respectively, which support H4 and H5. The path coefficient from knowledge management systems usage to knowledge sharing is 0.330 ($t= 5.331$, $p<0.01$), which supports H6. Finally, the path coefficient from knowledge sharing to organisational effectiveness is 0.322 ($t= 4.868$, $p<0.01$), which supports H7. The path coefficient from the control variable, firm size, to organisational effectiveness is

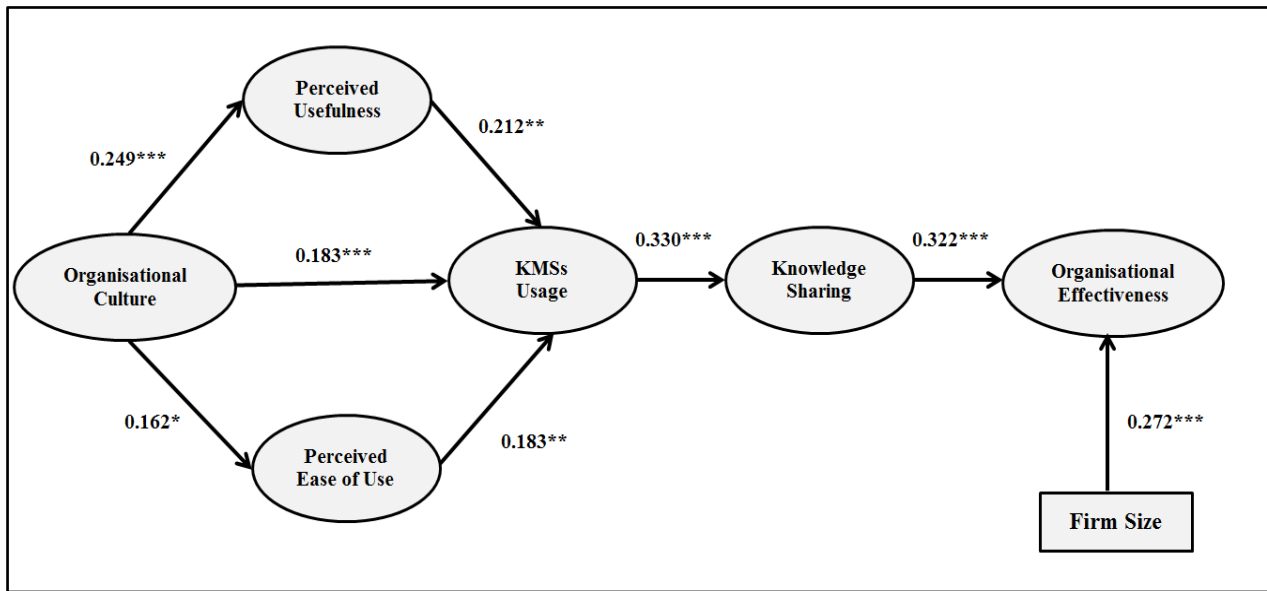
0.272 (t= 4.896, p<0.01). The results of the hypothesis testing are presented in Table (3) and Figure (3) below.

TABLE 3
Assessment of the structural model

Hypothesised relationships	Standardised coefficient	t-statistic	Statistically significant?
H1: Organisational culture → Perceived usefulness	0.249***	3.150	Yes
H2: Organisational culture → Perceived ease of use	0.162*	1.897	Yes
H3: Organisational culture → KMSs Usage	0.183***	2.629	Yes
H4: Perceived usefulness → KMSs Usage	0.212**	2.633	Yes
H5: Perceived ease of use → KMSs Usage	0.183**	2.060	Yes
H6: KMSs Usage → Knowledge Sharing	0.330***	5.331	Yes
H7: Knowledge Sharing → Organisational effectiveness	0.322***	4.868	Yes
Control variable Firm size	0.272***	4.896	Yes

Note: ***, p<0.01; **, p<0.05; *, p<0.1

FIGURE 3
Assessment of the structural model:



Note: ***, p<0.01; **, p<0.05; *, p<0.1

5. DISCUSSION

The main model estimations indicated that all hypotheses are statistically significant and supported. The results revealed that OC has positive significant effect on PU, PEU and KMSs usage in MNCs. This result is consistent with (e.g. Alavi *et al.*, 2006; David *et al.*, 2000; Huber, 2001; Kankanhalli *et al.*, 2005; Leidner *et al.*, 2012; Nielsen and Michailova, 2007; Ruppel and Harrington, 2001). Moreover, Huber (2001) points out that OC affects the behaviour of knowledge workers in forming and adhering to KS, and using the knowledge in the context of KMSs. Alavi *et al.* (2006) emphasise the importance and influence of OC on the use of KMSs and the outcomes of such use, stressing that “any differences in cultural values within firms will lead to divergent organisational and individual outcomes from KMSs use”. Ruppel and Harrington (2001) point out that when the OC shows strong concern for the organisation’s members and an atmosphere of mutual confidence and trust between them, early adoption of KMSs is most likely to occur. Kankanhalli *et al.* (2005) argue that OC supports KS by using KMSs through different reward and incentive policies. David *et al.* (2000) point out that the benefits of using a new technology infrastructure like KMSs are limited if OC values and practices are not supportive of KS and using these systems across units.

Research has also shown that organisations with cultures emphasising innovation are more likely to use KMSs and facilitate KS through subjective norms that encourage sharing (Bock *et al.*, 2005; Ruppel and Harrington, 2001; Wang and Noe, 2010). Regarding MNCs, Nielsen and Michailova (2007) maintain that most MNCs adopt the same type of KMSs for relatively long periods of time; OC and other relevant organisational factors also influence KMSs use, design and implementation.

Furthermore, the results revealed that PU and PEU have a positive and significant effect on KMSs in MNCs. This result is consistent with previous research (Adams *et al.*, 1992; Cabrera *et al.*, 2006; Davis 1989, 1993; King and Marks, 2008; Kulkarni *et al.*, 2006; Vlahos *et al.*, 2004; Venkatesh *et al.*, 2003). Davis (1989, 1993) and Venkatesh *et al.* (2003) explain through TAM the impact of individuals' perceptions regarding their PRE towards a particular technological system that determines the actual use of this technology. In TAM, PEU was significantly correlated with intended use and actual system usage. Moreover, it is individuals' perceptions based on their PU towards a particular technological system that determine the actual use of this technology. In this model PU was significantly correlated with intended use and actual system usage and also found to be relatively more influential than PEU (Davis, 1989, 1993; Venkatesh *et al.*, 2003).

The results also demonstrate that KMSs usage has a strong and significant positive effect on KS. This finding is consistent with other research which provided empirical evidence of KMSs usage on KS (e.g. Riege, 2007; Bolloju *et al.*, 2002; Cabrera *et al.*, 2006; Jarvenpaa and Staples, 2001; Kankanhalli *et al.*, 2005; Lee and Choi, 2003; Nicolas, 2004; Nielsen and Michailova, 2007; Shin, 2004). Kulkarni *et al.* (2006), state that KMSs are ineffective if they are not used. Shin (2004) pointed out that KMSs enhance the quality of KM by supplying tools for effective storage and sharing of knowledge, and through facilitating knowledge creation and KS.

Furthermore, Bolloju *et al.* (2002) stressed that in order to assist the creation of new knowledge effectively, KMSs must support not only the creation, but also the gathering, organisation and sharing of existing knowledge. Cabrera and Cabrera (2005) and Wang and Noe (2010) maintained that KS using KMSs facilitates a community of practice and makes ideas, experiences, best practice and knowledge accessible and available to all employees in an organisation. KS is a significant issue in MNCs, where knowledge cannot be effective unless it is

shared. Holm *et al.* (2001) pointed out that in MNCs, knowledge can be generated in various parts and shared with diverse parts of an interconnected network of organisational units. Ghoshal and Bartlett (1995), Gupta and Govindarajan (2000) and Sia *et al.* (2010) suggested that KS between MNC units requires particular coordination mechanisms and tools in this complex environment to facilitate KS.

Therefore, they are always looking for support from their IT departments to utilise, facilitate and use the existing knowledge effectively and efficiently (Montazemi *et al.*, 2012). Dennis and Vessey (2005) state that KMSs succeed in playing a vital and dynamic role in enabling employees in MNCs easily to find expertise residing in the organisation and to support interactions toward KS. Wang and Noe (2010) suggest that MNCs need to pay close attention to cultural issues in developing organisational practices and global KS systems that will facilitate KS, as there is no one universal set of practices that can be used to facilitate KS in global and multi-national companies.

The model in this research hypothesised that KS will have a positive and significant effect on OE in MNCs. Lesser *et al.* (2001) show how the usefulness of KS and communities of practice in MNCs can add value to the organisation by: creation of higher-quality knowledge, fewer surprises and planned revisions, greater capacity in dealing with unstructured problems, more effective KS among business and corporate staff units, improved likelihood of implementing joint goals, and improved employee skills and learning. Zheng *et al.* (2010), state that OC is a key organisational asset and is associated with OE.

Moreover, OC is a source of competitive advantage, and several empirical researchers have shown that it is a significant factor in OE (Barney, 1991; Gordon and DiTomaso, 1992; Wilkins and Ouchi, 1983; Zheng *et al.*, 2010). Likewise, Davenport and Prusak (2000) stress that KM

practices need to fit with OC in order to create a competitive advantage. Zheng *et al.* (2010) point out that KM initiatives play a potentially mediating role in linking OC with OE, as successful KM is believed to enhance and improve organisations' competitive advantage, innovation and employee relations, and to lower costs. Denison and Mishra (1995); Denison, (1996); Fey and Denison (2003); Gold *et al.*, (2001), agree that OC encompasses the social and technical systems of organisations and also affects OE.

6. CONCLUSION

The results of this study make a number of significant theoretical contributions. This research applied TAM models in a new context of exploring OC role in KS by using KMSs in MNCs. OC as an important factor can be added to TAM model which can explain the impact of different factors on KMSs usage to support KS in MNCs. Thereby, the results of this study extend TAM by understanding users' perceptions regarding the usefulness and ease of use of using KMSs in KS. The findings also extend the Knowledge Based View by showing how KMSs can support KS, and by taking OC as a vital factor which affects, PU, PEU and KMSs usage which in turn contribute in the best use of knowledge available in an organisation and create the best value and improve organisational effectiveness.

This study also extends KBV in the context of OC through showing the impact of OC and KMSs usage in deploying and sharing knowledge assets in MNCs, resulting in a better understanding of knowledge as a competitive resource in a global context. Accordingly, MNCs are recommended to consider OC as a significant factor that affects KMSs usage and KS. They are also advised to create a favourable environment or OC to enable employees in all branches and at all levels to utilise their knowledge resources by using KMSs in KS. Furthermore, the model

explored in this study speaks the language of business, focusing on management and organisational practices related to technology acceptance, organisational culture, KMSs usage, knowledge sharing, and organisational effectiveness. This makes it easier for MNCs to use and apply; it can also be connected to key strategic initiatives, metrics and capabilities.

6.1 Limitations of the Study and Further Research

Although the results and findings of this study are promising and valuable, a few limitations have been recognised which might be useful for other researchers to consider in the future. The model developed in this study represents a reasonable starting point as it was tested on a sample size (221 responses), which certainly will have some implications for the generalisability of the findings. Therefore, to generalise the results and make significant analysis, further research needs to be conducted through using the same questionnaire with a much larger sample size. It would also be interesting for future researchers to test and explore the model developed for this study as a case study in a single MNC with its branches all over the world. In addition, the data was collected in this study through a cross-sectional survey; future research is recommended with more in-depth investigations using longitudinal data.

Another direction for further research could be using subjective and objective measures in measuring OE instead of using subjective measures only. Conducting comparative studies is also suggested, to expand the research model by testing it in different regions or industries.

7. REFERENCES

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