

A structural equation model for knowledge sharing behavior in an emerging economy

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Abstract

Purpose – Knowledge sharing behaviour is becoming one of the main priorities in organizations operating in emerging economies, as knowledge sharing behaviour may impact their competitiveness. The purpose of this paper is to examine the impact of: openness and trust; top management support; and the reward system on knowledge sharing behaviour. In addition, the paper investigates how knowledge sharing behaviour impacts firm's competitiveness.

Design/methodology/approach – The analyses in this paper were based on data from more than 230 companies operating in five industries in an emerging economy in the Gulf area. Structural equation modelling (SEM) methodology was used to test the impact of the three independent latent variables of openness and trust, top management support and the reward system on the knowledge sharing behaviour as well as the impact of the later on firm's competitiveness.

Findings – Exploratory factor as well as confirmatory factor analysis were used to assess the five dimensions of knowledge sharing behaviour and firm's competitiveness. SEM was used to test the four main hypotheses in this study and to assess the structural relationships among these five latent variables. There was a moderate relationship between the knowledge sharing behaviour and the three independent latent variables of openness and trust; top management support; and the reward system. There was a strong positive association between knowledge sharing behaviour and firm's competitiveness.

Practical implications – For academics, the paper offers an opportunity to further study knowledge sharing behaviour in other emerging economies. Academics who are interested in examining this issue further may extend our study in many directions. For practitioners, our findings should motivate practitioners to place emphasis on top management support, openness and trust and the reward system to create a proper culture for knowledge creation and sharing.

Originality/value – To the best of the authors' knowledge, this study is the first attempt in its purpose and design to study knowledge sharing behaviour in multiple industries in an emerging economy such as that of Saudi Arabia.

Keywords Knowledge sharing behaviour, Structural equation modelling, Emerging economies, Reward system, Top management commitment

Paper type Research paper

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1. Introduction

In recent years, dynamic changes in the business environment have attracted the attention of practitioners and scholars and led them to focus on knowledge as a main driver of competitive advantage (Grant, 1996; Nonaka and Takeuchi, 1995; Kogut and Zander, 1992; Casimir *et al.*, 2012; Jones and Mahon, 2012). In this context, Millar *et al.* (2015) outline the global nature of knowledge management and the associated cultural differences and leadership challenges. Most recently, the literature has outlined the role of contextual factors in shaping knowledge sharing (Haak-Saheem *et al.*, 2016).

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Organizations recognize knowledge as an essential element to allow them to maintain sustainable competitive power in the market (Frappaolo, 2002; Cavaliere *et al.*, 2015). Organizational knowledge is valuable, scarce, path dependent and hard to imitate and substitute by third parties (Wernerfelt, 1984; Afiouni, 2007). Moreover, knowledge is unique as an organizational resource in that, while most other resources diminish with use, the value of knowledge as a resource increases with use (Usoro *et al.*, 2007). In this respect, knowledge is an elite form of information that can be assimilated and reflected on and that contributes to sustainable value creation (Conner and Prahalad, 1996; Lin and Lo, 2015).

However, information alone, without interpretation, cannot be converted to knowledge and this limits its value for building capacity. Knowledge is the integration of information and personal experience that affects an individual's choices and behaviour, as well as the foundation of reasoned action (Bender and Fish, 2000; Sabetzadeh and Tsui, 2011). In fact, knowledge-sharing behaviour is an effective approach to maintaining the competitiveness of organizations (Penrose, 1952; Grant, 1996; Yam and Chan, 2015; Sabetzadeh and Tsui, 2011; Haak-Saheem *et al.*, 2016).

Given our focus on knowledge sharing, extant research on individual-level knowledge transfer recognizes trust commitment, extrinsic and intrinsic motivation and individual engagement as important antecedents of knowledge-sharing behaviour (Szulanski, 1996; Hislop, 2002; Hansen and Nohria, 2004; Gagné, 2009; Kaše *et al.*, 2009; Camelo-Ordaz *et al.*, 2011; Minbaeva, 2013; Kim and Ko, 2014; Haak-Saheem *et al.*, 2016). More recently, Buch *et al.* (2015) have emphasized the positive effect of supervisor support on knowledge-sharing behaviour. In other words, facilitating knowledge behaviour requires the understanding of those factors influencing and encouraging individuals to engage in knowledge-sharing behaviour.

Despite the growing interest in knowledge management, in particular knowledge sharing, there is little reference to regional contexts outside of the Western sphere (Haak-Saheem and Darwish, 2014). Therefore, this study aims to advance our understanding of knowledge-sharing behaviour in the context of the emerging Gulf economy. Despite the rapid growth of the emerging economies and their development of competitive firms, little attention has been given to understanding how knowledge-sharing behaviour in these countries is managed. However, research should use opportunities to study the knowledge-sharing context in emerging markets, to build on current theory or to create novel alternatives (Bello and Kostova, 2012).

Moreover, an increasing number of organizations within the Gulf States have realized that capturing and nurturing the growth of relevant knowledge, and determining the potential gaps that are likely to obstruct knowledge sharing and management in organizational contexts, should be a concerted effort to achieve long-term competitive advantage (Mohamed *et al.*, 2008). Therefore, the aim of the present paper is to investigate the impact of factors influencing knowledge-sharing behaviour and competitiveness of organizations in a context that is rapidly changing and growing but has not yet received enough attention.

The remainder of this paper is organized as follows. In the next section, we review the literature on knowledge sharing behaviour and the factors impacting it. Moreover, we explore existing research on behavioural aspects and antecedents of knowledge sharing in the context of the emerging economy of Saudi Arabia. The paper then proceeds by introducing the conceptual model and hypothesis, followed by our research methodology and presentation of our results. The following section aims to present the findings and applicability of our conceptual framework. We then go on to develop relevant implications for practice and research. The latter may reflect the extent of the regional peculiarities and the requirement for more academic effort in understanding the factors influencing knowledge-sharing behaviour in a region that is gaining more importance. We conclude by summarizing the limitations of our study.

2. Relevant literature

2.1 Openness and trust

There is growing evidence that factors related to the climate of an organization can foster learning-oriented goals and behaviours among its employees. Research has demonstrated, for example, that organizational units (Abbey and Dickson, 1983; Scott and Bruce, 1994) and organizational work teams (Bunderson and Sutcliffe, 2003; Edmondson, 1999) differ in the extent to which they foster knowledge-sharing behaviour among their members. These differences have been attributed to factors such as top management support and authority relations, task characteristics, evaluation and recognition, openness and trust (Ames, 1992; Roeser *et al.*, 1996). As Cabrera *et al.* (2006) outline, openness can be a strong predictor of knowledge-sharing behaviour because openness is a reflection of an individual's curiosity and originality, which in turn are predictors of whether an individual will seek other people's expertise and advice.

Openness to new experiences is linked to an active imagination, intellectual curiosity and originality (Costa and McCrae, 1992). Employees with a high level of openness are curious about both the inner and outer worlds and are willing to consider new ideas and knowledge (Matzler *et al.*, 2008). Moreover, highly open people display intellectual curiosity, creativity and flexible thinking and thus tend to have a positive attitude towards learning new things and engaging in new learning experiences (Dingman, 1990). More specifically, highly open employees are more engaged in the process of knowledge sharing.

The nurturing function of an organization can support the development of openness. In addition, trust can be viewed as a factor which has a crucial impact on knowledge exchange. On the same baseline, Bunderson and Sutcliffe (2003) attribute positive learning experiences of group members to openness and trust.

Although the definition of trust is diffuse in the literature, researchers and practitioners have understood the role of trust in interpersonal relationships (Bunderson and Sutcliffe, 2003). Mayer *et al.* (1995) define trust as the willingness to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular act important to the truster, irrespective of the ability to monitor and control the other party.

Based on this definition, trust is a crucial enabler of knowledge-sharing behaviour. Therefore, the significance of trust in the process of knowledge sharing has been well explored (McNeish and Mann, 2010). Hinds and Pfeffer (2003) propose that a salient aspect of the organizational environment is that employees tend to share knowledge in a climate in which individuals trust each other highly. Davenport and Prusak (1998) view trust as an important factor in the process of knowledge sharing. Nelson and Coopriider (1996) indicate that trust acts through shared knowledge to influence organizational performance. When trust exists, people are more willing to share useful knowledge (Zand, 1972). Based on the theory of reasoned action (TRA), we understand trust as an environmental constraint which influences the employees' attitudes towards knowledge-sharing behaviour.

2.2 Top management support

The link between normative beliefs and intentions to behave in a certain way has been acknowledged in the literature (Cabrera *et al.*, 2006). In line with the TRA, the subjective norms of the individual – that is, the perceived pressures from the environment towards a certain action – influence an employee's attitudes (Fishbein and Ajzen, 1975). Subjective norms are an outcome of the individual's normative beliefs and the motivation to comply with those beliefs. Employees will be more encouraged to perform certain behaviours if they feel that important referent individuals are likely to approve and appreciate such behaviour (Cabrera *et al.*, 2006).

In the context of knowledge sharing, research has documented the effect of top management support on knowledge-sharing behaviour. [Amabile et al. \(1996\)](#)'s findings emphasize the positive impact of supervisory support on creativity. The positive relationship between social support from managers and learning and development has been outlined in the literature ([Noe and Wilk, 1993](#)). Our present study will investigate the impact of perceived top management on attitudes towards knowledge-sharing behaviour in a non-Western context.

Top management support is likely to influence employees' willingness to share knowledge with colleagues ([Davenport et al., 1998](#)). Moreover, the role of top management is to create an environment where people are encouraged to share knowledge. [Chiang et al. \(2011\)](#) indicate that organizational support has a positive impact on knowledge-sharing behaviour.

2.3 Organizational reward system

Rewards could range from intangible to tangible incentives. For the purpose of our present discussion, we consider the effects only of tangible rewards on attitudes towards knowledge-sharing behaviour.

[Bartol and Locke \(2000\)](#) identify several important aspects of organizational reward systems that are useful to motivate employees to perform the desired behaviour. According to the expectancy theory ([Vroom, 1964](#)), intentions to perform a certain behaviour are in part determined by consequence expectation. Therefore, the more positive an employee perceives the outcomes associated with the given action to be, the bigger the likelihood that the person will perform that action ([Cabrera et al., 2006](#)).

[Kuvaas \(2008\)](#) showed that there is a positive relationship between organizational reward systems and knowledge-sharing behaviour. As outlined in the literature ([Bartol and Srivastava, 2002](#); [Gagné, 2009](#); [Buch et al., 2015](#)), an appropriate reward is essential to foster knowledge sharing in organizations. In other words, a reward system should be designed in a way that encourages employees to share knowledge. Additionally, [O'Dell and Hubert \(2011\)](#) suggest that successful knowledge management requires the cultivation of knowledge-sharing behaviour, which is a result of positive reinforcement through reward and recognition. However, there is a controversial debate about the effectiveness of reward systems ([Bartol and Srivastava, 2002](#)).

2.4 The role of knowledge sharing as a basis for competitive advantage

Given the increasing need for organizations to innovate and remain agile, it is essential that they promote the intelligence and competence of employees to create a proprietary and strong knowledge base. The function of knowledge management is to explore and develop the knowledge assets of an organization to ensure the achievement of the organization's objectives ([Grant, 1996](#)). Managing knowledge as a valuable resource has a long tradition within the management literature ([Penrose, 1952](#)).

The nature of knowledge has been discussed intensively within the framework of knowledge management ([Nonaka and Peltokorpi, 2006](#)). Scholars and professionals have acknowledged the importance of knowledge as one of the key factors of modern firms and underscored the value of knowledge as a strategic asset ([Kogut and Zander, 1992](#); [Conner and Prahalad, 1996](#); [Nonaka and Peltokorpi, 2006](#); [Jasimuddin, 2008](#); [Minbaeva, 2013](#)). According to [Grant \(1996\)](#), knowledge is the most important resource for creating wealth in contemporary post-capitalist societies. More specifically, knowledge is more critical to the success of organizations than other resources. [Teh and Sun \(2012\)](#) emphasize in this context the role and importance of knowledge management, in particular knowledge sharing in the organizations of the twenty-first century. The main focus in the field of knowledge management is on strategic implications of knowledge in organizations.

In fact, in recent decades, organizations have invested enormously in what have been referred to as knowledge management systems (Cabrera *et al.*, 2006). These initiatives have developed new information systems, new organizational structures or new human resource policies (Davenport and Prusak, 1998) to leverage the collective knowledge of employees.

In practice, technically advanced knowledge management systems have made possible the interconnection of companies' employees across barriers of time and space (Cabrera *et al.*, 2006). Most knowledge management initiatives take the form of what has been known as a knowledge repository (Davenport and Prusak, 1998). Knowledge repositories permit employees to exchange experiences and work methods, improving knowledge-sharing processes or generating new ideas. Although such knowledge repositories can benefit organizations, they cannot guarantee by themselves that knowledge flow takes place (Davenport and Prusak, 1998). Advances in technology will not make a person with expertise share it with others (Davenport and Prusak, 1998). Individuals have the choice of whether to share their knowledge with their co-workers.

In this respect, there is a strong interest in studying knowledge sharing from diverse perspectives, which has led to a growing number of publications (Chennamaneni *et al.*, 2012; Buch *et al.*, 2015). Some research examines knowledge sharing from the behavioural and psychological perspective (Teh and Yong, 2011; Yen-Tsang *et al.*, 2012; Lin and Lo, 2015).

Drawing on a knowledge-based view of the firm, strategic management studies determined that knowledge is the strategic asset that is the most important in sustaining a firm's competitive advantage (Penrose, 1952; Grant, 1996; Teece, 1998). According to this view, knowledge sharing contributes to the creation and utilization of knowledge within the framework of knowledge management (Chiang *et al.*, 2011).

Hence, for instance, the TRA outlines that the behaviour of a person is determined by a set of salient beliefs about certain outcomes caused by the behaviour and the corresponding evaluation of the outcomes (Fishbein and Ajzen, 1975; Yen-Tsang *et al.*, 2012). Ajzen (1991) defines an attitude as a disposition to respond favourably or unfavourably to an object, person or event. In addition, subjective norms refer to the social pressure put on the individual to enact the behaviour. Attitudes and subjective norms shape the behaviour of an individual's intention to perform the actual desired behaviour (Fishbein and Ajzen, 1975; Ajzen, 1991). Initially, this theoretical framework was proposed to explain behaviour and its antecedents based on beliefs, attitudes and intentions. According to this model, skills, environmental constraints and intentions are antecedents of certain forms of behaviour (Yen-Tsang *et al.*, 2012). In connection to this approach, Fishbein and Ajzen (1975) propose the principle of aggregation, which assumes that any single sample of behaviour reflects not only the influence of a general disposition but also the influence of various factors unique to the particular occasion, situation and action being observed (Ajzen, 1991).

Therefore, the TRA provides a solid theoretical background to examine how knowledge-sharing behaviour is shaped by conditional factors such as openness and trust, top management support and reward systems. Moreover, the TRA framework provides an appropriate theoretical framework to study the influence of openness, trust, reward systems, top management support and collaborative climate, and external factors in attitudes towards knowledge sharing in the context of the emerging economy of Saudi Arabia.

Unlike in the main body of research in the field of knowledge management and knowledge sharing, we investigate this interdependent relationship in an underexplored regional setting; while the accumulation of research on knowledge sharing has provided useful

insights, there is little reference to knowledge sharing in non-Western contexts (Haak-Saheem and Darwish, 2014).

In a recent study, Seba *et al.* (2012) stated that, despite the large interest of scholars and practitioners in the field of knowledge management, in particular knowledge sharing, little reference has been made to the Arab Gulf States. While the majority of the literature has been conducted in Western economies and cultures, there are few informative contributions relating to this region. For example, Weir and Hutchings (2005) outline the embeddedness of knowledge sharing in the context of Arab culture. Haak-Saheem *et al.* (2016) outline knowledge sharing at the micro level while considering the institutional forces in the Gulf States.

Sabri (2005) argues that the successful transition of Arab societies into more knowledge-focused economies requires fundamental changes in their management capabilities and organizational structures. Skok and Tahir (2010) identify Arab culture as a main barrier to knowledge management and knowledge sharing.

Despite few publications in the field of knowledge management in general and knowledge sharing in particular, there is a significant lack of studies relevant to emerging Gulf countries such as Saudi Arabia (Haak-Saheem and Darwish, 2014). In this context, Kumar and Che Rose (2012) view the dearth of assess to the literature on Islam and Eastern business and organization possessions as contributing to the lack of a theoretical basis. As Skok and Tahir (2010) outline, the Western-based model of knowledge sharing cannot be directly applied to the non-Western context.

2.5 Knowledge sharing in the context of the emerging economy of Saudi Arabia

The present work concentrated on the factors affecting knowledge sharing and its impact on the competitive advantage of firms in the Gulf Corporation Countries (GCC), which are undergoing a rapid transition (Harry, 2007). Moreover, the economic development of the GCC has improved rapidly in the past few decades, in particular because of the availability of its natural resources and its exploitation of them. Saudi Arabia belongs to the GCC, along with the rest of the Gulf States – that is, Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates (Ronen and Shenkar, 1985). Saudi Arabia is the largest oil producer in the GCC, and its economy benefits from the high income generated by oil and gas production. The government of Saudi Arabia invests a considerable amount of this income in economic development and diversification (REF). Hence, although natural resources are limited, the government pays attention to diversifying and strengthening the economy to remain competitive (Hvidt, 2009).

Encouraged by the stable growth of developed countries, countries in less developed regions seek to emphasize the role of knowledge within economic development. Like the governments of other Gulf countries (e.g. the United Arab Emirates), the government of Saudi Arabia focuses on knowledge as a critical resource for future competitiveness. In this regard, managing knowledge becomes a crucial factor in sustainable economic growth and organizational competitiveness. Thus, to make knowledge more valuable, it has to be exchanged, distributed and shared (Al-Adaileh and Al-Atawi, 2011).

As Ruggles (1998) notes, the biggest challenge in managing knowledge is to change people's behaviour. In this perspective, knowledge-sharing behaviour in organizations is regarded as the degree to which employees share their acquired knowledge with their colleagues (Davenport and Prusak, 1998; Teh and Yong, 2011). Generally, speaking, knowledge sharing between individuals and across organizational boundaries and into organizational sharing behaviour relies heavily on individual employees' knowledge-sharing behaviour. In other words, effective knowledge sharing is not a matter of advanced technologies but of the willingness of individuals (Cabrera *et al.*, 2006; Teh and Yong, 2011).

Although some psychological and behavioural studies have examined the behavioural conditions of knowledge sharing and its impact on firms' competitiveness (Davenport and Prusak, 1998; Cabrera *et al.*, 2006; Teh and Sung, 2012; Teh and Yong, 2011; Chennamaneni *et al.*, 2012), our paper is distinct in several ways. First, it responds to the substantial need to examine the impact of openness and trust, top management support and reward systems on knowledge-sharing behaviour, and second, it examines the determinants of knowledge-sharing behaviour in an underexplored regional context. Third, the fact that Saudi Arabia represents a particular cultural cluster and that it employs a substantial number of expatriates to satisfy its domestic demand make it an ideal country in which to conduct research on knowledge sharing and its role as a basis for the competitive advantage of firms (Bozionelos, 2009). In this regard, the present study examines knowledge sharing to investigate the factors that contribute to employees' knowledge-sharing behaviour. We believe that Saudi Arabia is an ideal location for the study, as it is a major Arab country with a strong economic position in the Middle East.

Saudi Arabia is a relatively developed and stable Middle Eastern country with a significant industrial and commercial base. Geographically, it is the biggest country within the GCC and its oil and gas reserves place Saudi Arabia in a favourable financial position.

If the practices of KM are unable to foster knowledge sharing in such a setting, arguably this would cast doubt on the broader relevance of such practices across much of the developing world. Firms operating in the wider Middle East region, as well as in commodity-driven economies, could learn useful lessons from what works in such a context, and what does not. Hence, the main focus of the present paper is to investigate a subset of variables to explore their relationships with an individual's likelihood of engaging in knowledge-sharing behaviour.

2.6 Conditional factors influencing knowledge sharing in the context of Saudi Arabia

The relevance of organizational factors influencing knowledge-sharing behaviour has been addressed in the literature in several ways (McElroy, 2003; Gagné, 2009; Manning, 2010; Monavvarian *et al.*, 2013). Despite the fact that knowledge sharing is of great interest and has a great impact on organizational competitiveness, there are no comprehensive theoretical frameworks for knowledge sharing that stress the appropriateness of organizational factors that influence knowledge-sharing behaviour. Given the lack of a clear understanding of how organizational factors affect knowledge-sharing behaviour in organization, this paper attempts to develop a conceptual framework that enhances understanding of the importance of organizational factors in shaping knowledge-sharing behaviour and its impact on firms' competitiveness in an emerging business environment.

As documented in previous research, there is a relationship between knowledge-sharing behaviour and competitiveness of firms (Tortoriello, 2015). Moreover, intra-organizational knowledge-sharing processes seek to stimulate individuals to think critically, to enhance their creativity skills, to gain new knowledge and to enhance the overall innovation capacity of the organization (Lin, 2007; Tortoriello, 2015). Following the same tradition, we aim to investigate organizational antecedents that shape knowledge-sharing behaviour, such as openness and trust, top management support and reward systems.

This framework is compatible with previous models of knowledge sharing, such as those of Monavvarian *et al.* (2013). The major differences lie in conceptualizing the linkage between knowledge-sharing behaviour and several environmental factors and its impact on the competitiveness of firms. In addition, we test our conceptual model in a setting that has not yet received sufficient attention.

The literature offers a wide range of concepts and theoretical models on knowledge-sharing behaviour (Minbaeva *et al.*, 2009, 2012; Buch *et al.*, 2015). Building on

previous research, we aim to address the extent to which conditional factors influence knowledge-sharing behaviour and determine the impact of knowledge-sharing behaviour on firms' competitiveness.

3. Methodology

3.1 Sample and data collection

Twenty-eight observed variables, measuring the five knowledge sharing behaviour constructs were collected from the current knowledge management literature. Each of these observed variables was operationalized on a five-point Likert scale, with the higher end of the scale representing respondent's strong agreement with the statement and the lower end of the scale representing a strong disagreement. Respondents were asked to evaluate each statement to the best of their knowledge. Variables names and labels are depicted in [Table I](#), the rotated factor solution matrix. In addition, the questionnaire includes five demographic variables, intended to evaluate the profile of the respondents and for possible additional analysis.

The questionnaire was pilot tested to ensure the reliability of the research constructs. The final version of the questionnaire along with a cover letter explaining the importance of the study was distributed to 640 people in five different industries in one of the Gulf region countries. Two hundred and fifty questionnaires were collected, of which 17 were unusable for missing data of more than 50 per cent of the questionnaire. The remaining 233 questionnaires (net response rate of 36.4 per cent) were used throughout the analyses. To ensure that the sample is representative to the population from which it was drawn, a random sample from the none-responding companies was selected and the hypothesis that no significant differences in the size between responding and none-responding companies. At a probability level of 0.05, the null hypothesis could not be rejected. Therefore, the sample is not contaminated by none-response bias and that our sample is a true representation of the population from which it was drawn.

3.2 Profile of respondents

3.2.1 Age of the respondent. Respondents were asked about their age. This variable was operationalized as a categorical variable as shown in [Table II](#).

It is obvious that about 43 per cent of respondents are between the age of 25 and 35. Furthermore, one-way analysis of variance ANOVA was run to see if there are significant differences in knowledge sharing behaviour between different age categories. The results of one-way ANOVA shows that there are statistically significant differences in knowledge sharing behaviour between age categories ($F = 3.689$ and $p = 0.005$).

3.2.2 Education level. Respondents were asked to indicate their level of education. This variable was operationalized as a categorical variable, as shown in [Table III](#) below. More than 65 per cent of respondents have a college degree while almost 29 per cent of respondents have a graduate degree. One-way analysis of variance was also use to test whether there are significant differences in the knowledge sharing behaviour among the different categories of this variable. The results of one-way ANOVA) showed that there are no significant differences in knowledge sharing behaviour between respondents with different level of education ($F = 1.206$ and $p = 0.309$).

3.2.3 Type of industry. Respondents were asked to indicate the industry to which their company belongs. This variable was operationalized as in [Table IV](#).

[Table IV](#) shows that 36 per cent of respondents are from the oil and gas industry, 15 per cent are from engineering and technology, almost 12 per cent are from the educational sector, 13.7 per cent are from the service sector, and almost 24 per cent are classified as other industries. As with the previous two demographic variables, one-way ANOVA was

Table I Rotated factor matrix

<i>Observed variables</i>	<i>Openness and trust</i>	<i>Top management support</i>	<i>Component Knowledge sharing behavior</i>	<i>Reward system</i>	<i>Competitiveness</i>
X16: The quality of knowledge shared among my co-workers is respectable	0.758				
X15: I do not doubt my co-workers' ability to share knowledge	0.747				
X12: Knowledge sharing has fostered teamwork in my department/company	0.737				
X11: There is a great deal of openness among my co-workers in knowledge sharing	0.732				
X13: My co-workers know that they can depend on each other for new knowledge	0.656				
X14: My co-workers stand up for each other to protect the knowledge shared	0.611				
X17: My co-workers will not share the wrong knowledge to put me at a disadvantage	0.575				
X26: My department/company encourages knowledge sharing in action, not only in words		0.759			
X27: We are continuously encouraged to bring new knowledge to the department/company		0.732			
28). X28: Open communication is a characteristic of my department/company in relation to knowledge sharing		0.724			
X20: The top management is highly supportive of knowledge sharing in my company		0.704			
X25: The people I report to keep me informed about job-related and other issues of the department/company		0.669			
X19: I can generally get the resources I need to share knowledge in my department/company		0.595			
X18: My superior is enthusiastic about my knowledge sharing involvement in the department/company		0.565			
X5: I share knowledge actively on informal occasions			0.839		
X1: I share knowledge actively on formal occasions			0.664		
X4: I use my company's information system or database to store knowledge			0.624		
X3: I share knowledge through written communication			0.611		
X6: My co-workers share knowledge actively on informal occasions			0.603		
X2: My co-workers share knowledge actively on formal occasions			0.563		
X23: The rewards offered by my company for knowledge sharing are attractive				0.749	
X21: My company rewards knowledge sharing behaviour				0.736	
X22: I am driven by rewards for knowledge sharing				0.694	
X24: Rewards are an essential motivation for knowledge sharing in general				0.620	
X8: Knowledge sharing on informal occasions has increased my job knowledge and skills					0.748
X7: Knowledge sharing on formal occasions has increased my job knowledge and skills					0.622
X9: Collective knowledge sharing has increased my company's competitive advantage					0.616
X10: Knowledge sharing has resulted in new ideas and solutions for my company					0.599
<i>Cronbach' alpha</i>	0.873	0.884	0.822	0.799	0.768

used to determine whether there are significant differences in knowledge sharing behaviour among respondents from different industries. The results of this analysis shows that no significant differences in knowledge sharing behaviour among respondents from different industries ($F = 0.129$ and $p = 0.972$).

Table II Age of the respondent

Age categories	Frequency	(%)	Valid (%)	Cumulative (%)
25 years or below	44	18.9	18.9	18.9
Between 25 and 35	80	34.3	34.3	53.2
Between 36 and 45	53	22.7	22.7	76.0
Between 46 and 55	51	21.9	21.9	97.9
56 or above	5	2.1	2.1	100.0
Total	233	100.0	100.0	

Table III Educational level of the respondent

Education level categories	Frequency	(%)	Valid (%)	Cumulative (%)
<i>Valid</i>				
High school	7	3.0	3.0	3.0
Bachelor's degree	152	65.2	65.2	68.2
Master's degree	50	21.5	21.5	89.7
Doctoral degree	17	7.3	7.3	97.0
Other	7	3.0	3.0	100.0
Total	233	100.0	100.0	

Table IV Industry type

Industry categories	Frequency	(%)	Valid (%)	Cumulative (%)
<i>Valid</i>				
Gas and Oil	84	36.1	36.1	36.1
Engineering technology	35	15.0	15.0	51.1
Education	27	11.6	11.6	62.7
Service	32	13.7	13.7	76.4
Other	55	23.6	23.6	100.0
Total	233	100.0	100.0	

3.2.4 Job function. Respondents were asked about their function in their organizations. This variable was operationalized as a categorical variable with different categories as [Table V](#) shows.

More than 60 per cent of respondents hold managerial positions, 25 per cent of respondents hold technical positions, and 10 per cent hold administrative positions. Furthermore, one-way ANOVA was used to examine whether there are significant differences in the knowledge sharing behaviour among respondents holding different job functions. The results of this analysis shows that there are no significant differences in the knowledge sharing behaviour among respondents holding different job functions ($F = 1.510$ and $p = 0.200$).

Table V Job function of the respondent

Respondent's job categories	Frequency	(%)	Valid (%)	Cumulative (%)
<i>Valid</i>				
Administrative	24	10.3	10.3	10.3
Technical	58	24.9	24.9	35.2
Service-oriented	13	5.6	5.6	40.8
Managerial	117	50.2	50.2	91.0
Others	21	9.0	9.0	100.0
Total	233	100.0	100.0	

3.2.5 Research questions and hypotheses. Our proposed model postulates that the knowledge sharing behaviour is a second-order factor comprising top management support, openness and trust and the reward system and that each of these factors has a positive association with knowledge sharing behaviour. The model also postulates that knowledge sharing behaviour has a strong positive impact on firm's competitiveness. The four research hypotheses, as stated in the literature review section and as depicted on the conceptual model, therefore read:

- H1.* There is a strong association between openness and trust and knowledge sharing behaviour.
- H2.* There is a strong association between top management support and knowledge sharing behaviour.
- H3.* There is a strong association between the reward system and knowledge sharing behaviour.
- H4.* There is a strong association between knowledge sharing behaviour and firm's competitiveness.

These four hypotheses will be tested using the structural equation modelling methodology, after assessing all of the measurement models.

4. Analysis

To test the research hypotheses, the analysis proceeded in three steps. First, we factor analyse the 28 statement of knowledge sharing behaviour and firm's competitiveness to reduce this list into a manageable number of factors (dimensions). Second, we examine the profile of respondents in terms of their age, education, the industry they belong to and job function. Third, we use the structural equation methodology to assess the measurement and structural models postulated in our conceptual model.

4.1 Exploratory factor analysis

The list of the 28 observed variables was subjected to factor analysis procedure (SPSS21). After rotating the solution matrix using the Varimax rotation, five factors emerged and were labeled F1: Knowledge Sharing Behaviour, F2: organizational competitiveness, F3: Reward System, F4: Trust and openness, and F5: Top Management Support Respectively. [Table I](#) shows the rotated matrix solution and the Cronbach's alpha for each of the five dimensions. To ensure the robustness of the factor solution, the sample was split into two halves and each was factor analysed using the same procedure. In each half, the factor solution was replicated. This is an indication of factor solution validity. The rotated solution matrix is depicted in [Table I](#).

4.2 Model assessment

Our model postulates that there is a strong positive association between these three independent latent variables and knowledge sharing behaviour. In addition, we postulate that there is a strong association between knowledge sharing behaviour and firm's competitiveness. To assess our model, we first used confirmatory factor analysis (CFA) to assess the X- and Y- measurement models.

4.2.1 Measurement models. The proposed model comprises three X- and two Y-measurement models and four structural relationships. CFA is used here to assess the reliability of each of the measurement models. [Tables VI-X](#) show the standardized coefficient Lambda and the corresponding *t*-value for each of the observed variables in each measurement model.

4.2.2 Structural models. In this paper, we postulate that there is a strong positive association between knowledge sharing behaviour and the three latent variables of top management support, openness and trust and the reward system in the organization. In

Table VI F1 knowledge sharing behavior measurement model

Measurement model	Observed variables	Indices for assessing the measurement model
F1: Knowledge sharing behavior	X5: I share knowledge actively on informal occasions (0.73 – 12.92)**	NFI 0.959
	X1: I share knowledge actively on formal occasions (0.62 – 11.65)	NNFI 0.953
	X3: I share knowledge through written communication (0.60 – 9.79)	CFI 0.972
	X4: I use my company's information system or database to store knowledge (0.62 – 9.79)	IFI 0.972
	X2: My co-workers share knowledge actively on formal occasions (0.55 – 9.78)	RFI 0.932
	X6: My co-workers share knowledge actively on informal occasions (0.49 – 9.35)	GFI 0.964
		AGFI 0.917

Note: **Indicates the standardize coefficient Lambda and corresponding *t*-values

Table VII F2: firm's competitiveness measurement model

Measurement model	Observed variables	Indices for assessing the measurement model
F2: Firm's competitiveness	X7: Knowledge sharing on formal occasions has increased my job knowledge and skills (0.56 – 10.16)	NFI 0.964
	X8: Knowledge sharing on informal occasions has increased my job knowledge and skills (0.43 – 7.03)	NNFI 0.911
	X9: Collective knowledge sharing has increased my company's competitive advantage (0.66 – 12.96)	CFI 0.970
	X10: Knowledge sharing has resulted in new ideas and solutions for my company (0.67 – 11.82)	IFI 0.971
		RFI 0.892
		GFI 0.977
		AGFI 0.884

Note: **Indicates the standardize coefficient Lambda and corresponding *t*-values

Table VIII F3: reward system

Measurement model	Observed variables	Indices for assessing the measurement model
F3: reward system	X21: My company rewards knowledge sharing behavior (0.66 – 12.26)	NFI 0.978
	X22: I am driven by rewards for knowledge sharing (62 – 10.50)	NNFI 0.949
	X23: The rewards offered by my company for knowledge sharing are attractive (0.64 – 120.23)	CFI 0.982
	X24: Rewards are an essential motivation for knowledge sharing in general (0.56 – 9.75)	IFI 0.982
		RFI 0.933
		GFI 0.982
		AGFI 0.915

addition, we postulate that knowledge sharing behaviour impacts firm's competitiveness. The structural relationships in our model are represented by the following two equations: $\eta_1 = \gamma_{11}\xi_1 + \gamma_{12}\xi_2 + \gamma_{13}\xi_3 + s_1$ and $\eta_2 = \beta_{21}\eta_1 + s_2$. Where the standardized β_{21} is 0.63. parameters estimates are represented on Figure 1 (Figure 2).

Table IX F4: openness and trust

Measurement model	Observed variables	Indices for assessing the measurement model
F4: Openness and trust	X11: There is a great deal of openness among my co-workers in knowledge sharing (0.82–150.79)	NFI 0.936
	X12: Knowledge sharing has fostered teamwork in my department/company (0.85–16.24)	NNFI 0.905
	X13: My co-workers know that they can depend on each other for new knowledge (0.72–12.81)	CFI 0.942
	X14: My co-workers stand up for each other to protect the knowledge shared (0.59–9.4)	IFI 0.943
	X15: I do not doubt my co-workers' ability to share knowledge (0.67–10.63)	RFI 0.894
	X16: The quality of knowledge shared among my co-workers is respectable (0.75–14.62)	GFI 0.898
		AGFI 0.761

Table X F5: top management support measurement model

Measurement model	Observed variables	Indices for assessing the measurement model
F5: Top management support	X17: My co-workers will not share the wrong knowledge to put me at a disadvantage (0.47–5.79)	NFI 0.954
	X18: My superior is enthusiastic about my knowledge sharing involvement in the department/company (0.62–10.11)	NNFI 0.946
	X19: I can generally get the resources I need to share knowledge in my department/company (0.65–11.21)	CFI 0.964
	X20: The top management is highly supportive of knowledge sharing in my company (0.79–13.19)	IFI 0.964
	X25: The people I report to keep me informed about job-related and other issues of the department/company (0.63–11.37)	RFI 0.821
	X26: My department/company encourages knowledge sharing in action, not only in words (0.72–12.56)	GFI 0.829
	X27: We are continuously encouraged to bring new knowledge to the department/company (0.79–14.05)	AGFI 0.852
	X28: Open communication is a characteristic of my department/company in relation to knowledge sharing (0.76–13.72)	

4.3 Overall assessment of the structural models

To assess the structural relationships in our model, we used the fit indexes reported in Table XI below. In addition, we used the criteria of expected cross validation (ECVI), root mean square residual (RMR), Akaike information criterion (AIC), consistent akaike information criterion (CAIC) and root mean square error (REMSEA). It is obvious from Table XI that our model exceeds the cutoff points reported in literature for the fit indexes. Moreover, the parsimony fit index is outstanding, compared to other values reported in literature. All in all, our hypothesized model fits the data well.

4.3.1 Expected cross validation. The ECVI assess the likelihood that the model cross-validates across similar-sized samples from the same population. Because ECVI can take on any value, there is no determined range of values for this criterion (Byrne, 1998). To assess the relationship between knowledge sharing behaviour and firm's competitiveness

Figure 1 The conceptual model

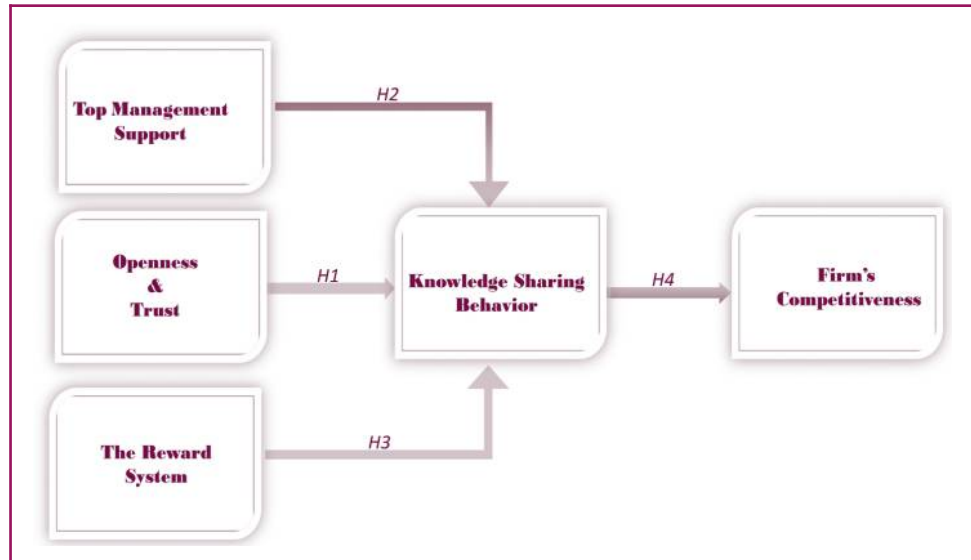
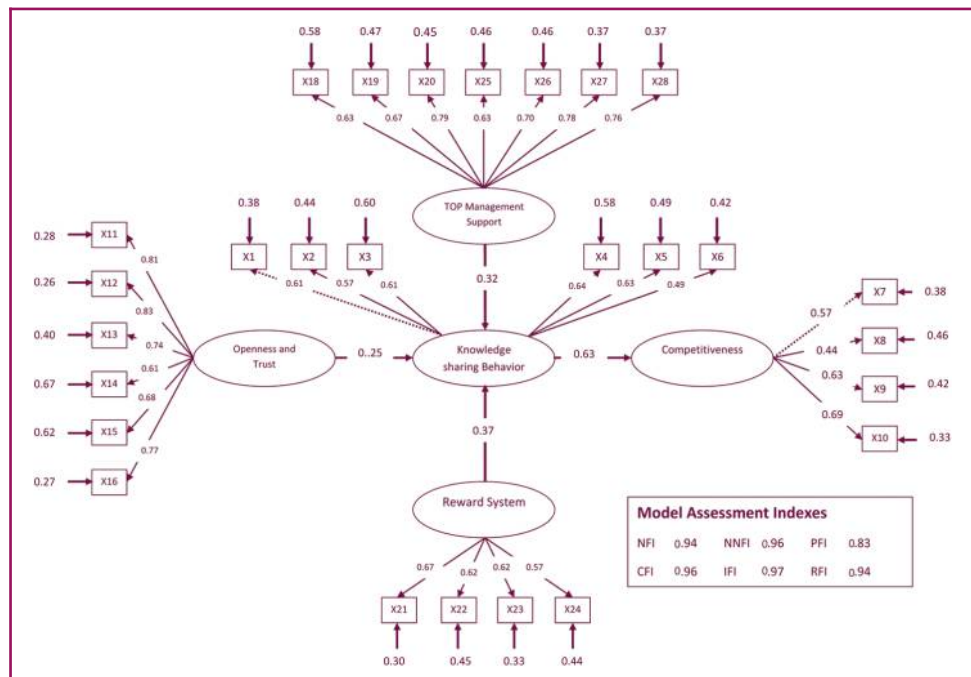


Figure 2 Full model with parameters



(our hypothesized model), we compare the EVCI value of the hypothesized model (3.839) and its 90 per cent confidence interval (3.510; 4.200, with that of both the saturated model (30.483) and the independence model (48.673), we conclude that our model fits the data well.

4.3.2 Root mean square residual. RMR represents the average residual value derived from the fitting of the variance-covariance matrix for the hypothesized model to the variance-covariance matrix of the sample data. Because the RMR values are relative to the size of the observed variance covariance, their standardized values are easier to interpret.

Table XI Indexes for assessing the structural model

Index	Equation	Threshold value reported in literature	Our model
Normed Fit Index (NFI)	$NFI = \frac{ch_b^2 - ch_f^2}{ch_b^2}$	0.90	0.94
Non Normed Fit Index (NNFI)	$NNFI = \frac{(ch_b^2/df_b - ch_f^2/df_f)/(ch_b^2/df_b - 1)}$	0.90	0.96
Parsimony Fit Index PFI	$(df_f/df_b)NFI$	0.50**	0.83
Comparative Fit Index (CFI)	$1 - [(ch_f^2 - df_f)/ch_b^2 - df_b]$	0.90	0.96
Incremental Fit Index (IFI)	$IFI = \frac{(ch_b^2 - ch_f^2)/(ch_b^2 - df_b)}$	0.90	0.97
Relative Fit Index (RFI)	$RFI = (ch_b^2 - ch_f^2) - [df_b - (df_f/n)]/ch_b^2 - (df_f/n)$	0.90	0.94

Note: **According to Mulaik *et al.* (1989)

For our hypothesized model, this value is 0.0702. As our hypothesized model produced a standardized RMR close to that value, it fits the data best.

4.3.3 Akaike information criterion and consistent. The Akaike's (1987) information criterion and Akaike's consistent information criterion address the issue of parsimony in the assessment of model fit. As such, the statistical goodness of fit as well as the number of estimated parameters are taken into account. AIC and CAIC reflect the extent to which parameters estimate from the original sample will cross validate in future samples. If the statistics from the hypothesized model are statistically smaller than they are from other independence saturated, then the hypothesized model represents a better fit to the data. For this purpose, we compared AIC and CAIC of our hypothesized model with those of the independence and saturated models. This comparison is depicted in Table XII.

This comparison shows that the hypothesized model is a better fit to our data.

4.3.4 Root mean square error. Our proposed model produced an REMSEA of 0.0730, with a 90 per cent confidence interval that ranges from 0.0661 to 0.0799. Obviously, the value of REMSEA is in line with the optimal value reported in the SEM literature. The probability value associated with the level of close fit is approximately 0.05. This is an indication that our model fits the data well.

4.3.5 Chi-square for the independence model. The independence model (Null model) is used in the computation of NFI, NNFI and CFI. It serves as a good baseline against which to compare alternative models for the purpose of evaluating the gain in improved fit. Given a sound hypothesized model one would naturally expect the chi square value of the null model to be extremely high, thereby indicating excessive mal-fit to the data. On the other hand, had the hypothesized model been close to the null model, this would have raised serious questions about the soundness of the hypothesized model. The chi square of the independence model is 11,284.823, with 387 degrees of freedom, compared with the chi square of our model of 684.71, with 317 degrees of freedom. Therefore, our hypothesized model fits the data better. Finally, if the ratio of chi square to the degrees of freedom is less than 5 it is another indication that the model is a better fit. In our case, this ratio is $(684.71/317 = 2.15)$.

5. Discussion

This study used the structural equation modelling methodology to test the impact of reward system, top management support and openness and trust on knowledge sharing

Table XII AIC and CAIC comparison

Akaike's criteria	Hypothesized model	Independent model	Saturated model
AIC	1133.0	17761.46	930.00
CAIC	1558.26	17918.96	3371.24

behaviour. Subsequently, the study tests the influence of knowledge sharing behaviour on firms' competitiveness. The findings of this study indicate that the three independent latent variables of reward system, top management support and openness and trust do in fact impact knowledge sharing behaviour moderately. As knowledge management in our regional setting is still in its infancy, one can surmise that the impact of the three independent variables will be even stronger as organizations in this part of the world start to embrace and value the sharing of knowledge.

Participants in this study are more willing to engage in cooperative behaviours, such as knowledge sharing behaviour, when a relationship is characterized by openness and trust as one construct. In light of the social nature in an emerging economy such as that of Saudi Arabia, openness and trust are major factors in engaging in knowledge sharing behaviour. In addition openness and trust lowers uncertainty and foster risk-taking behaviour and collaboration. In addition to the moderate effect of openness and trust, as our model shows, participants consider reward system as equally important. Furthermore, top management support, universally claimed in many knowledge sharing behaviour models, in developed and developing economies, is equally important in our model.

In summary, our results confirm the argument in the existing literature on the impact of openness and trust, top management support, reward system knowledge sharing behaviour. The fact that our findings are not different from those found in other studies in the Arabian Gulf states is that the workforce consists mainly of expatriates. In particular, managerial positions are occupied by high skilled expatriates from the Western countries (Haak-Saheem and Brewster, 2017).

5.1 Theoretical and practical implication

To the best of our knowledge, this study constitutes a unique and unprecedented in the way of how knowledge sharing behaviour was modelled and tested in this part of the world. The fact that our data were collected from five differing industries in this emerging economy, this diversification provides strengths in the novelty of our approach.

The findings of this study have many implications for both academics and practitioners.

For academics, it encourages further exploration of the knowledge sharing behaviour in other emerging economies, particularly in the Middle Eastern transitioning markets. Future studies in this regard are needed confirm or refute our results. The extension of this study can be done in several ways. First, a larger sample from the same economy can be collected and analysed. Second, multiple samples from other countries of the region can be used to compare or contrast knowledge sharing behaviour in differing countries.

We also recognize the value, in future studies, of extending research models to examine the sharing of specific types of knowledge assets and examine knowledge sharing beyond the boundaries of organizations (reflecting the increasing necessity for organizational members to share knowledge with customers, suppliers and other shareholders). Additionally, it might of theoretical value to include data on knowledge sharing from other sources such as peers or supervisors.

Our findings should motivate practitioners to place emphasis on reward system, top management support and openness and trust in that order. In the context of our study, Sabri (2005) argued that a successful transition of the Arab societies into more knowledge focused economies requires fundamental changes in the management capabilities and organizational structures. Skok and Tahir (2010) identify the Arab culture as a main barrier to knowledge management and knowledge sharing.

Based on our findings, we propose the following suggestions to those who are leading knowledge-management initiatives or otherwise desiring to encourage knowledge sharing within their organizations. First, practitioners should ensure the implementation of

supportive management system. This perception is of great importance with regard to their knowledge sharing behaviour. Second, our findings suggest that decision makers should create a work environment which is characterized by trust and openness. Our findings also suggest that practitioners should ensure the implementation of effective reward. For example, managers and policy maker should create a social environment that can facilitate and forestall intrinsic motivation, by supporting the psychological need of the people. In this context, it is of great value to assign tasks according to the competencies of the individual employees. However, it is critical to have in mind that individuals will be intrinsically motivated only for activities that hold intrinsic interest for them, activities that have the appeal of novelty, challenge or aesthetic value (Deci and Ryan, 2000).

5.2 Limitation

Despite the contribution of the paper, it should be noted that the findings must be seen in light of several limitations. First, our conclusion can be drawn only on the population from which the sample was drawn –emerging economies. In conclusion, knowledge sharing behaviour is in its infancy in most of developing economies. Companies that compete globally have come to realize that converting tacit- into explicit knowledge is important for encouraging and promoting knowledge sharing behaviour. Such activities will cultivate an organizational environment in which the synergy of knowledge sharing behaviour thrives and enables companies to achieve multiple competitive advantage.

In this paper, we postulate that top management support, openness and trust and existing reward systems will impact the knowledge sharing behaviour, which, in turn, leads to enhancing company's competitiveness.

References

- Abbey, A. and Dickson, J.W. (1983), "R&D work climate and innovation in semiconductors", *Academy of Management Journal*, Vol. 26 No. 2, pp. 362-368.
- Afiouni, F. (2007), "Human resource management and knowledge management: a road map toward improving organizational performance", *Journal of American Academy of Business*, Vol. 11 No. 2, pp. 124-130.
- Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.
- Akaike, H. (1987), "Factor analysis and AIC", *Psychometrika*, Vol. 52 No. 3, pp. 317-332.
- Al-Adaileh, R.M. and Al-Atawi, M.S. (2011), "Organizational culture impact on knowledge exchange: Saudi Telecom context", *Journal of Knowledge Management*, Vol. 15 No. 2, pp. 212-230.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-1184.
- Ames, C. (1992), "Classrooms: goals, structures, and student motivation", *Journal of educational psychology*, Vol. 84 No. 3, p. 261.
- Bartol, K.M. and Locke, E.A. (2000), "Incentives and motivation: compensation in organizations", *Current Research and Practice*, pp. 104-147.
- Bartol, K.M. and Srivastava, A. (2002), "Encouraging knowledge sharing: the role of organizational reward systems", *Journal of Leadership & Organizational Studies*, Vol. 9 No. 1, pp. 64-76.
- Bello, D.C. and Kostova, T. (2012), "From the editors: conducting high impact international business research: the role of theory", *Journal of International Business Studies*, Vol. 43 No. 6, pp. 537-543.
- Bender, S. and Fish, A. (2000), "The transfer of knowledge and the retention of expertise: the continuing need for global assignment", *Journal of Knowledge Management*, Vol. 4 No. 2, pp. 125-137.
- Bozionelos, N. (2009), "Expatriation outside the boundaries of the multinational corporation: a study with expatriate nurses in Saudi Arabia", *Human Resource Management*, Vol. 48 No. 1, pp. 111-134.

- Buch, R., Dysvik, A., Kuvaas, B. and Nerstad, C.G. (2015), "It takes three to tango: exploring the interplay among training intensity, job autonomy, and supervisor support in predicting knowledge sharing", *Human Resource Management*, Vol. 54 No. 4, pp. 623-635.
- Bunderson, J.S. and Sutcliffe, K.M. (2003), "Management team learning orientation and business unit performance", *Journal of Applied Psychology*, Vol. 88 No. 3, p. 552.
- Byrne, B.M. (1998), *Structural Equation Modeling*, Psychology Press, New York, NY.
- Cabrera, A., Collins, W.C. and Salgado, J.F. (2006), "Determinants of individual engagement in knowledge sharing", *The International Journal of Human Resource Management*, Vol. 17 No. 2, pp. 245-264.
- Camelo-Ordaz, C., Garcia-Cruz, J., Sousa-Ginel, E. and Valle-Cabrera, R. (2011), "The influence of human resource management on knowledge sharing and innovation in Spain: the mediating role of affective commitment", *The International Journal of Human Resource Management*, Vol. 22 No. 7, pp. 1442-1463.
- Casimir, G., Lee, K. and Loon, M. (2012), "Knowledge sharing: influences of trust, commitment and cost", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 740-753.
- Cavaliere, V., Lombardi, S. and Giustiniano, L. (2015), "Knowledge sharing in knowledge-intensive manufacturing firms: an empirical study of its enabler", *Journal of Knowledge Management*, Vol. 19 No. 6, pp. 1124-1145.
- Chennamaneni, A., Teng, J.T. and Raja, M.K. (2012), "A unified model of knowledge sharing behaviours: theoretical development and empirical test", *Behaviour & Information Technology*, Vol. 31 No. 11, pp. 1097-1115.
- Chiang, H.H., Han, T.S. and Chuang, J.S. (2011), "The relationship between high-commitment HRM and knowledge-sharing behavior and its mediators", *International Journal of Manpower*, Vol. 32 Nos 5/6, pp. 604-622.
- Conner, K.R. and Prahalad, C.K. (1996), "A resource-based theory of the firm: knowledge versus opportunism", *Organization science*, Vol. 7 No. 5, pp. 477-501.
- Costa, P.T. and McCrae, R.R. (1992), "Four ways five factors are basic", *Personality and individual differences*, Vol. 13 No. 6, pp. 653-665.
- Davenport, T.H. and Prusak, L. (1998), *Working knowledge: How organizations manage what they know*. Harvard Business Press.
- Davenport, T.H., De Long, D.W. and Beers, M.C. (1998), "Successful knowledge management projects", *MIT Sloan Management Review*, Vol. 39 No. 2, p. 43.
- Deci, E.L. and Ryan, R.M. (2000), "The 'what' and 'why' of goal pursuits: human needs and the self-determination of behavior", *Psychological Inquiry*, Vol. 11 No. 4, pp. 227-268.
- Dingman, J.M. (1990), "Personality structure: emergence of the five-factor model", *Annual Review of Psychology*, Vol. 41, pp. 417-440.
- Edmondson, A. (1999), "Psychological safety and learning behavior in work teams", *Administrative Science Quarterly*, Vol. 44 No. 2, pp. 350-383.
- Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Addison-Wesley, Reading, MA.
- Frappaolo, C. (2002), *Knowledge Management*, Capstone Publishing, Oxford.
- Gagné, M. (2009), "A model of knowledge-sharing motivation", *Human Resource Management*, Vol. 48 No. 4, pp. 571-589.
- Grant, R.M. (1996), "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, Vol. 17 No. S2, pp. 109-122.
- Haak-Saheem, W. and Brewster, C. (2017), "Hidden' expatriates: international mobility in the United Arab Emirates as a challenge to current understanding of expatriation", *Human Resource Management Journal*, doi: [10.1111/1748-8583.12147](https://doi.org/10.1111/1748-8583.12147).
- Haak-Saheem, W. and Darwish, T.K. (2014), "The role of knowledge management in creating a culture of learning: the case of Dubai municipality", *Management Decision*, Vol. 52 No. 9, pp. 1611-1629.

- Haak-Saheem, W., Darwish, T.K. and Al-Nasser, A.D. (2016), "HRM and knowledge transfer: a micro analysis in a Middle Eastern emerging market", *The International Journal of Human Resource Management*.
- Hansen, M.T. and Nohria, N. (2004), "How to build collaborative advantage", *MIT Sloan Management Review*, Vol. 46 No. 1, pp. 22-30.
- Harry, W. (2007), "Employment creation and localization: the crucial human resource issues for the GCC", *The International Journal of Human Resource Management*, Vol. 18 No. 1, pp. 132-146.
- Hinds, P. and Pfeffer, J. (2003), "Why organizations don't 'know what they know': cognitive and motivational factors affecting the transfer of expertise", *Sharing Expertise: Beyond Knowledge Management*, MIT Press, Cambridge, MA, pp. 3-26.
- Hislop, D. (2002), "Mission impossible? Communicating and sharing knowledge via information technology", *Journal of Information Technology*, Vol. 17 No. 3, pp. 165-177.
- Hvidt, M. (2009), "The Dubai model: an outline of key development-process elements in Dubai", *International Journal of Middle East Studies*, Vol. 41 No. 3, pp. 397-418.
- Jasimuddin, S.M. (2008), "A holistic view of knowledge management strategy", *Journal of Knowledge Management*, Vol. 12 No. 2, pp. 57-66.
- Jones, N.B. and Mahon, J.F. (2012), "Nimble knowledge transfer in high velocity/turbulent environments", *Journal of knowledge management*, Vol. 16 No. 5, pp. 774-788.
- Kaše, R., Paauwe, J. and Zupan, N. (2009), "HR practices, interpersonal relations, and intrafirm knowledge transfer in knowledge-intensive firms: a social network perspective", *Human Resource Management*, Vol. 48 No. 4, pp. 615-639.
- Kim, Y.W. and Ko, J. (2014), "HR practices and knowledge sharing behavior: focusing on the moderating effect of trust in supervisor", *Public Personnel Management*, Vol. 43 No. 4, pp. 586-607.
- Kogut, B. and Zander, U. (1992), "Knowledge of the firm, combinative capabilities, and the replication of technology", *Organization Science*, Vol. 3 No. 3, pp. 383-397.
- Kumar, N. and Che Rose, R. (2012), "The impact of knowledge sharing and Islamic work ethic on innovation capability", *Cross Cultural Management: An International Journal*, Vol. 19 No. 2, pp. 142-165.
- Kuvaas, B. (2008), "An exploration of how the employee – organization relationship affects the linkage between perception of developmental human resource practices and employee outcomes", *Journal of Management Studies*, Vol. 45 No. 1, pp. 1-25.
- Lin, H.F. (2011), "An empirical investigation of mobile banking adoption: the effect of innovation attributes and knowledge-based trust", *International Journal of Information Management*, Vol. 31 No. 3, pp. 252-260.
- Lin, S.W. and Lo, L.Y.S. (2015), "Mechanisms to motivate knowledge sharing: integrating the reward systems and social network perspectives", *Journal of Knowledge Management*, Vol. 19 No. 2, pp. 212-235.
- McElroy, M.W. (2003), *The New Knowledge Management: Complexity, Learning, and Sustainable Innovation*, Routledge, London.
- McNeish, J. and Mann, I.J.S. (2010), "Knowledge sharing and trust in organizations", *IUP Journal of Knowledge Management*, Vol. 8 Nos 1/2, p. 18.
- Manning, P. (2010), "Explaining and developing social capital for knowledge management purposes", *Journal of Knowledge Management*, Vol. 14 No. 1, pp. 83-99.
- Matzler, K., Renzl, B., Müller, J., Herting, S. and Mooradian, T.A. (2008), "Personality traits and knowledge sharing", *Journal of Economic Psychology*, Vol. 29 No. 3, pp. 301-313.
- Mayer, R.C., Davis, J.H. and Schoorman, F.D. (1995), "An integrative model of organizational trust", *Academy of Management Review*, Vol. 20 No. 3, pp. 709-734.
- Millar, C., Chen, S. and Waller, L. (2015), "Special issue of International Journal of Human Resource Management: leadership in global knowledge-intensive firms", *The International Journal of Human Resource Management*, Vol. 26 No. 13, pp. 1779-1781.

- Minbaeva, D.B. (2013), "Strategic HRM in building micro-foundations of organizational knowledge-based performance", *Human Resource Management Review*, Vol. 23 No. 4, pp. 378-390.
- Minbaeva, D., Foss, N. and Snell, S. (2009), "Bringing the knowledge perspective into HRM", *Human Resource Management*, Vol. 48 No. 4, pp. 477-483.
- Minbaeva, D.B., Mäkelä, K. and Rabbiosi, L. (2012), "Linking HRM and knowledge transfer via individual-level mechanisms", *Human Resource Management*, Vol. 51 No. 3, pp. 387-405.
- Mohamed, M.S., O'Sullivan, K.J. and Ribiere, V. (2008), "A paradigm shift in the Arab region knowledge revolution", *Journal of Knowledge Management*, Vol. 12 No. 5, pp. 107-120.
- Monavvarian, A., Asgari, N., Akhavan, P. and Ashena, M. (2013), "Developing social capital for facilitating knowledge management practices", *International Journal of Social Economics*, Vol. 40 No. 9, pp. 826-844.
- Mulaik, S.A., James, L.R., Van Alstine, J., Bennett, N., Lind, S. and Stilwell, C.D. (1989), "Evaluation of goodness-of-fit indices for structural equation models", *Psychological Bulletin*, Vol. 105 No. 3, p. 430.
- Nelson, K.M. and Cooperider, J.G. (1996), "The contribution of shared knowledge to IS group performance", *MIS Quarterly*, Vol. 20 No. 4, pp. 409-432.
- Noe, R.A. and Wilk, S.L. (1993), "Investigation of the factors that influence employees' participation in development activities", *Journal of Applied Psychology*, Vol. 78 No. 2, p. 291.
- Nonaka, I. and Peltokorpi, V. (2006), "Objectivity and subjectivity in knowledge management: a review of 20 top articles", *Knowledge and Process Management*, Vol. 13 No. 2, pp. 73-82.
- Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press. New York, NY.
- O'Dell, C. and Hubert, C. (2011), *The New Edge in Knowledge: How Knowledge Management is Changing the Way We Do Business*, John Wiley & Sons, New Jersey.
- Penrose, E.T. (1952), "Biological analogies in the theory of the firm", *The American Economic Review*, Vol. 42 No. 5, pp. 804-819.
- Roeser, R.W., Midgley, C. and Urdan, T.C. (1996), "Perceptions of the school psychological environment and early adolescents' psychological and behavioral functioning in school: the mediating role of goals and belonging", *Journal of Educational Psychology*, Vol. 88 No. 3, p. 408.
- Ronen, S. and Shenkar, O. (1985), "Clustering countries on attitudinal dimensions: a review and synthesis", *Academy of Management Review*, pp. 435-454.
- Ruggles, R. (1998), "The state of the notion: knowledge management in practice", *California Management Review*, Vol. 40 No. 3, pp. 80-89.
- Sabetzadeh, F. and Tsui, E. (2011), "Social motives polarity and its impact on knowledge sharing", *VINE*, Vol. 41 No. 1, pp. 76-88.
- Sabri, H. (2005), "Knowledge management in its context: adapting structure to a knowledge creating culture", *International Journal of Commerce and Management*, Vol. 15 No. 2, pp. 113-128.
- Scott, S.G. and Bruce, R.A. (1994), "Determinants of innovative behavior: a path model of individual innovation in the workplace", *Academy of Management Journal*, Vol. 37 No. 3, pp. 580-607.
- Seba, I., Rowley, J. and Lambert, S. (2012), "Factors affecting attitudes and intentions towards knowledge sharing in the Dubai Police Force", *International Journal of Information Management*, Vol. 32 No. 4, pp. 372-380.
- Skok, W. and Tahir, S. (2010), "Developing a knowledge management strategy for the Arab world", *The Electronic Journal of Information Systems in Developing Countries*, Vol. 21, p. 41.
- Szulanski, G. (1996), "Exploring internal stickiness: impediments to the transfer of best practice within the firm", *Strategic Management Journal*, Vol. 17 No. S2, pp. 27-43.
- Teece, D.J. (1998), "Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets", *California Management Review*, Vol. 40, pp. 55-79.
- Teh, P.L. and Sun, H. (2012), "Knowledge sharing, job attitudes and organisational citizenship behavior", *Industrial Management & Data Systems*, Vol. 112 No. 1, pp. 64-82.

Teh, P.L. and Yong, C.C. (2011), "Knowledge sharing in IS personnel: organizational behavior's perspective", *Journal of Computer Information Systems*, Vol. 51 No. 4, pp. 11-21.

Tortoriello, M. (2015), "The social underpinnings of absorptive capacity: the moderating effects of structural holes on innovation generation based on external knowledge", *Strategic Management Journal*, Vol. 36 No. 4, pp. 586-597.

Usoro, A., Sharratt, M.W., Tsui, E. and Shekhar, S. (2007), "Trust as an antecedent to knowledge sharing in virtual communities of practice", *Knowledge Management Research & Practice*, Vol. 5, pp. 199-212.

Vroom, V.H. (1964), *Work and Motivation*, Jossey-Bass, San Francisco, CA.

Weir, D. and Hutchings, K. (2005), "Cultural embeddedness and contextual constraints: knowledge sharing in Chinese and Arab cultures", *Knowledge and Process Management*, Vol. 12 No. 2, pp. 89-98.

Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, pp. 171-180.

Yam, R.C. and Chan, C. (2015), "Knowledge sharing, commitment and opportunism in new product development", *International Journal of Operations & Production Management*, Vol. 35 No. 7, pp. 1056-1074.

Yen-Tsang, C., Csillag, J.M. and Siegler, J. (2012), "Theory of reasoned action for continuous improvement capabilities: a behavioral approach", *Revista de Administração de Empresas*, Vol. 52 No. 5, pp. 546-564.

Zand, D.E. (1972), "Trust and managerial problem solving", *Administrative Science Quarterly*, Vol. 17 No. 2, pp. 229-239.

Further reading

Davenport, T.H. and Prusak, L. (2000), *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School Press, Boston, MA.

Liao, L. (2006), "A learning organization perspective on knowledge-sharing behavior and firm innovation", *Human Systems Management*, Vol. 25 No. 4, p. 227.

Nag, R., Corley, K.G. and Gioia, D. (2007), "The intersection of organizational identity, knowledge, and practice: attempting strategic change via knowledge crafting", *Academy of Management Journal*, Vol. 50 No. 4, pp. 821-847.

Senge, P. (1992), "Building learning organizations", *The Journal for Quality and Participation*, Vol. 15 No. 2, p. 30.

World Bank Group (Ed.) (2012), *World Development Indicators 2012*, World Bank Publications, New York, NY.

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