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# **HRM and Knowledge Transfer: A Micro Analysis in a Middle Eastern Emerging Market**

Washika Haak-Saheem, Tamer K. Darwish, and Amjad D. Al-Nasser

## **Abstract**

This is a study surrounding the interplay between Human Resource Management (HRM) and knowledge transfer within an emerging institutional petro-state. It seeks to link HRM and knowledge transfer through individual-level mechanisms in response to the recent calls for more research on micro-foundations. Our findings provide empirical evidence for the HRM-related factors influencing knowledge exchange in a sample of 815 employees in the national context of the UAE. We found that individual-level perceptions and extrinsic motivation have a positive impact on knowledge exchange; however, we found evidence to suggest only an indirect effect of individual perceptions of organisational commitment to knowledge exchange, via individual intrinsic motivation and social interaction. Unlike some existing accounts from the Western world, individual perceptions of organisational commitment to knowledge sharing had no direct positive impact on knowledge exchange – an issue that may be ascribed to the distinct institutional setting of the UAE. This paper adds to the existing literature on HRM and knowledge exchange by bringing to bear new evidence from a Middle Eastern emerging market setting – an area thus far relatively neglected in the literature.

Keywords: HRM, knowledge exchange, extrinsic motivation, intrinsic motivation, organisational commitment, emerging markets, institutions.

## **Introduction**

The ability to manage knowledge and build human capital determines organisational success in today's businesses. Whilst there is some agreement as to the value of knowledge as a critical resource, there has been a recent call for more research on knowledge management: in particular, knowledge sharing at the individual level (see, e.g., Kogut & Zander, 1992; Grant, 1996; Felin & Hesterly, 2007; Minbaeva, Mäkelä & Rabbiosi, 2012; Tortoriello, 2015). Indeed, the term knowledge management has become ubiquitous in organisational research and is a critical element of major management disciplines, such as strategic management, organisational behaviour or international business management (see, e.g., Penrose, 1952; Cohen & Levinthal, 1990; Grant, 1996, Minbaeva, Foss & Snell, 2009; Minbaeva, 2013). The knowledge-based view

(KBV) has largely extended understanding by suggesting that knowledge is the primary resource underlying value creation, heterogeneity and competitive advantage (Kogut & Zander, 1992; Felin & Hesterly, 2007). In accordance with this trend, scholars in the field of Human Resource Management (HRM) and Strategic HRM (SHRM) in particular have taken an interest in how different HR practices facilitate intraorganisational knowledge transfer (Foss, 2007; Minbaeva, Foss & Snell, 2009). As HRM practices could play an important role in organising and directing human knowledge, skills, and competencies, this belief has led to research into the link between HRM and organisational performance. In light of this, a few empirical studies have provided support for the claim that high-performance HR practices work most immediately through employee attitudes and behaviours such as job satisfaction, effective commitment (Gong, Law, Chang & Xin 2009), service-oriented citizenship behaviours, turnover (Sun, Aryee & Law 2007), and social exchange (Takeuchi, Lepak, Wang & Takeuchi, 2007). Recent theoretical work on the HR–performance causal chain suggests that these studies may oversimplify the relationships between HR practices and employee outcomes by ignoring key factors such as the cultural and institutional environment (see, e.g., Wright & Nishii, 2007; Vaiman & Brewster, 2015). However, it is held that HR practices are likely to have the desired consequences for employees' attitudes and behaviours only to the extent that they are consistently experienced and perceived by employees in intended ways (Bowen & Ostroff, 2004). More recently, interest has been directed toward unit-level Human Capital Resource (HCR), which is often articulated as the effort to better understand the individual-level constructs and organisational processes that are components of, and/or cause, higher-level strategic phenomena such as resources and capabilities (see, e.g., Nyberg, Moliterno, Hale & Lepak, 2014).

However, extant literature addresses knowledge sharing at the aggregate collective level rather than at the individual level (see, e.g., Cabrera & Cabrera, 2005; Mäkelä & Brewster, 2009; Minbaeva et al., 2012; Foss, Lyngsie & Zahra, 2013). We therefore propose that the success of any KM initiative requires the readiness and willingness of individuals to share knowledge within the organisation. Further, understanding the specific circumstances of knowledge sharing encompassed in the particular context under investigation enables us to draw out meaningful comparative lessons and fully understand the results.

Further, although there is a sound body of research on HRM and knowledge sharing, there has been little reference made to non-Western contexts and emerging markets in particular (Walczak, 2008). The existing HRM and knowledge sharing frameworks are largely embedded in the North American or in the general context of established economies; these provide limited platforms from which emerging managers can gain insights as they often need to cope with a set of institutional factors such as geopolitical and social factors, which are quite different from those experienced by established organisations. Clarifying the wide-ranging implications of institutional theory in the field of knowledge transfer is critical. According to institutional theory, organisational decisions are not driven purely by rational efficiency goals but also by social and cultural factors and legitimacy concerns (Wang, Tseng & Yen, 2012).

Previous research has typically viewed institutions as macro-level variables. In general, institutional theory has highlighted organisational motives to acquire acceptability by conforming to the rules and norms of the institutional environment (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). In contrast, Wicks (2001) argues that institutional settings could also be a micro-level variable influencing individual behaviour. From this perspective, a nexus of structural and cultural factors result in factors that in turn result in knowledge transfer. From an

institutional perspective, attention is directed to the rules, norms and beliefs that influence organisations and their members (Scott, 1995). Moreover, institutions formed as a result of internalised understanding of social reality come to define what is real for actors, and, subsequently, individuals transmit these understanding to others (Zucker, 1977). It is also held that institutions constrain firms' behaviour and provide stability and meaning to social behaviour (Scott, 1995). Hence, we can understand knowledge transfer more fully by finding out what is institutionalised in our context. Again, few studies have discussed the matter of managing knowledge in emerging markets (see, e.g., Mohamed, O'Sullivan & Vincent, 2008; Tahir & Skok, 2010; Biygautane & Al-Yahya, 2011; Haak-Saheem & Darwish, 2014). The work carried out in immature markets in general contexts – and that of the Middle East in particular – is not comparable with the intensity of the body of research related to the Western world. There has also been relatively less attention devoted to understanding of Gulf Arabian petro-states' economies. Complementing the wealth of studies that have looked at knowledge management from the point of view of firms or business units, our work seeks to deliver insights and empirical evidence relating to knowledge sharing at the individual level in an underinvestigated institutional setting.

Like countries such as Bahrain, Kuwait, Oman, Qatar and Saudi Arabia, the United Arab Emirates (UAE) is a member of the Gulf Cooperation Council (GCC). In addition, it is a member of the Organization of Petroleum Exporting Countries (OPEC), and about 40% of the country's gross domestic product is based directly on oil and gas output (The World Bank, 2012). Since the discovery of oil in the UAE, the country has become a modern state with a high standard of living, rooted in deep Islamic-based societal structures. Further, over the last few decades, the UAE has applied an economic developmental model that strongly emphasises market liberalism

and economic openness, embracing globalisation while at the same time refraining from challenging the traditional neo-patrimonial leadership structure in the country. In this context, the UAE's economic model has thus been highly distinct from those applied in other GCC countries (Hvidt, 2009). The impact of these and associated challenges in HRM and knowledge transfer is not clear. The institutional environment may suggest the potential development of a model specific to the UAE.

Our paper first provides an overview of the relevant literature on HRM and knowledge sharing, along with its key concepts. Subsequently, our attention is directed towards prior works carried out in the field of HRM and knowledge sharing in emerging economies with a particular focus on micro-level institutional processes affecting knowledge sharing among employees. We then present the methodology and the database used to identify empirical evidence on the aforementioned issues. Relevant results are presented and discussed, and conclusions are drawn on the extent of the validity of the theoretical model in a developing institutional setting.

### **The Nature of the HRM–Knowledge Relationship**

Management scholars and professionals have acknowledged the importance of knowledge as one of the key factors of modern firms, and have underscored the value of knowledge in a strategic concept by referring to the resource-based view of the firm (Kogut & Zander, 1992; Conner & Prahalad, 1996). Penrose offers one of the earliest arguments relating to the internal resources of a firm and the ways in which managers gain competitive advantage from such resources; in this context, she emphasises the role of knowledge as a main driver of creating competitive advantage (Penrose, 1952). From the HRM perspective, or more concretely from the SHRM perspective, two key themes characterise the SHRM literature and dominate the focus of work in

this field: first, coherent systems of mutually reinforcing HR practices are likely to better support sustainable performance outcomes than individual practices (Delery & Shaw, 2001; Darwish et al., 2013); second, not all HR systems are equally effective (MacDuffie, 1995). Thus, substantial research in the SHRM realm has sought to pinpoint characteristics of an optimal HR system for attaining competitive advantage, with support for a high-performance approach to HR management emerging from this stream. More specifically, Kehoe and Wright (2013) include ability-enhancing practices, such as formal selection tests, structured interviews, hiring selectivity, high pay, and training opportunities; motivation-enhancing practices, such as rewards based on individual and group performance outcomes, formal performance evaluation mechanisms, and merit-based promotion systems; and opportunity-enhancing practices, such as formal participation processes, regular communication and knowledge sharing efforts, and autonomy in work-related decision-making. However, HRM performance studies have provided limited insight into the effects of high-performance HR systems on the more proximal individual-level perception and outcomes that they are likely to affect most directly (Dyer & Reeves, 1995) – thereby leading to gaps in the field’s understanding of the mechanisms linking HR practices to performance such as knowledge sharing behaviour, and resulting in calls in the SHRM literature for research attention in this area (see Takeuchi, Chen & Lepak, 2009).

As is well documented in the literature, knowledge is held by individuals, but is also expressed in the traditions and norms by which members collaborate within a social setting (Kogut & Zander, 1992). According to this view, knowledge is embedded in individuals within their social settings, such as interpersonal relationships (Uzzi, 1997). The value of studying individuals as an ‘offspring’ of knowledge creation, transmission and retention is well known in the literature (Cabrera & Cabrera, 2005; Felin & Hesterly, 2007; Minbaeva et al., 2009). Nag and Gioia (2012)



argue in line with Felin and Hesterly (2007), suggesting that the dominant themes in theory and research relating to organisational learning and knowledge management clearly demonstrate the crucial role of individuals in organisational settings. In a similar vein, Teece (1998) proposes that the essence of a firm is to create, transfer, assemble, integrate and exploit knowledge assets (Teece 1998). The firm gains competitive advantage from the competencies deriving from knowledge-based resources. According to Teece (1998), such competencies reflect the skills and experiences of individuals, as well as doing things inside a firm; hence, the question arises in regard to how much know-how and how many individual ideas and experiences become collective at the organisational level. Cohen and Levinthal's concept of absorptive capacity highlights efforts to differentiate firms in their ability to acquire and use external knowledge (see Cohen & Levinthal, 1990). The idea of absorptive capacity suggests a dynamic organisational property, which enables how firms' people management frames evaluate and adapt knowledge to create new ideas (Cohen & Levinthal, 1990; Cabrera & Cabrera, 2005).

Nag and Gioia's study emphasises the importance of understanding the ways in which managerial schemas relate to the interpretation, search for and utilisation of knowledge as a critical resource (Nag & Gioia, 2012). Moreover, the extent to which knowledge is shared by organisational members or uniquely possessed by members affects its transfer (see, e.g., Argote, McEvily & Reagans, 2003). Most recently, Tortoriello (2015) outlines how individuals inside an organisation use external knowledge to generate innovation.

Whilst acknowledging the value of the crucial role of groups within the knowledge exchange process, we argue for a stronger focus to be placed upon individuals, based on the assumption that a deeper understanding of intraorganisational knowledge processes "cannot be reached in lieu of a starting point in individuals" (Foss, 2007, p. 43). As far as our work is concerned, this

means that, if organisational knowledge-based performance is to be explained, we need to consider not only organisational-level antecedents, such as HRM practices, but also, crucially, the individual level of such performance (see Minbaeva, 2013). Despite the proliferation of research into HRM and knowledge-based arguments, a number of fundamental constructs and questions have yet to be clearly defined and explored (see, e.g., Grant, 1996; DeNisi, Wilson & Biteman, 2014).

The premise of the present research, however, is that organisational and collective knowledge sharing is ultimately grounded in the behaviour of individuals. In this context, we turn our attention to those drivers with an impact on knowledge sharing behaviour, such as institutional factors and HRM practices. There are several directions centred on understanding the contextual frame of knowledge sharing; the decision was made to refer to the institutional approach because this theoretical concept has shown how work-related practices and processes are shaped by national context (Kristensen & Morgan, 2012). Further, Kristensen and Morgan (2012) argue that micro-level processes may be most influenced by given institutions and complementarities. In this view, institutions define what is appropriate in an objective, and consequently render other acts unthinkable (Wicks, 2001). Moreover, rather than focusing solely on efficiency-seeking behaviour, institutional theory is concerned with cultural and social impacts on organisations and their members that promote survival and effectiveness through a variety of mechanisms (Oliver, 1991). We can therefore understand the relationship between HRM practices and knowledge sharing more fully by finding out what was institutionalised in this context, e.g., which activities, beliefs and attitudes acquired a rule (see Meyer & Rowan, 1977), thereby becoming resistant to scrutiny and change (Oliver, 1991). In light of the institutional perspective, organisational practices such as HRM practices evolve over time under the influence

of the organisation's history, people and interests, and government interventions, laws, regulations and action. Moreover, as a large body of institutional literature reminds us, organisational practices are shaped by the institutional context as they are deeply embedded in the understanding of social reality, which reflects widespread understanding of social reality (see Meyer & Rowan, 1977; Kostova & Roth, 2002). Therefore, in our work, we consider the potential impact of the institutional context on HRM practices, influencing knowledge sharing in an emerging market setting.

### **HRM and Knowledge Sharing: Does the Context Matter?**

Whilst knowledge management, as a source of competitive advantage, is well studied in the Western context, the topic is still difficult to address outside of the boundaries of the Western world (Sabri, 2005). Whilst most of the literature on HRM and knowledge management is based on the application of Western-based models and concepts, there is little research from the Arab or Islamic perspective (see, e.g., Mellahi & Budhwar, 2006; Branine & Pollard, 2010; Ali, 2010).

Despite the rapid growth of some emerging markets and the development of companies that compete within them, there is less attention directed towards studying how such companies manage knowledge sharing at an individual level. The existing frameworks linking HRM to knowledge sharing are ingrained in the context of developed and mature economies; these provide a limited platform from which organisations and managers in emerging markets can gain insights as they lack the challenge of having to cope with institutional factors, such as institutional upheaval, which are quite different from the experiences of developed nations (see Newman, 2000; Zheng, 2011). Hence, an alternative way of addressing different needs of developing HRM practices and fostering knowledge sharing is required.

In the same vein, knowledge sharing is also an important practice as this stems from the principles of the religion of the context under investigation. The Quranic text and sayings of the Prophet Mohammed in Muslim societies are an indispensable part of sociopolitical discourse (see Ali & Al-Owaidan, 2008) and have a huge influence on people's behaviours and acts. The values of Islam encourage people to gain knowledge and share it, as is evidenced in the Holy Quran: "He Who taught (the use of) the pen – Taught the man which he knew not" (Quran: 96:4–5). The Prophet Mohammed has also encouraged Muslims to acquire knowledge, as is clear from one of his fundamental statements: "Acquire knowledge and impart it to the people" (Al-Tirmidhi, Hadith 107, in O'Kane and Radtke, 2013). Moreover, the revelation of the first Surah (chapters of Quran) of the holy Quran delivered by the Angel Jibril to the Prophet concerns knowledge and education. The significance, variety and benefit of knowledge are mentioned directly and indirectly in several Surahs. Readers of the Quran are frequently requested to use their senses to learn, study and truly understand its meanings. The holy Quran emphasises the importance of knowledge and its degrees; the Quran states, "Allah will raise those of you who have faith and those who have been given knowledge in rank" (Quran: 58:11). The Quran also states, inter alia, "Say, 'Are those who know equal to those who do not know?' Only those who possess intellect take admonition" (Quran: 39:9).

Hence, religion has a considerable impact on people management practices in the Arab context in general and the UAE in particular, and its role and effects cannot be overlooked. In other words, Islamic perspectives on HRM underscore the role of knowledge in achieving economic growth and prosperity and offer useful guidelines for ensuring cooperative labour relationships in the workplace (Ali, 2010). Hence, despite the scarcity of research on knowledge sharing from Islamic perspectives, the importance of knowledge sharing is often emphasised in Islamic

thoughts and values. In addition to Islamic perspectives on knowledge sharing, the government of the UAE invests a huge amount of income in economic development and diversification. In this context, the government seeks to direct its effort and investment into a more knowledge-based economy. As highlighted in the UAE Vision 2021, knowledge is a key driver of the competitive economy. According to this view, knowledge sharing is critical to the dynamic development of the UAE.

In contrast to developed economies, the developmental state paradigm highlights the critical role of government intervention in the country's economy, and focuses on the institutional and political bases for effective intervention (Hvidt, 2007). The context of HRM and knowledge sharing attracts particular interest of the government. As indicated in the UAE Vision 2021, a major aim of the government is to guide and support the preparation of the workforce for the high-value, knowledge-driven economy. Attracting and retaining highly skilled employees and improving nationals' qualifications and their motivation are of specific importance. The overall target of the government is pushing towards the development of human capital excellence (UAE Vision 2021). However, Hvidt (2007) highlights the lack of industrial experiences, shortages of competencies and 'fast track' development as major characteristic of emerging economies. In addition, Sabri (2005) considers the high level of complexity as a major weakness of organisations in the Arab World. Hence, organisations in this regional context require further structural changes and development in order to embrace knowledge management; in particular, knowledge sharing (Sabri, 2005).

Unlike most states within the Middle East context, the government of the UAE focuses on knowledge as a critical resource for future competitiveness. Hence, managing knowledge becomes a crucial factor of sustainable economic growth and organisational competitiveness.

Despite the effort of the government, the concepts of creating an environment in which knowledge sharing can take place is utopia (Haak-Saheem & Darwish, 2014). The lacking concepts and templates have to be seen in light with the rapid changes in the institutional conditions of emerging markets. The dynamic and volatile institutional context in the UAE may often lead to circumstances in which existing HRM practices and competencies become suddenly obsolete, leaving organisations with a competence vacuum. In addition, it is difficult to learn from limited available experiences during periods of significant changes; in other words, many changes in the institutional context inhibit strategic HRM practices in fostering knowledge sharing (Minbaeva, 2013). In a similar vein, Newman (2000) discusses that individuals in such a context face challenges in making strategic decisions, whilst the institutional context itself changes both rapidly and radically. The dilemma is that HRM practices and knowledge sharing are organisational issues with long-term perspectives but embedded in the conditions of emerging economies that exercise tremendous pressure on 'fast track' development underpinned by a great deal of changes. In fact, the fast development and the financial capacity of the states of the GCC motivate organisations to acquire the most advanced technologies to embrace knowledge sharing rather than to cultivate it within organisations.

However, there are no major thoughts on the role of individuals within the process of knowledge sharing that are critical to the further development of the country; however, the stream of knowledge sharing across individuals and organisational boundaries, and into organisational sharing behaviour, heavily relies on individual employees' knowledge sharing behaviours; otherwise stated, effective knowledge sharing is not a matter of advanced technologies but rather the willingness of individuals (Cabrera, Collins and Salgado 2006; Teh and Yong 2011). When taken together, the arguments suggest that the individual-level is crucial in understanding the

ways in which HRM influences knowledge flow within the organisation (see e.g. Minbaeva et al., 2012). In line with this logic, HRM determines individual conditions that are internal to the person and which consist of perception, desires, attitudes and behavioural choices; in other words, it is from individual-level choices and decisions that organisational level knowledge transfer emerges and subsequently economic development is ensured.

In this context, several variables, such as cultural, social and political factors, have an impact on the decision of an individual in terms of participating in the processes of knowledge sharing (see, for example, Whetten, 2009). However, the challenges of HRM in the UAE are special as the ratio of ‘nationals’ to ‘expatriates’ is amongst the most disproportionate in the world (see, for example, Harry, 2007; Rees, Mamman & Bin Braik, 2007; Hvidt, 2009; Forstenlechner & Mellahi, 2011). This point is corroborated by the fact that less than 20% of Dubai’s total population is local citizens, which indicates that nationals are in the minority (Hvidt, 2009). Al-Waqfi and Forstenlechner (2014) further argue that the situation is even more problematic in the private sector, where almost 99% of employees are expatriates. Taking into account the demographic factors, it is therefore quite difficult to develop HRM practices that are able to encourage knowledge sharing amongst a diverse workforce with distinctive cultures or political opinions. Hence, the present work contributes to the existing body of knowledge by applying a Western-derived model in a non-Western context, and further connecting this to the peculiarities of the institutional arrangements of a Middle Eastern petro-state.

### **Conceptual Framework and Hypotheses Development**

Having elaborated on the nature of the micro-foundations of the HRM–knowledge transfer link, we turn our attention to the content of such foundations. It is held that any bundle of HR

practices essentially encompasses an element of selectivity (Guest, 1997; Brewster et al., 2008). However, given our focus on knowledge sharing, extant research on individual-level knowledge transfer recognises commitment, extrinsic and intrinsic motivation and individual engagement as important antecedents of knowledge sharing behaviour (see, e.g., Szulanski, 1996, Hislop, 2002; Hansen & Nohria 2004; Gagné, 2009; Kaše, Pauuwe & Zupan, 2009; Camelo-Ordaz et al., 2011; Minbaeva, 2013). Hence, we shift our focus on these particular practices and investigate their impacts on knowledge-sharing behaviours in the context under investigation.

We support the notion that the relationship between HRM and unit-level knowledge transfer is enabled via individual-level mechanisms. In line with theoretical discussion on SHRM and performance outcomes, we assume that the following individual-level conditions impact on knowledge sharing: perceived individual commitment to knowledge sharing, intrinsic and extrinsic motivation to share knowledge, and engagement in social interactions. Existing literature suggests that HRM can influence and shape individual knowledge sharing behaviours in two distinct ways: through the signalling effect, which influences employees' perceptions; and, secondly, through the direct effect of HRM on employees' extrinsic motivation; it could further be argued that the level to which an individual engages in knowledge sharing is mediated by employees' intrinsic motivation and social engagement (see Bowen & Ostroff, 2004; Minbaeva et al., 2012). Most recently, Pudelko, Reiche and Carr (2015) have highlighted the role of knowledge management within our extended understanding of HRM.

As noted earlier, we test this theoretical proposition in a developing institutional Middle Eastern country. On the one hand, best-practice models tend to assume that certain sets of HR practices will tend to generate optimal results, whilst downplaying the significance of context (see Schuler & Jackson, 1987; Delaney & Huselied, 1996; Pfeffer, 1998). On the other hand, most recent



research argues that HRM is not the same in all parts of the world: universalistic approaches do not work (Vaiman & Brewster, 2015).

*Perceived Organisational Commitment:*

As addressed in the work of Camelo-Ordaz and her colleagues (2011), HRM practices do not influence knowledge sharing directly, rather have a positive impact when commitment mediates the relationship. As discussed earlier, the starting point of the success of any knowledge management initiative is likely to be dependent on having competent and committed employees taking an active role in the process (see e.g. Hislop, 2002). Perceived organisational commitment is viewed as an attitudinal consequence of the psychological contract, with a positive psychological contract assumed as producing positive levels of organisational commitment. Such individual perceptions can be seen as individual conditions of action (Coleman, 1990; Minbaeva et al., 2012).

Further, the willingness to share knowledge relates to the extent to which employees believe that the key promises and obligations they expect from the organisation have been met (Guest, 1997). Whilst Carter and Scarbrough (2001) discuss the ways in which HRM can be linked to the field of knowledge sharing, Storey and Quintas (2001) emphasise that the development of commitment of employees is a key challenge in relation to managing knowledge workers. In a similar vein, Van den Hooff and Ridder (2004) label commitment as a key predictor of employees' behaviour towards knowledge sharing. Bowen and Ostroff (2004) further emphasise the role of HRM practices in influencing the perceptions of employees at the individual-level. In the country context of the UAE, the work of Yousef (2001) indicates the positive relationship between the Islamic work ethics (dominating value system in UAE) and organisational

commitment; it was further claimed that the value system of the employees influences their perception on commitment. With reference to all the aforementioned views, it seems that commitment to the organisation is a necessary condition for sharing knowledge. Hence, in connection to the context under investigation, we hypothesize the following:

*Hypothesis 1: There is a positive relationship between perceived organisational commitment and knowledge sharing across the organisations in the country context of UAE.*

#### *Extrinsic Motivation:*

Extant knowledge-based research recognises the necessity of effort to disseminate knowledge across the organisation (see e.g. Szulanski, 1996; Minbaeva, 2013). As Argote and Ingram (2000) argue, employees must be motivated to expend such an effort. Thus, HRM practices and policies can importantly affect the motivation of workers to share knowledge (Hislop, 2002). However, a strong HRM system can foster similar viewpoints such that the situation leads every employee to hold clear expectations about rewards and incentives for the desired responses and behaviours (Bowen & Ostroff, 2004). Huselid (1995) factor-analysed a number of HRM practices and categorised practices into two categories: those mainly influencing employees' abilities and those having a greater impact on the motivation of employees; therefore, the effectiveness of even highly competent employees is limited when employees are not motivated to participate (see Huselid, 1995; Minabaeva, 2005).

According to the expectancy theory, intentions to share knowledge with peers are determined by consequence expectations (Vroom, 1964): the more positive outcomes are perceived by an individual to be associated with a given action, the more inclined an individual will be to

perform an action, such as sharing knowledge. Moreover, perceived rewards have a significant effect on several work behaviours (see Cabrera, Collins & Salgado, 2006). In a similar vein, Maurer and Tarulli (1994) highlight the strong relationship between extrinsic rewards (tangible rewards) and participation in voluntary behaviours, such as knowledge sharing. In this context, HRM practices may influence the knowledge sharing behaviours of individuals by providing incentives that elicit the appropriate behaviour.

In the present context, the UAE is a wealthy country, indicating its strong financial capacity. Importantly, almost 99% of the jobs in the private sector are staffed by expatriates (Al Waqfi & Forstenlechner, 2014). Extrinsic motivation is a major factor in terms of attracting employees from different parts of the world. Firms located in the UAE are recognised for their generous reward systems; more specifically, high-skilled employees enjoy attractive packages mostly above the standards of other competing markets. Taking the arguments into account, we hypothesise the following:

*Hypothesis 2: There is a positive relationship between extrinsic motivation and knowledge-sharing across the organisations in the country context of UAE.*

#### *Intrinsic Motivation:*

The model introduced by Gagné (2009) on knowledge sharing motivation emphasises the importance of the mediating role of intrinsic motivation. Kuvaas, Buch and Dysvik (2012) discuss motivation as an indicator for assurance with regard to work-related knowledge and skills, which increases the likelihood of sharing knowledge with colleagues. Furthermore, intrinsic motivational factors, such as reciprocal benefits, have been identified as significantly associated with the intention to share knowledge (Ho & Kuo, 2013). The linkage between

motivation and knowledge sharing behaviour is further emphasised in the theoretical discussion of Reinholt, Pedersen and Foss (2011). In contrast to extrinsic motivation, intrinsic motivation to engage in knowledge sharing implies employees find the work itself interesting, enjoyable and stimulating (see Foss et al., 2009). In other words, it is reasonable to expect that intrinsic motivation has a positive impact on knowledge sharing.

Empirical studies show intrinsic motivation encourages highly valued behavioural outcomes, such as learning, creativity and personal growth (see, for example, Amabile, 1993; Deci & Rayn, 2000; Vaansteenkiste, et al. 2004). Cabrera et al. (2006) argue that intrinsic motivation is most likely to matter in terms of knowledge sharing behaviour. Moreover, motivational psychology, principally self-determination theory (Ajzen, 1991) or theory of reinforcement (Pate, 1978) have a strong standing within the discussion on motivation and knowledge sharing. Taking the reinforcement approach into account, intrinsic motivation is a critical factor influencing behaviour. Existing research on HRM practices associated with the management of intrinsic motivation shows the fundamental interests of strategic HRM in managing knowledge flow and building human capital (Minbaeva et al., 2009).

Regardless of the abundance of studies investigating motivation in Western contexts, the Middle East has provided little research relating to motivation and knowledge sharing. This is true for countries such as the UAE and other Middle Eastern countries. In actual fact, the few existing studies available are not based on empirical realities, but rather tend to be anecdotal in nature (Zahra, 2011). Hence, it is not yet possible to chart an effective awareness of intrinsic motivation and knowledge sharing in this part of the world. One possible approach might be to examine the impact of Islamic work ethic on knowledge sharing behaviour (Kumar & Rose 2010). Thus, knowledge sharing can be cultivated since it is grounded in major religions, cultures and

ideologies (Rizk, 2008). Based on all the above reasoning, we put forward the following hypothesis:

*Hypothesis 3: In the country context of UAE, the relationship between perceived organisational commitment and knowledge sharing will be mediated by intrinsic motivation – the higher the intrinsic motivation the more positive is the relationship.*

#### *Engagement in Social Interaction:*

The second mediating effect is given through individual engagement in social interaction. Embeddedness theory suggests that engagement in social interaction influences the flow and quality of information (Granovetter, 1985). Uzzi (1997) highlights that embedded ties characterised by frequent interaction and a high level of trust are associated with a high level of knowledge sharing. Furthermore, much knowledge is subtle, nuanced and difficult to verify, meaning actors do not trust impersonal sources; therefore, personal engagement is critical to knowledge transfer (Granovetter, 2005). Several scholars outline the importance of cultivating interpersonal relationships amongst employees rather than developing and acquiring new technologies for an effective knowledge transfer (see e.g. Hansen & Nohria 2004; Kaše, Pauwe & Zupan, 2009). In sum, firm-level interpersonal relationships enable the development of trust and cooperative culture and behaviours, and therefore have a positive impact on knowledge sharing. From a similar perspective, existing literature on intraorganisational social interaction supports the notion that social interaction that, the more frequent the interaction, the more knowledge exchange takes place (Leana & Van Buren, 1999; Youndt & Snell, 2004). Thus, engagement in social engagement may lead to reciprocity behaviour that has been reported as imperative in facilitating knowledge sharing (Kumar & Rose, 2010).

Although recent years has witnessed considerable attention being directed towards analysing engagement in social interaction, the role of interpersonal relationships in institutional settings, such as the UAE, has not been adequately researched (see, for example, Hutchings and Weir, 2006). Therefore, unveiling aspects of contextualizing can utilize and benefit existing theories and contribute to knowledge accumulation. In conception of this view, we propose:

*Hypothesis 4: Within the context of UAE, the existence of social interaction mechanisms positively mediates the relationship between perceived organisational commitment to knowledge sharing and the level of knowledge exchange an individual engages in. The stronger the interaction, the more positive the relationship.*

## **Methodology**

### ***Sample and Procedures***

The data for this study were drawn from a random sample from different sectors (education, banking; healthcare; hospitality; consultancy and others) in Dubai, as shown in Table 1. Having gained prior corporate approval via interorganisational mailing systems, the questionnaire employed was self-administered. Potential respondents were assured that participation was entirely voluntary. Completed questionnaires were returned via a sealed envelope to a secured drop-off box for collection by the researchers only. The survey was conducted over 6 months, excluding uncompleted questionnaires. In the data screening stage we removed all questionnaires that contained 20%+ missing data. As a result, we removed 19 out of 1000 questionnaires. Because of the smallness of this number, we did not perform the *t*-test for the comparison between the complete and incomplete questionnaires. Other questionnaires were also removed in

the data screening stage: all cases with zero standard deviation were removed from the data set. Further, we also removed all cases with standard deviation less than 0.2 (which indicated that the respondents provided the same answer to all questions except for one or two; we considered them unserious respondents). As a result, the final sample size included 815 answers generated from 1000 distributed questionnaires, making a response rate of 81.5%.

Table 1 provides the characteristics of the targeted sample. The majority of respondents were male (60%), with the largest age group being between 20 and 35 years of age (73%). Notably, foreigners represented 74% of the total subjects, which supports the earlier observation that the ratio of “nationals” to “expatriates” in the national context of the UAE is amongst the most disproportionate in the world (see Harry, 2007; Rees et al., 2007; Hvidt, 2009; Forstenlechner & Mellahi, 2011).

INSERT TABLE 1 ABOUT HERE

## **Measures**

The scales used to measure HRM and knowledge exchange for the present work were based on the work of Minbaeva et al. (2012). In turn, their work is notably based on the theoretical and empirical work of Deci (1975), Vroom (1995), Bresman, Birkinshaw and Nobel (1999), Osterloh, Frost and Frey (2002), Björkman, Barner-Rasmussen and Li (2004), Minbaeva (2005), and Cabrera et al. (2006). The scales consist of 20 items distributed over 5 factors, including knowledge exchange (4 items); intrinsic motivation (3 items); individual engagement in social interactions (6 items); extrinsic motivation (4 items) and perceived organisational commitment (3 items). All questions were answered on a 5-point Likert-type scale (all variables and their

measuring items are shown in Appendix A). Although we have used existing measurement tools from the literature, we would like to acknowledge that such scales may have some limitations. For instance, it is argued that 5-point Likert-type scales are intrinsically coarse and that they are imprecise; information provided by such scales could be lost as respondents with different true scores are considered to have identical standing regarding the underlying construct (see Aguinis et al., 2009). As a result, such coarse scales do not allow the provision of sufficiently discriminating data and would force respondents to provide scores that are systematically biased downwardly or upwardly (ibid.). It is also held that such scales may produce ambiguous results if individuals agree or disagree on mutually exclusive items; hence, such statements need more items to ensure consistent and reliable results (see Spector, 1992). Further, using an advanced level of statistical analysis is essential to develop such scales and to further prove their reliability and validity (ibid.)

## **Data Analysis**

### ***Scale Validity and Reliability:***

In the first stage of data analysis, we conducted Confirmatory Factor Analysis (CFA) such that the number of factors was fixed at 5. CFA is used to determine whether the number of factors (dimensions) and the loadings of measured items on them conform to what is expected on the basis of the proposed model (see Kim & Mueller, 1978). Using CFA to fit the results to one factor for knowledge exchange, a Principal Components Analysis (PCA) with a Promax rotation with Kappa equal to 4 was carried out. The total variance explained for the overall knowledge exchange model (with 20 items) is 67.58% (see Table 2). This indicates acceptable construct validity. The reliability coefficient Cronbach's alpha for data consistency in the scales ranged



between 0.670 (intrinsic motivation) and 0.837 (knowledge exchange). The overall estimate of internal consistency scale was 0.905 for the knowledge exchange model (20 items).

INSERT TABLE 2 ABOUT HERE

The resulting pattern matrix that conform the proposed model is used to compute composite reliability (CR), convergent validity (CV) by using the average variance extracted (AVE) criterion, maximum shared variance (MSV), average shared variance (ASV) and discriminant validity (DV) (see Table 3). The results indicated that the reliability of the construct is met as all the composite reliability coefficients are more than 0.7; the convergent validity is satisfied since all AVEs are more than 0.5. Further, the discriminant validity is met since the square root of AVE is more than all the correlation coefficients within each factor, and AVE is less than MSV for all factors. Moreover, for evaluating the model used in CFA, residual means squared error (RMSEA), standardised root mean square residual (SRMR), normed fit index (NFI), comparative fit index (CFI) and goodness of fit index (GFI) values were taken into consideration, noting that a fit index value of more than 0.90 and a means squared error of less than 0.08 would indicate a close fit of the model. The fit of the measurement model was acceptable, with a significant chi-square value ( $\frac{\chi^2}{degrees\ of\ freedom} = 2.715$ ,  $P < 0.001$ ; SRMR = 0.049, GFI = 0.945; NFI = 0.947; CFI = 0.965 and RMSEA = 0.045).

INSERT TABLE 3 ABOUT HERE

### ***Model Testing:***

The research model was tested using a linear structural equation modelling (SEM) with latent variables as this approach is well-suited to highly complex predictive models (Jöreskog, 1973). SEM is appropriate when theoretically derived paths amongst multiple exogenous and endogenous variables are estimated (Bollen, 1989). In order to minimise the ratio of parameters to observations in estimating the model, scale values for each variable were calculated and corrected for random measurement error. In an effort to adjust for measurement error in the scale values, the error variance was set equal to the variance of the scale value multiplied by 1.0 minus the reliability (Jöreskog & Sörbom, 1989). SEM has several strengths, which make it appropriate for this study, including its ability to handle both reflective and formative constructs.

### ***Results of the SEM Model Analysis:***

Hair et al. (1998) and Hu and Bentler (1999) claim that a general set of criteria enables an evaluation of whether models are characterised by an acceptable fit. SEM analyses were performed using a covariance matrix as input to the Analysis of Moment Structure software (Arbuckle & Wothke, 2003) using maximum likelihood estimation. The fit of the SEM was acceptable, with a significant chi-square ( $\chi^2(4) = 690.771$ ,  $P < 0.001$ ; SRMR = 0.023; GFI = 0.963; NFI = 0.916; CFI = 0.909 and RMSEA = 0.046).

Figure 1 and Table 4 shows the significant parameter estimates for the structural equation model. There are significant positive effects identifiable for all of the tested relationships, except the direct effect of perceived organisational commitment on knowledge exchange ( $\beta = 0.012$ ,  $P = 0.755$ ).

INSERT FIGURE 1 ABOUT HERE

INSERT TABLE 4 ABOUT HERE

As the results indicate, hypothesis 2 is supported in that the estimate of the relationship between extrinsic motivation and knowledge exchange was positive and significant ( $\beta = 0.120$ ,  $P = 0.000$ ). Furthermore, there was an indirect effect between individual perceptions of organisational commitment to knowledge sharing and knowledge exchange via individual intrinsic motivation ( $\beta = 0.336$ ,  $P = 0.000$ ;  $\beta = 0.218$ ,  $P = 0.000$ ; effect =  $0.336 \times 0.218 = .073$ ); and engagement in social interaction ( $\beta = 0.415$ ,  $P = 0.000$ ;  $\beta = 0.279$ ,  $P = 0.000$ ; effect =  $0.415 \times 0.279 = .115$ ), which lends support to hypotheses 3 and 4. The total indirect effect of an individual's perceptions of organisational commitment to knowledge sharing on knowledge exchange was therefore 0.188 ( $0.073+0.115$ ).

#### *Further Tests*

We have also used bootstrapping techniques and the Sobel test to examine the mediation effects of variables. We first used bootstrapping techniques (see Preacher & Hayes, 2004) in order to test the conditional indirect effect of perceived organisational commitment on knowledge exchange through two proposed mediator variables: intrinsic motivation (Model A) and individual engagement (Model B). Figures 2 and 3 show the effect of the mediator using the bootstrap simulation technique with 5000 samples.

INSERT FIGURE 2 ABOUT HERE

INSERT FIGURE 3 ABOUT HERE

The results indicated interesting results in Model B as there is no direct effect between perceived organisational commitment and knowledge exchange but there is a statistically significant indirect relationship, which means that individual engagement is an important mediator for knowledge exchange. The following statistical measures were computed: bootstrap estimates of standard error (SE); an approximate standard error for the standard error (SE-SE); the mean across bootstrap samples of the quantity being estimated (Mean); the difference between the average of 5000 estimates obtained from 5000 bootstrap samples, and the single estimate obtained from the original sample (Bias); and an approximate standard error for the bias estimate (SE-Bias) (see Table 5).

INSERT TABLE 5 ABOUT HERE

Moreover, we calculated the Sobel test as proposed by Preacher and Hayes (2004), for the conditional indirect effect as well as percentile-based, bias-corrected, and bias-corrected and accelerated bootstrap 90% confidence intervals for the conditional indirect effect, which indicated that both models (A and B) are significant (see Table 6).

INSERT TABLE 6 ABOUT HERE

### *Effects of Gender and Nationality*

The findings may reflect potential exogenous factors stemming from the diversity of the sample; therefore, in order to assess our findings, we conducted a multigroup analysis on the model (see Bakker et al., 2003; Floh & Treiblemaier, 2006). First, we attempted to test whether the gender of the employee has an impact on the extent to which he or she shares knowledge with other peers. Hence, in an effort to capture any potential difference, the sample was divided into two groups: males and females. Second, we aimed to understand if the nationality of the employee has an influence on the results. As stated earlier, the ratio of “nationals” to “expatriates” is amongst the most disproportionate in the world (Forstenlechner et al., 2014). Therefore, citizens may have a different perspective on knowledge sharing from that of expatriates. Hence, we reran the model with this subsample and repeated the procedure to test whether or not there would be any significant changes. None of this further analysis resulted in any significant changes in the findings. We discuss these results further in the next section.

### **Discussion and Conclusions**

This article adds to the growing empirical evidence and contributes to our understanding of the interplay between HRM and knowledge transfer at the individual level with considerable attention to the institutional environment of a Middle Eastern petro-state. We investigated the relationship between individual employees' perceptions of organisational commitment to

knowledge sharing, their intrinsic and extrinsic motivations, their social interaction, and the extent to which they exchange knowledge. Our findings provide empirical evidence for the HRM-related factors influencing knowledge sharing in an emerging market setting. As a baseline, our results are consistent with the theoretical work to date that suggests that individual-level perceptions and extrinsic motivation are positively associated with knowledge sharing (Tarulli, 1994; Minbaeva et al., 2012). However, in contrast to the findings of previous research (see Yousef, 2001; Bowen & Ostroff, 2004; Minbaeva et al., 2012), we found evidence to suggest only an indirect effect of individual perceptions of organisational commitment on knowledge exchange via individual intrinsic motivation and social interaction. In other words, individual perceptions of organisational commitment to knowledge sharing had no direct positive impact on knowledge exchange. Further, we found no evidence for the impact of gender on knowledge sharing behaviours, which also contradicts previous findings (see Vallerand & Bissonnette, 1992; Connelly & Keloway, 2003; Minbaeva et al., 2012). At a theoretical level, our study contributes to the literature on HRM and knowledge sharing by providing a micro-level analysis on the relationship between HRM and knowledge sharing complementary to the main focus of recent research in an emerging market setting. The importance of such an analysis can be seen in the fact that organisational knowledge is held by firms' employees, and knowledge exchange mainly occurs amongst individuals or small groups of people within the organisation (Foss, 2007), which paves the way for interorganisational knowledge transfer. Further, this work also contributes to the literature by unlocking the black box of the enigmatic HRM–knowledge transfer relationship. In other words, the current empirical findings offer insights into the mechanisms by which HRM systems impact on knowledge transfer. Hence, it could be argued

that the strength of HR complementarities or systems is positively related to knowledge sharing behaviours at an individual level.

This study is one carried out in a non-Western context, and is, notably, the first of its kind in the national context of the UAE. If HRM systems are unable to foster knowledge sharing in such a setting, this will arguably cast doubt on the broader relevance of people management practices across comparable contexts. In this view, several strengths of our study enhance the contribution of this research to HRM and knowledge management literature and practice. Firstly, looking at the results as discussed above, individual-level perceptions and extrinsic motivation are positively associated with knowledge sharing, which echoes previous research conducted in distinct institutional settings (e.g., Minbaeva et al., 2012). Although it is held that institutions would have an impact on HRM practice in institutional emerging markets (see, e.g., Al-Hasan & James, 2003; Hancke et al., 2007; Darwish et al., 2015), nevertheless, the impacts of the specific institutional setting of the UAE may in fact be minimal. The research on HRM and knowledge exchange in the UAE would suggest that national institutional features realities do not appear to exert a specific strong homogenising effect on firm practices (see Al-Hasan & James, 2003; Darwish et al., 2015). Further, given that this work has focused on a micro-level analysis, it could also be argued that the UAE institutional setting and cultural traditions appear to have far less impact than expected and exert a relatively weak pull on firms under investigation. This finding could be justified as a reflection of the expatriate-dominated workforce. Hence, it could be argued that the characteristics of the existing workforce in the UAE context have contributed in adapting to a more Western-oriented approach to people management, which as a result minimises the potential impacts of the specific institutional and cultural setting. Highly skilled expatriates – mostly originating and educated in the West – decide on the implementation of

people management practices, particularly in multinational companies. Hence, these “acquired” HRM practices benefit and challenge organisations in such an institutional environment. On the one hand, the fast-growing economy of the UAE can benefit from these practices without investing considerable efforts to develop context-related HRM practices; on the other hand, the adoption of Western-based HRM practices may conflict with the existing institutional arrangements and may mislead organisations in their desire to encourage knowledge transfer.

Secondly, it is essential to note that individuals’ perceived organisational commitment to knowledge sharing had no impact on knowledge exchange – an issue that may be ascribed to the work demographics in the UAE. In light of this consideration, our findings point to an interesting question with regard to commitment and knowledge sharing. Despite previous empirical support confirming a positive relationship (see, e.g., Minbaeva et al., 2013), we were able to prove that a distinct institutional environment, such as one characterised by a strongly expatriate-dominated workforce and short-term work contracts, may result in alternative results. This notion is in particular relevant within the discussions around universal high-performance HRM practices and knowledge exchange. Hence, irrespective of their applicability in emerging markets, our results may suggest that the usage of specific sets of people management practices does not always have a strong impact on knowledge exchange in the context of UAE, nor does an ideal synergistic set of HR practices readily emerge within the context under investigation.

Thirdly, our findings support the notion that employees share knowledge primarily because of extrinsic motivation rather than any other obligation such as religious guidelines. The negligence of Islamic principles on knowledge sharing could be grounded in the adoption of Western-based HRM practices, which leads to Western-like working environments. These practices do not reflect any Islamic reference and consequently the religion may not significantly influence the



working environment. Additionally, cultural diversity within the workforce may be seen as another barrier in developing and incorporating HRM practices linked to Islamic principles.

Finally, our results suggest that gender is not associated with knowledge sharing behaviours. In other words, results indicate that males and females do not show significantly different social behaviours. Contrary to existing literature, this would reflect less divergent societal and cultural expectations for the two genders (see Wood & Eagly, 2002) in the national context of the UAE. This result also contradicts the argument that the Arab culture has a significant impact on behavioural differences between males and females (see Whiteoak et al., 2006). Why is this the case? It could be that the dominance of expatriates in the country's workforce keeps the impact of local culture, values and behaviours to a minimum. As mentioned earlier, the ratio of 'nationals' to 'expatriates' is significantly unbalanced in the UAE (see Harry, 2007; Hvidt, 2009; Forstenlechner & Mellahi, 2011); this was also evidenced by our sample, of which foreigners formed 74%. Hence, this remains one of the most important HRM challenges in the UAE in particular, and petro-states in general.

Despite our contributions, however, we acknowledge the limitations of our work. The present study employs a cross-sectional design, which limits the possibility of causal connections among variables (Spector, 1994). It would be more rewarding to use a longitudinal design as this would help to strengthen the reverse causation possibility and assess variables over time. Moreover, although we have targeted several industries, the sample size could be larger and more heterogenic. It was held that particular attention should be assigned to individual heterogeneity and its effect on knowledge processes (see Felin & Hesterly, 2007); hence, future researchers could direct particular focus to individual differences, as they may become pronounced in the aggregation of individuals' actions into organisational-level outcomes. Finally, a closer

examination between the relative efficacy of HRM practice and workforce composition in contexts such as the UAE might yield some interesting new insights into the challenges of managing different categories of expatriates. Although we have discussed some of our results in light of the institutional arrangements within the context under investigation, future work could include some key institutional factors and measure their potential impacts on HRM practice and knowledge sharing behaviours, particularly in emerging markets.

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#### Further reading:

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Table 1: Participant's profile

Variable	Category	N	%
Gender	Male	491	60.6
	Female	319	39.4
Age	20–35	595	73.5
	36–50	186	23.0
	51 +	29	3.6
Nationality	UAE	206	25.6
	Others	599	74.4
Educational Level	HS Diploma	136	17.1
	College Diploma	127	15.9
	Bachelor Degree	417	52.3
	Master Degree	110	13.8
	PhD	7	.9
Position	Non-managerial role	571	73.3
	Manager	62	8.0
	Senior manager	146	18.7
Industry	Education	71	8.9
	Banking	160	20.1
	Health care	47	5.9
	Hospitality	34	4.3
	Consultancy	43	5.4
	Others	443	55.5

Table 2: Percentage (%) of variance, Cronbach's alpha and component loading range

Dimension	Number of Cases	Number of items	Number of Removed items	% of Variance	Cronbach's Alpha	Component Loading Range
Knowledge exchange	796	4	0	14.901	0.837	0.757–0.804
Intrinsic Motivation	786	3	0	14.645	0.670	0.42–0.728
Individual Engagement	774	6	0	14.427	0.817	0.445–0.781
Extrinsic Motivation	762	4	0	12.599	0.802	0.825–0.849
Perceived Organisational Commitment	733	3	0	11.012	0.814	0.771–0.813
Overall	677	20	0	67.584	0.905	0.523 – 0.643

Table 3: Descriptive statistics, reliability and validity measures for the proposed model

	Descriptive Statistics		Reliability and Validity Measures				Correlation Coefficients				
Factor	Mean	SD	CR	AVE	MSV	ASV	K-E	I-M	I-E	E-M	P-O-C
K-E	3.2949	.78890	0.841	0.516	0.404	0.306	0.718*				
I-M	3.3424	.85465	0.866	0.564	0.293	0.238	0.541	0.751*			
I-E	4.0349	.85538	0.789	0.589	0.404	0.269	0.636	0.492	0.767*		
E-M	3.5891	.88093	0.808	0.514	0.228	0.183	0.478	0.355	0.460	0.717*	
P-O-C	3.5590	1.06106	0.882	0.714	0.297	0.242	0.545	0.539	0.465	0.405	0.845*

Notes: K-E: Knowledge exchange; I-M: Intrinsic Motivation ; I-E: Individual Engagement in Social Interaction; E-M: Extrinsic Motivation; P-O-C: Perceived Organisational Commitment; CR: Composite Reliability, AVE: Average Variance Extracted, MSV: Maximum Shared Variance, ASV: Average Shared Variance.

\* is the square root of AVE

Table 4: Standardised estimates of the knowledge-exchange model

Endogenous Variable		Exogenous Variable	Standardised Estimate	Estimate	S.E.	T	P
Intrinsic Motivation	←	Perceived Organisation Commitment	.336	.271	.027	10.170	.000
Individual Engagement	←	Perceived Organisation Commitment	.415	.335	.026	13.018	.000
Knowledge exchange	←	Intrinsic Motivation	.218	.190	.030	6.387	.000
Knowledge exchange	←	Individual Engagement	.279	.243	.031	7.919	.000
Knowledge exchange	←	Extrinsic Motivation	.120	.101	.027	3.733	.000
Knowledge exchange	←	Perceived Organisation Commitment	.012	.008	.026	.312	.755

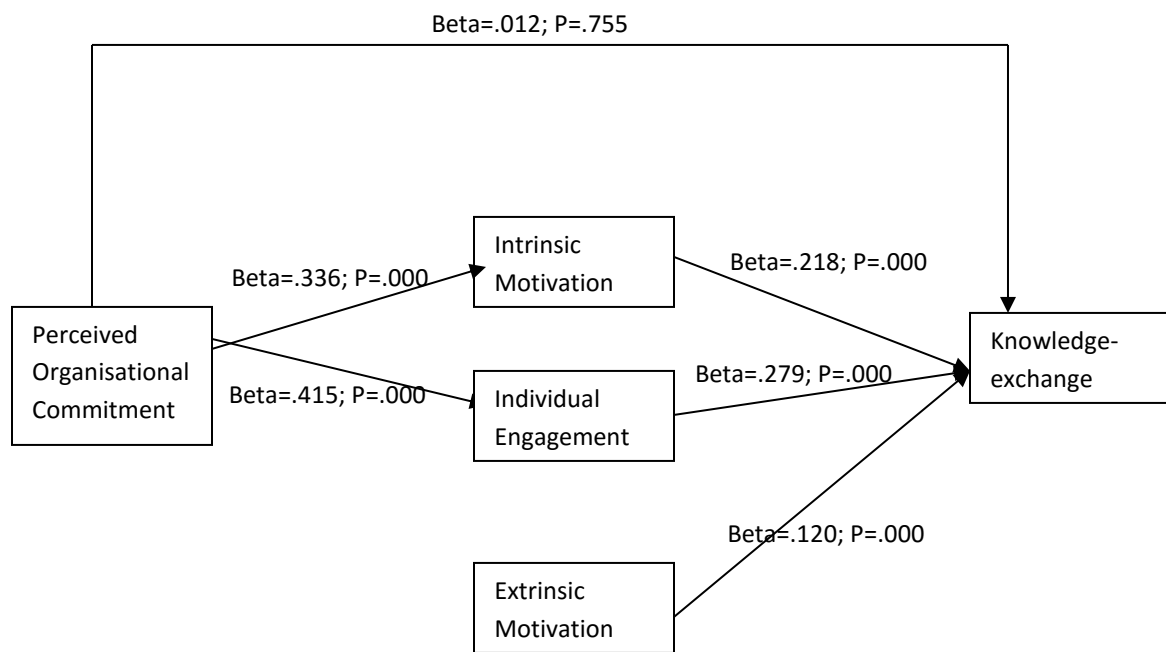


Figure 1: Structural parameter estimates

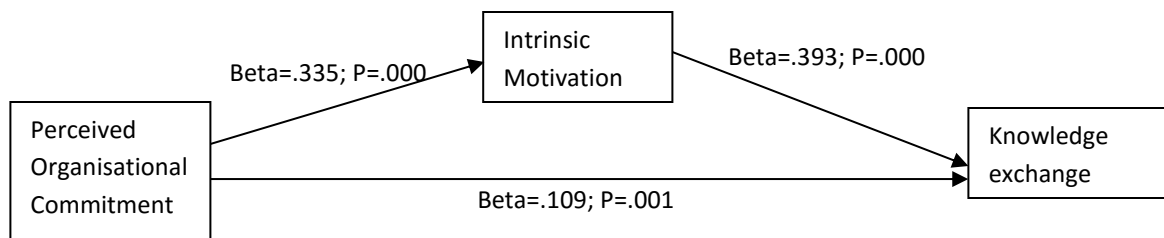


Figure 2: Model A; indirect effect of perceived organisational commitment on knowledge exchange mediated by intrinsic motivation

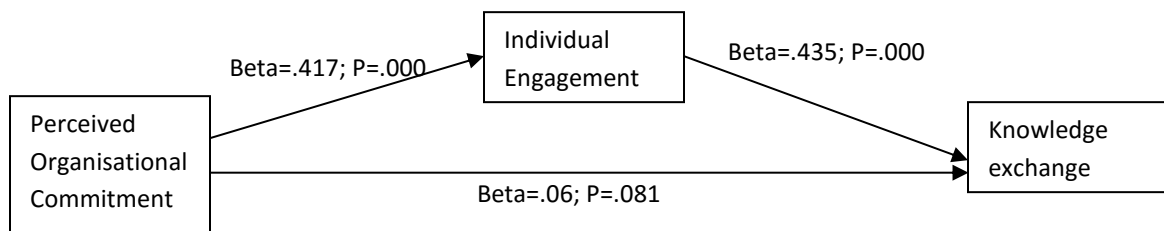


Figure 3: Model B; indirect effect of perceived organisational commitment on knowledge exchange mediated by individual engagement

Table 5: Indirect effect by using bootstrapping with B = 5000

Model	Parameter			Estimate	Standardized	S.E.	C.R.	P	SE	SE-SE	Mean	Bias	SE-Bias
<b>A</b>	I-M	<---	P-O-C	.270	.335	.027	10.158	.000	.052	.001	.335	.000	.001
	K-E	<---	I-M	.363	.393	.031	11.758	.000	.030	.000	.393	.000	.000
	K-E	<---	P-O-C	.081	.109	.025	3.258	.001	.037	.000	.108	.000	.001
<b>B</b>	I-E	<---	P-O-C	.337	.417	.026	13.094	.000	.034	.002	.420	.002	.002
	K-E	<---	I-E	.401	.435	.032	12.712	.000	.038	.002	.435	.000	.003
	K-E	<---	P-O-C	.044	.060	.025	1.746	.081	.042	.002	.062	.002	.003

Notes: K-E: Knowledge exchange; I-M: Intrinsic Motivation ; I-E: Individual Engagement in Social Interaction; P-O-C: Perceived Organisational Commitment.

Table 6: Sobel test results for mediation effects

Model	Parameter			90% Confidence Interval						Indirect Effect		
				Percentile method			bias-corrected percentile method					
				Lower	Upper	P	Lower	Upper	P	Lower	Upper	P
A	I-M	<---	P-O-C	.247	.422	.000	.240	.409	.001	.066	.124	.000
	K-E	<---	I-M	.341	.441	.000	.344	.442	.000			
	K-E	<---	P-O-C	.044	.169	.000	.045	.170	.000			
B	I-E	<---	P-O-C	.347	.490	.010	.338	.472	.020	.141	.227	.012
	K-E	<---	I-E	.360	.510	.010	.361	.518	.007			
	K-E	<---	P-O-C	-.020	.145	.118	-.029	.138	.158			

Notes: K-E: Knowledge exchange; I-M: Intrinsic Motivation; I-E: Individual Engagement in Social Interaction; P-O-C: Perceived Organisational Commitment

## **Appendix A: Constructs and Items**

### **- Knowledge exchange**

To what extent have:

1. You gained knowledge from colleagues in other departments?
2. You used knowledge from colleagues in other departments?
3. Colleagues in other departments gained knowledge from you?
4. Colleagues in other departments used knowledge from you?

### **- Intrinsic motivation**

5. Increased value for me is enough to motivate knowledge-sharing
6. Increased value for my department is enough to motivate knowledge-sharing
7. Increased value for my company is enough to motivate knowledge-sharing

### **- Engagement in social interaction**

To what extent do you use the following media when you *transfer* knowledge to other people in your company?

8. Cross-functional project groups
9. Conferences, seminars, and workshops
10. Meetings

To what extent do you use the following media when you search for knowledge?

11. Cross-functional project groups
12. Conferences, seminars, and workshops
13. Meetings

### **- Perceived organisational commitment**

14. Knowledge-sharing is valued in my company
15. Uncovering and leveraging existing knowledge is highly valued in my company
16. Acquiring and leveraging new knowledge is highly valued in my company

### **- Extrinsic motivation**

How would you prefer to be rewarded for transferring your knowledge in the future?

17. By increments/bonuses
18. By promotion

How would you prefer to be rewarded for reusing knowledge in the future?

19. By increments/bonuses
20. By promotion