
Achieving competitive advantage through knowledge sharing: deducing the determinants of knowledge sharing towards a new concentric model: a review

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Abstract: Knowledge sharing among employees in organisations is vital for achieving competitive advantages. Different researches discussed about a range of predictors of knowledge sharing. This review was to deduce all the possible factors or determinants of knowledge sharing in the existing literature and identified several interesting possible directions for future research. Secondary data have been used for the entire study. The analysis showed that there are a number of factors that affect the knowledge sharing. The paper discussed and analysed the views, opinions and findings of different researchers about the same. This paper has proposed a new meaningful concentric model to classify the antecedents of knowledge sharing. This summarised all antecedents into four domains. As such, factors which are directly relevant to individual fall in the individual domain. While, the group domain includes those factors that cannot be meaningfully or practically separated from a context of interaction with peers, the organisation domain includes factors that are organisationally relevant. Factors with national domain subsume those factors that can be enacted only across the boundary of the organisation. This paper brings together a large range of antecedents of knowledge sharing. Implications and directions for future studies are also discussed.

Keywords: concentric model; knowledge management; knowledge sharing.

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1 Introduction

Role of knowledge management (KM) is indispensable for achieving a comprehensive and sustainable competitive advantage (Abzari and Abbasi, 2011; Mpofu and Chikati, 2013) and it has been playing a vital role in knowledge-intensive economy (Kathiravelu, Mansor and Kenny, 2013). Teh and Yong (2011) stated that important asset of an individual is knowledge. Knowledge should be valued and successfulness of any firm depends on sharing knowledge (Alipour, Idris and Karimi, 2011). Knowledge sharing is the process of knowledge exchange. Knowledge-sharing behaviour among employees is motivated by a number of organisations as the means of achieving organisational objective and goals (Al-Zu'bi, 2011). Knowledge sharing plays an essential role in the organisational effectiveness through enhancing the overall performance, helping to add extra competitive advantages, helping individuals to create new ideas, enhancing work process, achieving creative solutions, developing the individuals and groups skills and competencies, enhancing the organisation's profit, reducing the turnover rate, strengthening the social relationships among groups and individuals, staying dynamic and flexible to face any changes in the working environment (Islam, Ahmad and Mahtab, 2010; Hassandoust and Kazerouni, 2011; Shih and Lou, 2011; Lin, 2007; Seba, Rowley and Delbridge, 2012). It is evident that organisations are benefitted of implementing knowledge sharing (Alam et al., 2009). Sitko-Lutek et al. (2010) stated that organisational members are better equipped with skills and knowledge when they engage in knowledge sharing practices. Based on this fact, knowledge sharing is considered to be the most significant part of KM (Rehman, Mahmood and Sugathan, 2010).

Organisations are willing to invest on knowledge sharing to enjoy its potential benefit. However, such investment for knowledge sharing becomes failure (Babcock, 2004). Not understanding the antecedents which may require for the successful implementation of knowledge sharing may be the main reason for this failure. If organisations fail to consider the influencing factors, they cannot be successful in any knowledge-sharing attempt. Understanding the predictors of knowledge sharing will improve the effectiveness of knowledge-sharing effort. These predictors may be in the form of organisational, interpersonal, or individual (Carter and Scarbrough, 2001; Voelpel, Dous and Davenport, 2005). Since knowledge lies within the employees and they are the one who control the sharing decision (Abdullah et al, 2005), reinforcing them to share knowledge become a serious problem for managers (Akashah, Rizal and Hafiz, 2011). Therefore, there must be a motivation to share their knowledge. While there are a number of barriers for knowledge sharing (Riege, 2005, 2007), managers have to clearly understand what induce employees' knowledge-sharing behaviour to face this challenge. Therefore, organisations must understand what and how employees are motivated to share knowledge. So then organisations will be able to implement appropriate management practices to encourage such behaviour and thereby enjoy the benefits of knowledge sharing.

Few reviews are conducted on this issue (Wang and Noe, 2010; Kathiravelu, Mansor and Kenny, 2013; Aliakbar, Yusoff and Mahmood, 2012). The review conducted by Wang and Noe (2010) found 76 qualitative and quantitative studies published in knowledge sharing between 1999 and 2008. They developed a framework consisting of several areas of emphasis including organisational context, interpersonal and team characteristics, cultural characteristics, individual's characteristics, and motivational factors. Later, Matzler and Muller (2011) studied about individual-related factors that

motivate people to share their knowledge. Some other studies have discussed other factors such as organisational structure (Donate and Guadamillas, 2011), organisational climate (Abzari and Abbasi, 2011), organisational size, information technology (Antonova, Csepregi and Marchev, 2011), and stressors (Teh and Sun, 2012).

Although these reviews are conducted, none of those reviews was conducted systematically after 2010. Therefore, recent studies conducted were not included in those reviews. Even, few studies were missing in those reviews. As a result, new findings, missing studies and new avenues for further research have to be systematically identified. This review focuses on understanding the factors that influence knowledge sharing among employees. Therefore, this paper has two objectives. First, the literature on influence of various factors on knowledge sharing is reviewed. Based on the past literature, this review develops a framework for factors of knowledge sharing. This framework provides the structure to this paper. Second, there are a number of possible factors that can influence knowledge sharing. Those factors may have not been studied so far. Based on the previous literature, this review provides directions for interesting potential future research, which are still untapped by the scholars.

2 Knowledge sharing

Knowledge is awareness or understanding of someone or something such as facts, information, descriptions, or skills. Knowledge sharing at work is the dissemination or exchange of explicit or tacit knowledge among individual employees or groups of employees (Wang et al., 2008). Knowledge is acquired through interaction between individuals and through accumulation of personal experience or education. Such knowledge is mostly tacit in nature. Tacit or implicit knowledge refers to knowledge that lives and sticks in a person's mind (Markus, 2001). In general, this type of knowledge is deeply set in the mind of individuals (Janson and Mcqueen, 2007) and therefore, difficult to quantify and can be lost easily when employees leave organisations. On the other hand, explicit knowledge is easily understood, expressed, and shared among the members in the organisation (Girard, 2006). Knowledge has been widely recognised as the basis for generating an organisation's economic benefit (Teh and Yong, 2011). Both tacit and explicit knowledge should be shared among individuals in organisations to ensure they are retained within the organisations. Especially, in respect of tacit knowledge, organisations should develop proper knowledge-sharing practices.

Now economy is becoming more knowledge intensive and KM plays a vital role in it. KM is a process of producing, maintaining, and sharing knowledge (Akashah, Rizal and Hafiz, 2011). Knowledge-sharing process is one activity of the KM process. Knowledge sharing is the process carried out by people for exchanging through discussion so that new knowledge or thoughts will be formed (Alam et al., 2009; Nordin, Daud and Osman, 2012). A comprehensive definition on knowledge sharing cannot be found in the literature studies. Different authors have provided their definitions for knowledge sharing from their perspectives (Alhalhouli, Hassan and Der, 2014). Lee and Al-Hawamdeh (2002) defined knowledge sharing as a "deliberate act that allows knowledge to be reuse by other people through knowledge transfer". Further, Boon et al. (2010) have defined knowledge sharing as an activity to disseminate the information, values, and ideas among

more than one party; in order to create and rebuild knowledge to be understandable to all parties. The definition of knowledge sharing also varies depending on its situations and needs (e.g., Pulakos, Dorsey and Borman, 2003; Ryu, Ho and Han, 2003; Ho, Hsu and Oh, 2009). For instance, according to Levitt and March (1988), knowledge sharing is a process of obtaining experience from others and it can also be called as “knowledge transfer”. However, according to Szulanski, Cappetta and Jensen (2004), knowledge sharing is different from knowledge exchange and knowledge transfer. They argue that knowledge transfer involves both sharing of knowledge and acquisition and application of knowledge by the recipient.

This knowledge sharing can be taken place through top-down, bottom-up, or horizontal interchanges (Mom, Van Den Bosch and Volberda, 2007). In other words, knowledge sharing is the act of transferring knowledge from one individual to another individual or group (Behnke, 2010). It may include job-related documents, organisational rules, working procedures, or personal experience (Le et al., 2006). Although knowledge sharing has been taken in the simple traditional forms, the new technology has created new ways of sharing knowledge (Behnke, 2010). While knowledge sharing is related to innovation performance (Saenz, Aramburu and Rivera, 2009), lack of knowledge sharing is related to knowledge leak and organisational inefficiency (Al-Zu’bi, 2011).

Organisation’s KM plans to grasp knowledge creation, retention and distribution (Teh and Yong, 2011). If new technologies, innovations and new management techniques are shared among individuals, organisations’ operations will be successful (Alipour, Idris and Karimi, 2011). As the world business realised the importance of knowledge sharing for their business advancement, numerous firms are attracted to adapt knowledge sharing among their employees (Rasli, Madjid and Asmi, 2004). They believe by doing it so, they can easily achieve the aims and goals of the organisation. Firms have improved their performance after the implementation of knowledge sharing (Alam et al., 2009).

However, some employees do not want to share their knowledge (Wei and Asmawi, 2012). A number of reasons have been identified for this situation. This situation is crucial for successful knowledge sharing. Although numerous firms have been applying technological advancement among employees as motive to knowledge-sharing behaviour, some factors hinder the success of knowledge-sharing process (Teh and Yong, 2011). Andreas (2005) found a large number of possible knowledge-sharing barriers at individual, personal, organisational, and technological level.

3 Materials and methods

This paper applied a narrative type of review of the literature. For the purpose of review, popular databases were used to search articles published in scholarly peer-reviewed journals. The terms knowledge sharing, KM, and knowledge exchange were used for the purpose of searching. A total of 118 qualitative and quantitative studies have been found from the literature studies. Figure 1 is drawn on the basis of review of the literature. Figure 1 shows four domains of research related to investigating the antecedents of knowledge sharing. The right hand of Figure 1 shows the common antecedents examined in the literature studies.

4 Review of studies and theoretical framework

Existing literature studies classify the determinants of knowledge sharing into three main factors: the environmental factors, the individual characteristics, and the motivational factors (Wang and Noe, 2010). Such classification could not adequately describe for all the factors that the author found in the knowledge-sharing literature and each classification seems to be fallen into another classification broadly. Therefore, a new framework is needed. This new review of knowledge-sharing literature suggests that it may be more fruitful to classify determinants of knowledge sharing based on broadness of context of factors, rather than on the classical bases of environmental, individual, and motivational. Therefore, the author proposes a concentric model to classify determinants of knowledge sharing. In this model, determinants of knowledge sharing can be classified into four domains based on the broad focus or context of factors such as individual, group, organisation, and national (Figure 1).

A number of individual factors influencing knowledge sharing have been identified in the literature studies. Although it is suggested that individuals are inclined to some work attitudes and behaviours (e.g., Judge and Bono, 2001), empirical studies to examine the effect of individual personality on knowledge sharing are only a few. Personality influences knowledge sharing (Halimah and Najib, 2014). Study conducted by Cabrera, Collins and Salgado (2006) and Matzler and Muller (2011) found openness to experience was positively related to individuals' knowledge sharing and suggest that individuals high in openness to experience tend to show more interest in searching others knowledge. Teh et al. (2011) found extraversion and neuroticism are positively related to the attitude towards knowledge sharing. Individual who possess characteristics such as agreeableness, conscientiousness, and openness is irrefutable to influence knowledge sharing (Abdul Manaf, Armstrong and Lawton, 2011). Conscientiousness influences knowledge sharing (Matzler and Muller, 2011). The findings by De Vries, Van den Hooff and de Ridder (2006) and Wang, Noe and Wang (2011) suggest that extraverted people will be likely to have a positive influence on knowledge sharing.

Some other researchers have shown employees' competencies in the usage of computers likely influence information sharing (Jarvenpaa and Staples, 2001). Highly educated employees with much experience are also shown to have positive attitude towards knowledge sharing (Constant, Kiesler and Sproull, 1994). While some studies found positive relationship between expertise and knowledge sharing (Constant, Sproull and Kiesler, 1996), the other studies found negative relationship between these two variables (Wasko and Faraj, 2005). However, Wang and Noe (2010) state that knowledge sharing appears to be contingent on individuals' confidence of sharing useful knowledge with others (e.g., Cabrera, Collins and Salgado, 2006; Lin, 2007). Alternatively, anxiety as a result of fear of negative evaluations and knowledge sharing were found to be negatively related (Bordia, Irmer and Abusah, 2006). Some researchers have found that when employees believe the ownership of knowledge is theirs (not owned by the organisation) they would engage in knowledge sharing (Constant, Kiesler and Sproull, 1994; Jarvenpaa and Staples, 2001). This result can be attributed to employees' internal satisfaction derived from sharing their knowledge with others (Wang and Noe, 2010).

The relationship between perceived benefits, perceived costs, and knowledge sharing has been found to be related by many studies. According to social exchange theory, individuals evaluate the perceived benefits, perceived costs, and engage in activities with an expectation of receiving certain benefits such as respect, reputation, and tangible

incentives (Blau, 1964; Emerson, 1981). Based on this theory, while some researches show that perceived benefits and knowledge sharing are positively related, some others have shown a negative relationship between perceived costs and knowledge sharing. For instance, participating in knowledge sharing in an online community of practice is related internal satisfaction, perceived obligation to reciprocate reputations, and helping the community (e.g., Lin, 2007; Hew and Hara, 2007; Wasko and Faraj, 2000, 2005). Bordia, Irmer and Abusah (2006) found a positive influence of benefits on knowledge sharing only for technology-aided sharing. However, the same effect could not be found in a face-to-face context.

Kankanhalli, Tan, and Wei (2005) found that if the time and effort needed to codify knowledge to share knowledge longer it is less likely to share knowledge. This study is supported by the theory of reasoned action and the subsequent adapted technology acceptance model (Davis, 1989; Fishbein and Ajzen, 1975). This theory describes how beliefs and attitudes shape the individual behaviours. If individual believe that the knowledge they possess is useful, and if they believe they can improve relationship with other through sharing knowledge likely to relate to knowledge sharing (Bock and Kim, 2002).

There are evidences to support the relationship between attitudes and behaviours of the employees and knowledge sharing (Alam et al., 2009). A study of hospital physicians in Korea found that attitudes partially mediated the relationship between subjective norms and physicians' intention to share knowledge (Ryu, Ho and Han, 2003). In addition, some studies have found that organisational attitudes such as job satisfaction and organisational commitment also encourage knowledge sharing (De Vries, Van den Hooff and de Ridder, 2006; Lin, 2007). Commitment is an essential facet in taking into consideration knowledge-sharing behaviour (Kathiravelu, Mansor and Kenny, 2013). Overall, it appears that individual domain factors have significant influence on knowledge sharing. Employee dedication also increases knowledge sharing (Hassan and AL-Hakim, 2011). Organisation citizenship behaviour was found to have a positive relationship with knowledge sharing (Maryam, Bozorgmehr and Somayah., 2011; Al-Zu'bi, 2011).

Further, a number of factors influencing knowledge sharing falling into the group domain have also been identified in the literature studies. Among them, most researchers have paid their attention on the factor of trust. Kankanhalli, Tan and Wei (2005) stated that trust help to remove the negative effect of perceived costs on knowledge sharing. Similarly, while cooperative team perceptions help to create trust, a necessary condition for knowledge sharing, low knowledge sharing, when there is a competition among individuals (Schepers and Van den Berg, 2007; Wang, 2004; Willem and Scarbrough, 2006).

The interaction among workers and other employees can greatly impact knowledge sharing (Wei, Teh and Asmawi, 2012). Team characteristics and processes influence knowledge sharing among team members. For example, the longer a team has been formed and the higher the level of team cohesiveness the more likely team members are to share knowledge (Bakker et al., 2006; Sawng, Kim and Han, 2006). Team communication styles, agreeable and extravert styles were positively associated with knowledge sharing (De Vries, Van den Hooff and de Ridder, 2006). Knowledge sharing among team members is fostered by leadership empowerment (Srivastava, Bartol and Locke, 2006). Some studies have investigated how the minority status or diversity of team members relates to knowledge sharing. When team members perceive, they are

minority on the basis of gender, marital status, or education less likely to engage in knowledge sharing among team members (Ojha, 2005). Teams in large organisations with higher female-male ratios were more likely to share knowledge (Sawng, Kim and Han, 2006). Some studies suggest that socially isolated members are more likely to disagree with others and share their knowledge within a heterogeneous team (Phillips et al., 2004; Thomas-Hunt, Ogden and Neale, 2003). When team members' expertise is acknowledged, they are more likely to share their knowledge among a functionally diversified team (Thomas-Hunt, Ogden and Neale, 2003).

Researchers have used social exchange theory to examine how trust and justice, two key components in interpersonal relationships (Rauf, 2015; Organ, 1990; Robinson, 1996), relate to knowledge sharing. Studies in examining the trust as an antecedent or mediator of knowledge sharing have been done (e.g., Butler, 1999; Lin, 2007). Further, procedural justice was found to be positively related to perception of knowledge sharing among employees (Schepers and van den Berg, 2007). Taiwan, Lin (2007) found that while both distributive and procedural justice had positive effect on knowledge sharing, an indirect effect on tacit knowledge sharing through organisational commitment and trust in coworkers was also found.

Likewise, studies have also found organisational factors influencing knowledge sharing behaviour. Many studies have examined the effect of organisational culture on knowledge sharing. Organisational culture is described as the encouragements that people shared as values within the organisation surrounds the thinking and behaviour of the individuals (Wei, Teh and Asmawi, 2012). Based on a qualitative study of 50 companies, De Long and Fahey (2000) conducted a qualitative study among a sample of 50 companies and found that the organisational culture affect knowledge sharing. Knowledge sharing culture facilitates knowledge sharing (Davenport and Prusak, 1998; Nielsen, 2006). Culture that promotes trust reduces any kind of harmful effect in the cost of knowledge sharing (Wei, Teh and Asmawi, 2012).

Research has also shown that organisations with cultures emphasising innovation are more likely to share information (Bock et al., 2005; McKinnon et al., 2003). Lin and Lee (2006) found that executives' perceptions of the relative advantage of knowledge sharing for the business, compatibility to existing business process, and complexity to encourage knowledge sharing served as mediators between organisational climate and an organisation's intention to encourage knowledge sharing. Mixed results have been found in studies examining the relationship between learning culture and knowledge sharing. Organisational culture that welcomes innovative ideas and focused on learning from failure was positively related to effective knowledge sharing (Taylor and Wright, 2004). Organisational culture that appreciates the value of knowledge and its sharing has a role in knowledge sharing (Paghaleh, Shafieezadeh and Mohammadi, 2011). Firm that has a culture of encouraging ideas and focus on quality learning rather than repeating mistakes are related to knowledge sharing (Wei, Teh and Asmawi, 2012).

Management support for knowledge sharing has been shown to be positively associated with knowledge sharing (Connelly and Kelloway, 2003; Lin, 2007). Top management support affected both the level and quality of knowledge sharing (Lee, Kim and Kim, 2006). Perceived supervisor and coworkers support and their encouragement of knowledge sharing also increase employees' knowledge exchange and their perceptions of usefulness of knowledge sharing (Cabrera, Collins and Salgado, 2006; Kulkarni, Ravindran and Freeze, 2006). Similarly, Liao (2008) found that a manager's reward power and expert power were positively related to knowledge sharing. Overall, these

studies show that management support likely influences knowledge sharing. Organisational rewards and incentives have been shown to be positively related to the frequency of knowledge contribution made (Kankanhalli, Tan and Wei, 2005; Cabrera, Collins and Salgado, 2006; Kulkarni, Ravindran and Freeze, 2006). A study conducted on a sample from Korea also found that performance-based pay system contributed to knowledge sharing (Kim and Lee, 2006). However, some other studies found negative or no relationship between extrinsic rewards and knowledge sharing (Bock and Kim, 2002; Bock et al., 2005; Kwok and Gao, 2005; Lin, 2007).

Researchers have also examined how different types of rewards influence knowledge sharing. Rewards facilitate knowledge sharing (Wei, et al., 2012). While a cooperative reward system positively affect information sharing between partners, a competitive system has the opposite effect (Ferrin and Dirks, 2003). Similarly, while the influence of group-based incentives shows positive effect on knowledge sharing, individual incentives, piece-rate, and tournament incentives do not show such effect (e.g., Quigley et al., 2007; Taylor, 2006). Siemsen, Balasubramanian and Roth (2007) found a positive effect between group-based incentives and knowledge sharing. Incentives facilitate knowledge sharing (Lilleoere and Hansen, 2011). Weiss (1999) pointed out that certain professionals such as consultants or lawyers do not share knowledge because they do not bill clients for time devoted to knowledge sharing because clients are unwilling to pay for services from which they do not receive an exclusive benefit. Arthur and Aiman-Smith (2001) found that the volume of suggestions increased rapidly following implementation of a gain sharing plan designed to increase employees' suggestions, but then started to decline over time. While researchers have shown a functionally segmented structure likely to hinder knowledge sharing across functions (Lam, 1996; Tagliaventi and Mattarelli, 2006), some other researchers have shown a less centralised organisational structure help knowledge sharing (Kim and Lee, 2006). Leadership is found to produce an effect on knowledge sharing (Zaid, Zainuddin and Chen, 2014).

A community of practice is a work-related group of individuals who share common interests or problems and learn from each other through interactions (Lave and Wenger, 1991), and this may exist within one organisation or boundaries of organisations (Brown and Duguid, 1991, 2001). Norm of reciprocity refers to any exchanges that are mutual and perceived as fair by both parties. Chiu, Hsu and Wang (2006) found a positive relationship between norm of reciprocity and knowledge sharing. Individuals tie in the social networks help knowledge transfer (e.g., Cross and Cummings, 2004; Reagans and McEvily, 2003). Studies have found (Chiu, Hsu and Wang, 2006; Wasko and Faraj, 2005) both the number of direct ties and personal relationships an individual has with other members are positively related to the quantity and the perceived helpfulness of knowledge shared. Organisations with employees with different national cultures and languages face challenges for knowledge sharing (Ford and Chan, 2003; Minbaeva, 2007). Hwang and Kim (2007) found that one's collectivism was positively related to share knowledge. This relationship was fully mediated by their identification with the group and the congruence of such behaviours with their values (Wang and Noe, 2010).

The review of literature presented in the previous section can be summarised into four categories as proposed in the concentric model. As such, factors personality, attitude, education and experience, perception, time and effort needed, and organisation citizenship behaviour are fallen into the individual domain. The group domain includes those factors that cannot be meaningfully or practically separated from a context of interaction with peers. Trust, interaction, team characteristics, communication styles,

empowerment, minority status or diversity of team, justice perception fall into this domain. The organisation domain includes factors that are organisationally relevant. Organisational culture, management support, executives' perceptions, manager's power, rewards and incentives, organisational structure, leadership style fit into this domain. Factors with national domain subsume those factors that can be enacted only across the boundary of the organisation or in its external environment with outside stakeholders (Figure 2).

Figure 1 Framework for identified factors influencing knowledge sharing

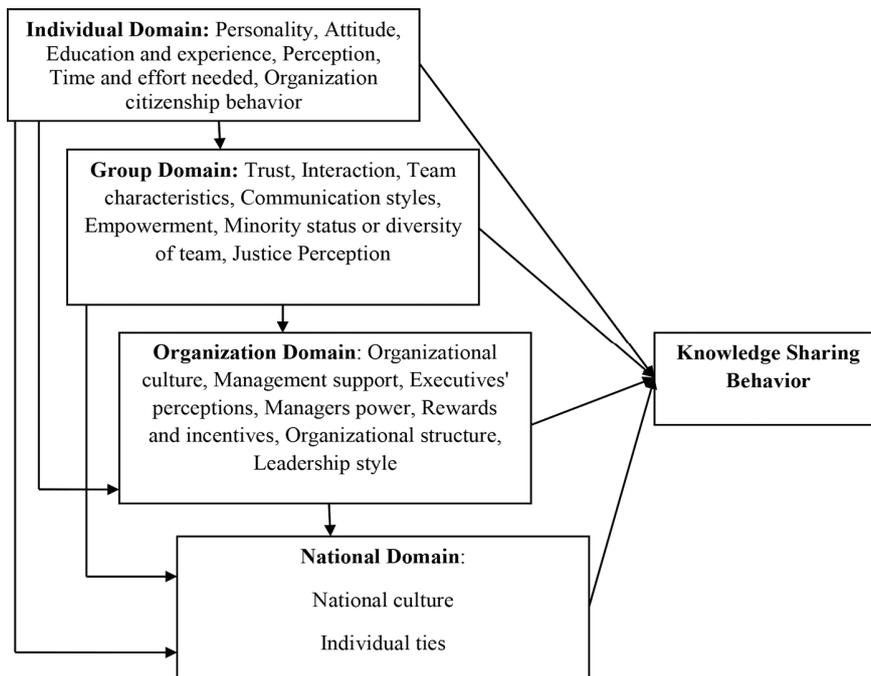
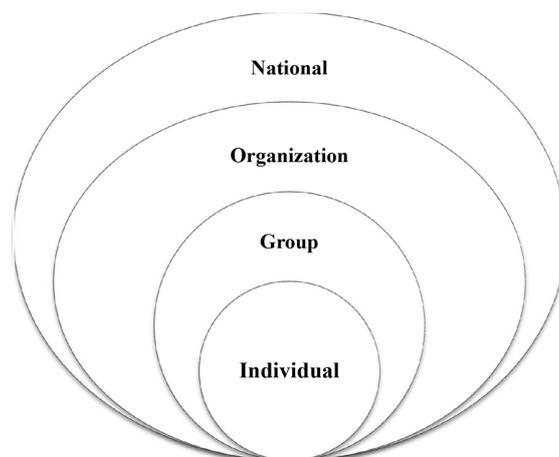


Figure 2 A concentric model of knowledge sharing factors



5 Conclusion and discussion

There are different ways to enhance knowledge sharing among employees and a number of factors related to knowledge sharing. The main contribution of this paper brings together with a large range of knowledge-sharing factors. This article reviews and discusses the potential factors of knowledge-sharing, categorising them into four main domains: individual, group, organisational, and national. The extensive list of factors of knowledge sharing provides a helpful guideline for managers appraising their practices with a view of improving on the overall effectiveness of knowledge-sharing activities. Managers need to realise, the specific factor which encourages knowledge-sharing behaviour and take action to promote such factor to achieve optimum benefit of knowledge sharing. Since knowledge sharing is one of the ways to achieve competitive advantage, implementation of knowledge sharing should be planned in strategic way to make the situation conducive for effective knowledge sharing.

The current research is the evidence of the vast scope of knowledge-sharing behaviour in the organisation and the organisational environment and it also shows that the different factors have been discussed in the study if taken care and lead to the increased sharing of knowledge among employees and that will in turn lead to increased effectiveness of the organisation. Hence, in view of the growing evidence of the benefits associated with knowledge sharing, efforts should be made to attain it.

6 Limitations and areas for future research

Although this study covers more than 118 articles, there are a number of limitations involved. There may be more papers available than the reviewed papers. As such, some more factors can be identified with more review. Further, review can be done using more theories related with the issues which can come out with more elaborated findings. Grabbing more databases, other sources of information, and readings may give more findings.

A number of literature studies and methodological gap can also be found from this review and they can be addressed with future studies. Most of the reviewed papers in this study were not grounded on any theory. Studies ought to be carried out in a comprehensive manner with the relevant theoretical support and evidences.

Future research can be conducted to find out any relationship between justice perception and knowledge sharing. Similarly, studies are also possible to investigate the effect of leader characteristics. Further, role perception limits the boundary line of employees' duties. When employees perceive that knowledge sharing is there in role, they may share knowledge. Otherwise they may not. Therefore, it is also possible to check this possibility in future studies.

Future research is also possible by investigating the impact of characteristics of social network and the strength of tie on knowledge sharing. Likewise, it would be interesting to understand the difference of effect of relationship between peers, supervisor, subordinates, and personal friends with knowledge sharing. Also, in respect of knowledge sharing among the members in teams, more research is needed to examine the differences of frequencies and type of knowledge in the different stages of team's development. Employees may be willing to share their knowledge for the purpose of merely helping others or impression management. Impression management is followed for many reasons

by different types of employees. As a result, knowledge provider may benefit such as better performance evaluation and promotions. Therefore, it would be interesting to examine these areas among various categories of employees. It is possible for individuals to gain referent power through sharing knowledge. Investigating this possibility would also be interesting.

Some employees may feel that if the shared knowledge is inaccurate or not valued by the knowledge recipient may result unfavorable criticism by others. Because of this evaluation apprehension, employees are reluctant to share knowledge. Future research should emphasise the ways to reduce this evaluation apprehension. Sometimes employees may not wish to disclose the mistakes or errors made by their superiors. For this reason, they may not like to get involved in sharing knowledge. Therefore, it is also possible to investigate how this unwillingness can be reduced as a mean of increasing knowledge sharing.

People may not like to share knowledge for fear of losing expert power. Employees may use their knowledge as an expert power to influence others. It is possible to examine the effect of this fear of losing power. It is also possible to investigate how characteristics of other people affect knowledge-sharing behaviour. Studies can also be done on how different rewards system may affect sharing knowledge.

The mode of knowledge sharing may be face to face or through technology or electronic system. Studies can also be performed to analyse the effectiveness of these three types of mode of knowledge sharing. A comparative study can also be conducted to compare the same. The review shows that most of the studies on knowledge sharing are conducted in non-western cultural context. Therefore, having more studies in other cultural contexts would be of interest.

Furthermore, some methodological gap can also be found from the literature studies. Majority of the studies on knowledge sharing are qualitative. If studies are conducted both qualitative and quantitative, more reliable findings can be drawn. In addition to that studies reviewed here, mostly are self-reported ones. Therefore, social desirability may be particularly an issue when self-report is used to measure a variable. A valid and reliable measure should be used in studies. A triangulation method of data collection would be of interest to eradicate this methodological issue. Another methodological issue is the sample characteristics and the sample size. Studies ought to be conducted with diverse sample characteristics rather than having only a particular employee group in one industry. Studies would be more meaningful if the sample size is large.

Further, more empirical studies involving field experiments and using longitudinal research designs are needed because such designs can help establish the causal relationship between individual, team, and organisational factors and knowledge sharing. Further, some individual factors, attitude, and perceptions may also have a certain impact on knowledge-sharing tendency.

This paper provides a detailed review of current literature studies on a large number of possible knowledge-sharing antecedents. Thereby, it offers a more comprehensive and structured starting point for senior managers when appraising their organisation's current knowledge-sharing requirements. This review also contributes to human resource management practice by discussing the implications of knowledge-sharing research for the implementation, support, and effectiveness of knowledge-sharing initiatives in organisations.

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