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1 Introduction

Knowledge sharing is a central concept in managing knowledge and was the dominant topic among the 117 frameworks reviewed by Heisig (2009). The term knowledge sharing has been defined and interpreted in a variety of ways (see for example Yeşil et al., 2013) but the conceptual definition for this article is adopted from Boyd et al. (2007: 139) which argued that knowledge sharing 'involves social interaction and is a two way voluntary process'.

Despite a large volume of literature focusing on knowledge sharing, the field has not yet arrived at a consensus as to the key influences that shape knowledge sharing from an individual perspective. However, this is important not only to increase our knowledge of knowledge (Rutten, 2003) but also to establish a shared understanding (Smylie, 2011) so a rigorous debate about the phenomenon can occur (Beesley and Cooper, 2008) and guidelines for knowledge sharing practices be created (Wickramasinghe and Widyaratne, 2012). Thus the aim of this article is to firstly present the literature regarding knowledge sharing and secondly introduce the ShaRInK (i.e. Sharer, Relations, Institution, Knowledge) framework that depicts key categories of influences that shape individual perceptions of knowledge sharing based on data from a case study carried out in a multinational organisation.

2 The knowledge sharing literature landscape

Databases such as ABI/Inform Complete, EBSCO and Web of Science list approximately 39,000, 7,600 and 4,400 documents on knowledge sharing respectively. Acknowledging the breadth of discussion, authors have attempted to map the existing literature through narrative reviews and meta-analyses from different perspectives. As Cooper (2009) and Detrich et al. (2013) stated, these studies provide a valuable overview of the existing literature. While narrative reviews are considered to be more associated with qualitative research (Bryman, 2012), meta-analyses are commonly linked with quantitative studies (Bryman, 2012, Rubin and Bellamy, 2012). By incorporating both narrative reviews and meta-analyses in this literature review, the two widely used types of research strategies (Bryman, 2012), i.e. qualitative and quantitative, are covered and hence provide a larger overview of the literature landscape on knowledge sharing. The strategy of using narrative reviews and meta-analyses to obtain a broad overview of the theoretical landscape of a field and supplementing this with specific articles where necessary has been used by other authors such as Carcello et al. (2011). In this study, the steps proposed by Fink (2014) are adapted, as outlined in the figure below.

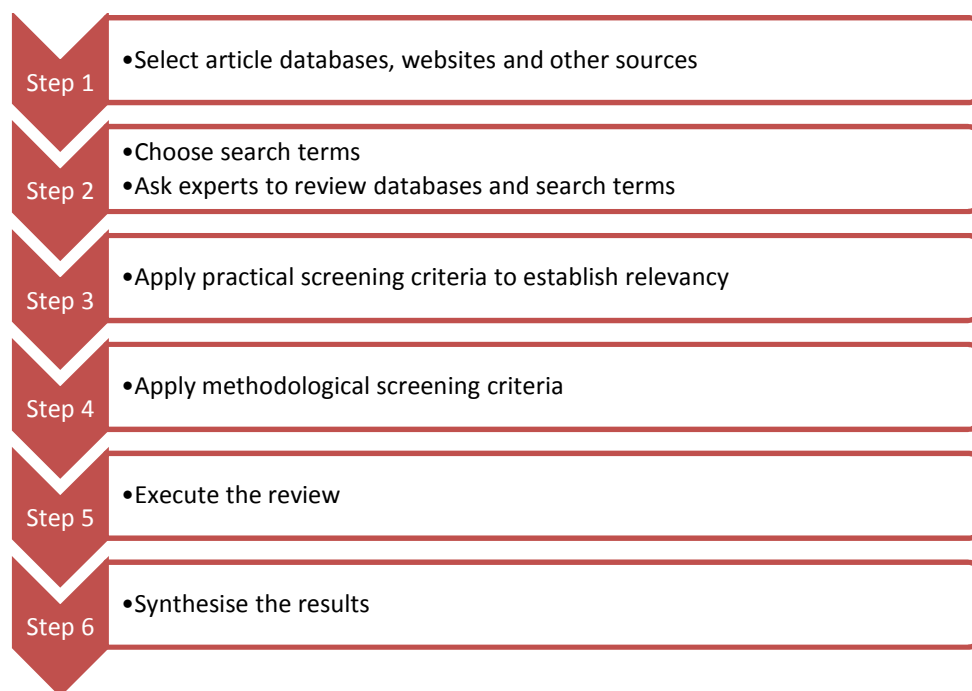


Figure 1. Steps involved in conducting the literature review.

Within Step 3, two practical screening tests were constructed. The first examined if the articles or documents are dealing in general with knowledge sharing, not information or data sharing for example. The second was a language filter which was limited to English. As to methodological screening criteria (Step 4), studies were examined as to whether they listed or summarised prior studies or whether they consolidated them into an abstracted form. If they reiterated findings or frameworks from other studies without summarising them into their own overall framework then they were excluded from this literature review. The rationale behind this is that reviews and meta-analyses were drawn upon to obtain an overview of the existing body of literature, not to illustrate a select few studies. Eight documents in total were retrieved during the execution (Step 5) and are synthesised in the next sub-section (Step 6).

2.1 *Reviews and meta-analyses illuminating the knowledge sharing landscape*

Eight articles, ranging from reviews, meta-analyse, comparisons to syntheses, were identified through the process described above which scanned documents in databases, conference proceedings, dissertations and grey literature for the term 'knowledge sharing' or similar terms, as well as for 'a review', 'meta analysis', 'comparison', 'synthesis' or 'narrative review' in their title. The reviews and meta-analyses (which also include comparisons and syntheses) had one common theme that ran through their discussions, namely categories of influences that shape knowledge sharing. Nevertheless, the reviews and analyses exhibited varying perceptions as to what categories of influences shape knowledge sharing. This realisation led to the focus of this paper as elaborated on at the end of this section. To reach this point, however, each of the eight reviews/meta-analyses are briefly summarised beneath.

Cummings (2003)

Cummings (2003), in the context of a report identifying factors that influence knowledge sharing in the World Bank, approached the topic from a narrative perspective, opting for a

selection of literature that he believed represented the knowledge sharing landscape and kept the period of review and inclusion/exclusion criteria open. The author argued that knowledge sharing success can be gauged by the degree to which the recipient has internalised the knowledge. He then identified five factors (called contexts) that affect knowledge internalisation. They are relationships between source and recipient (called relational context), explicitness and embeddedness of knowledge (called knowledge context), the learning capability of recipients (called recipient context), the credibility of a source and learning culture (called source context) and the larger environment in which knowledge sharing takes place (called environmental context).

Mitton, Adair, McKenzie, Patten, and Perry (2007)

Mitton et al. (2007) carried out a systematic review aimed at examining and summarising studies discussing knowledge transfer and exchange strategies or processes that could be applied in health care policies. Their rationale for this study was to 'inform the design of a specific KTE [knowledge transfer and exchange] platform for a series of research projects referred to collectively as the "Alberta Depression Initiative"' (Mitton et al., 2007: 730). Out of an initial 4,250 abstracts, 44 studies published between 1997 and 2005 were selected as they scored 67% or higher in their quality review. The results led to the identification of four major themes: barriers and facilitators for KTE, frameworks to guide KTE strategies, measuring the impact of research conducted on health policies, and stakeholder perceptions on KTE strategies. Out of these four major themes, Mitton et al. (2007: 735) argued that barriers and facilitators for KTE are 'perhaps [...] the most frequently addressed topic area in the KTE literature on health policy decision making'. The authors grouped them into four categories, namely individual and organisational level barriers/facilitators, facilitators and barriers related to communication as well as barriers/facilitators connected to time or timing. This suggests that barriers and facilitators are a core theme in understanding the knowledge sharing landscape.

Van Wijk, Jansen, and Lyles (2008)

Van Wijk et al. (2008) directed their meta-analytic review towards investigating how antecedents and consequences differentially relate to intra- and inter-organisational knowledge transfer. The study identified three main antecedents (i.e. knowledge, organisational and network characteristics) and two consequences (i.e. performance and innovativeness). Its results indicated that underlying knowledge is more difficult to transfer if it is more complex, specific and tacit. From an organisational perspective, the size of the firm and its capacity to absorb knowledge can also positively influence knowledge transfer, while the age of the company or degree of decentralisation does not have an influence. Furthermore, results suggested that a central position in a network, trust, a close relationship between companies and a shared vision and systems all positively shape knowledge transfer. At the same time, the number of relationships does not seem to influence transfer while cultural distinctions between firms can slightly decrease transfer.

Luo and Yin (2008)

The fourth synthesis identified through the systematic literature review was that by Luo and Yin (2008). Their aim was to summarise research on four aspects relating to enterprise knowledge transfer, which is treated as a synonym of knowledge sharing. The first aspect revolves around the conceptualisation of knowledge transfer and the two authors succinctly

restated three views, namely that a) knowledge transfer involves spanning boundaries between one individual or one organisation, b) knowledge transfer provides a competitive advantage, and c) knowledge transfer affects the actions of other organisations. The second aspect Luo and Yin (2008) briefly described are process models of knowledge transfer. The third aspect touched upon concentrates on the subsequent benefits stemming from knowledge transfer (such as increased efficiency) and how they can be measured (for instance by analysing the speed and range of transfer).

The fourth aspect concerns factors that shape knowledge transfer. Luo and Yin (2008) grouped these influences into i) organisational culture, ii) knowledge features, iii) knowledge provider and receiver, and iv) other factors, which range from having organisational incentives to transfer knowledge, the degree to which knowledge can be expressed clearly, the confidence the sender and receiver have in transferring knowledge, to the extent organisations maintain social networks.

Wang and Noe (2010)

Wang and Noe (2010) aimed to gain an understanding of the factors that shape knowledge sharing between individual employees. Their goal was to create a framework that summarises the existing knowledge sharing literature and to identify emerging issues and future research areas. They based their narrative review on the fact that studies had examined individual-level knowledge sharing from different perspectives but, according to the authors, 'no systematic review has been conducted to date' (2010: 116) to condense the individual-level knowledge sharing literature.

The findings were summarised in two main parts. The first describes five areas of emphasis connected with knowledge sharing research as perceived by the authors. The second part discusses emerging issues as well as future research questions that could be explored. In what concerns the former, Wang and Noe (2010: 116-117) stated that research could be classified into 'five emphasis areas', namely organisational context, interpersonal and team characteristics, cultural as well as individual characteristics and motivational factors. Organisational context, interpersonal and team, and cultural characteristics were then further grouped under environmental factors, as shown in Figure 2 beneath.

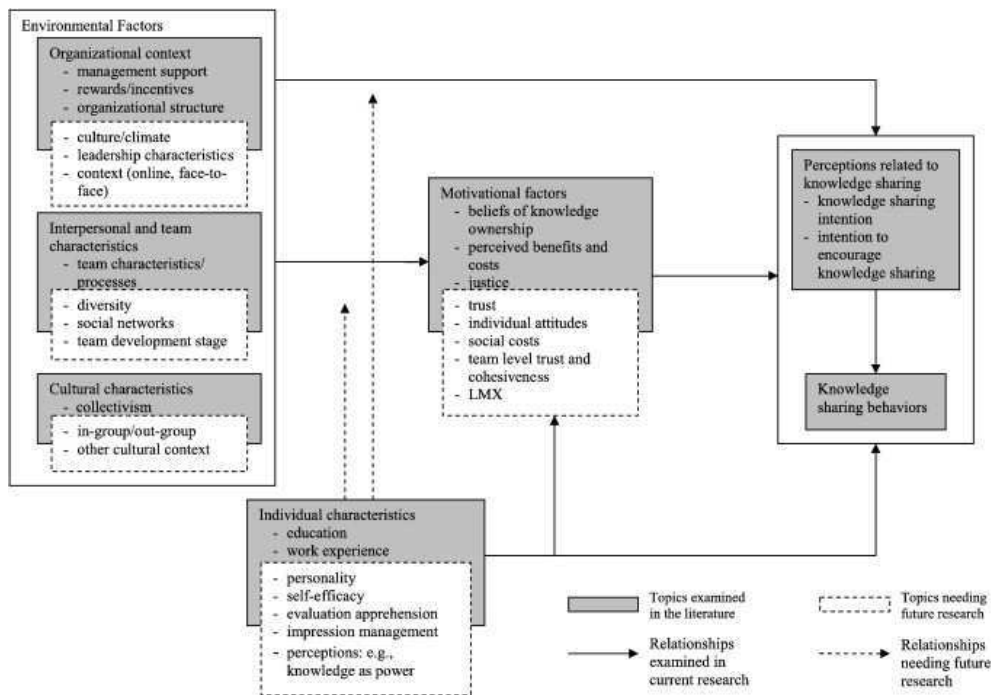


Figure 2 - A framework of knowledge sharing research according to Wang and Noe (2010).

There are two features in this narrative review that are distinctive. The first is that the authors explicitly highlighted how different key areas of emphasis are connected via relationships. Individual characteristics, for example, can shape knowledge sharing behaviour. The second distinction is that the review dedicates half of its space to emerging issues and future research directions. Although a discussion of these is present in almost all articles, the depth and variety of topics covered by Wang and Noe (2010) is extensive.

Contandriopoulos, Lemire, Denis, and Tremblay (2010)

Contandriopoulos et al. (2010) synthesised the literature into two main sections. The first section concerns three components of knowledge exchange systems. They consist of roles individual actors play in that system, the type (or nature) of knowledge shared and how the knowledge is used. The authors explained that the first component of knowledge exchange systems are individuals, working in institutions, that produce knowledge or use knowledge or contribute to the knowledge flow by being intermediaries between producers and users. The second component concerns the concept of knowledge and findings suggest that knowledge can be equally based on evidence or on ‘other types of information’ (2010: 458). The third relates to how knowledge is used and the literature reviewed indicates that knowledge is embedded into arguments to influence others.

The second section examines how knowledge exchange interventions are part of larger collective action systems, that is ‘systems characterized by high levels of interdependency and interconnectedness among participants’ (2010: 447), comprising of polarization, cost sharing equilibriums and social structuring.

Meese and McMahon (2012)

Meese and McMahon (2012: 437) executed a systematic review to identify ‘published primary data collection studies of SD [sustainable development] knowledge sharing (KS) approaches in a civil engineering-related context’. In total eight knowledge sharing concepts

were identified and elaborated on: collaboration, technology transfer, social learning, education, social networks, public participation, decision support, and measurement. The eight concepts were also correlated in the review to the research strategies used to explore them in the first instance. For collaboration, for example, two studies collected data about collaboration via a survey, two via case studies and two via an ethnographic approach. Overall, 16 out of 20 studies either used a survey or case study approach to investigate the eight concepts. Furthermore, the majority of studies concentrated on either collaboration or education issues. Together, these two trends formed the key findings of their review.

Witherspoon, Bergner, Cockrell, and Stone (2013)

The final article included in this review is a meta-analysis conducted by Witherspoon et al. (2013). Their goal was to identify quantitatively which factors shape individual-level knowledge sharing intention as well as behaviour. Furthermore, they examined where possible how a moderating effect can shape the relationships between factors and sharing intention or behaviour. They identified 17 independent factors, one moderating variable (namely individualistic versus collectivistic culture), and two dependent variables (knowledge sharing intention and knowledge sharing behaviour). The independent factors were grouped into four categories: intentions and attitudes, organisational culture, rewards to knowledge sharing, and gender.

2.2 Synthesis

The meta-analyses reviewed in the previous sub-section cover some common themes concerning knowledge sharing. However, they do vary (at a high level) in four dimensions, namely context, focal point within knowledge sharing, level of analysis, and categories of influences. The first three dimensions are summarised in Table 1 below.

Table 1. Summary of reviews/meta-analyses and their context, focal point within knowledge sharing and level of analysis

Author(s)	Context	Focal point within KS ^a	Level of analysis
Cummings (2003)	Global institution	KS success	Individual recipient
Mitton et al. (2007)	Health care policy	KS barriers and facilitators	Organisational, regional, provincial, and/or federal level ^c
Van Wijk et al. (2008)	General management issues	KS antecedents and consequences	Intra- and inter-organisational
Luo and Yin (2008)	Enterprises	Conditions and factors influencing KS	Organisational? ^b
Wang and Noe (2010)	General KS literature	KS research	Individual
Contandriopoulos et al. (2010)	Health care?	KS systems	Collective
Meese and McMahon (2012)	Sustainable development within civil-engineering	KS categories	Individual?
Witherspoon et al. (2013)	Multiple disciplines	KS antecedents	Individual

Note. ^aKS = knowledge sharing ^b? = uncertainty as the article does not specify the context or level of analysis.

The fourth and final dimension in which divergences are apparent concerns categories of influences that shape knowledge sharing. As can be seen from Figure 3 below, there are only marginal overlaps in terminology.

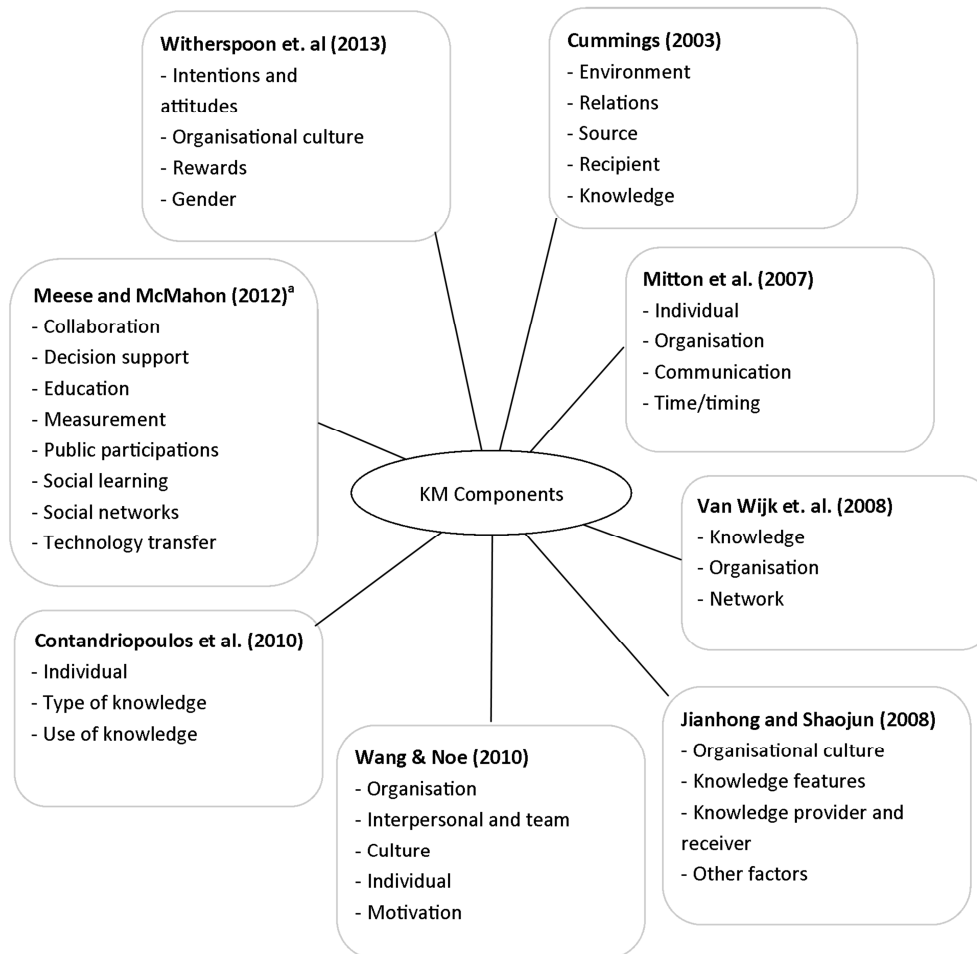


Figure 3. Summary of categories of influences that shape knowledge sharing according to the eight reviews. KS = knowledge sharing. ^aThese categories are specific to sustainable development within a civil engineering context, compared to the other seven meta-analyses and reviews that are generic.

The terms that occur more than once in the above figure are knowledge, individual and organisation. This is not to say that in all other instances the categories of influences are fundamentally different but rather that there is no consensus as to the exact terminology to be used to describe categories. For instance, source and recipient match the terms knowledge provider and knowledge receiver but it may not be obvious that they are equal.

A similar picture emerges when investigating primary research and conceptual papers (Bhaskar and Zhang, 2007, Bi and Yu, 2010, July, Bock et al., 2005, Borges, 2013, Evans, 2012, Hauck, 2005, Ismail et al., 2009, Jewels and Ford, 2006, Michailova and Hutchings, 2006, Nita, 2008, Yang and Chen, 2007). A commonality between this latter group of studies is that they classify influences into individual and organisational categories. As to the remaining categories, these vary considerably: technology (Bhaskar and Zhang, 2007, Evans, 2012), means (Bi and Yu, 2010, July), social environment (Borges, 2013), group (Bock et al., 2005), team and professional discipline (Jewels and Ford, 2006), as well as group and country (Michailova and Hutchings, 2006).

This suggests the literature to date has provided a range of influences that shape knowledge sharing but has not arrived at a consensus as to the key categories of influences that shape knowledge sharing, that is categories that are fundamentally different in nature to other key influences. This paper aims to identify key categories of influences that shape knowledge sharing from the perspective of the individual and to develop and propose a holistic framework that enables a more comprehensive understanding of the knowledge sharing phenomenon.

3 Methodology

This study adopted a case study approach to explore the key categories of influences shaping knowledge sharing in practice within a single IT service organisation (referred to as ITSC). This is an exploratory study concentrating ‘...on one thing, looking at it in detail, not seeking to generalise from it.’, being ‘...interested in that thing in itself, as a whole’ (Thomas, 2011: 3).

The organisation studied is among the top IT storage vendors in the world with sales in more than 80 countries. They help clients to store and manage their information and provide tools to access and search for existing information across varying sources. The rationale behind selecting ITSC is that it embraces a knowledge sharing culture allowing key categories of influences to be explored in a company where the interest and focus on knowledge sharing is not a new phenomenon.

The study compares four branches of the organisation located in China, the Netherlands, the UK and the US, though the unit of analysis is the company, not the branches themselves. This is conceptually similar to Thomas’s (2011) nested case studies or Yin’s (2009) embedded case studies. In both instances, the two authors argued that the units of analyses are part of a greater or wider case, in this case the branches being subunits to the wider organisation.

The choice of these four branches is both pragmatic and theoretical, a practice advocated by Okazaki et al. (2011). From a theoretical perspective each of the four branches has unique characteristics providing varying perspectives in which the emerging key categories of influences can be explored. Also, the results of a meta-analysis of the literature suggest that the top three countries in which knowledge sharing studies have been undertaken are China, the UK and the US (Karp, 2009). The Netherlands also scores between rank five and 11, depending on the databases consulted. This gives potential for the findings emerging from this case study to be evaluated against other studies conducted in these countries. From a practical perspective, the four country branches have a sufficient number of employees who were willing to participate in interviews.

Data were gathered using a qualitative semi-structured interview technique. To ensure confidentiality, all generated documents were encrypted, pseudonyms were used for ITSC, and anonymity was ensured for all participating staff. The audio files created from the interviews were transcribed and imported into NVivo 9.0 for analysis.

The selection of interviewees within the branches was primarily based on their tenure of three or more years with ITSC, given that their exposure to a knowledge sharing culture for some years may provide greater depth of understanding of knowledge sharing practices in the company and, hence, of the influences that shape these practices.

Secondly the interviewees were based in different functional departments and were chosen with the aim to obtain a broader view of key influences that shape their perceptions. The third criterion for selection was that the interviewees occupied varying hierarchical positions

within ITSC, again to elicit a broad range of viewpoints. In addition, willingness to participate and accessibility were taken into account. The sampling process evolved continuously, meaning the researcher continually sampled and collected data until patterns in the data emerged and data saturation was achieved (Jones et al., 2014).

A pilot study was carried out in the UK office with seven interviewees between September and October 2011. The pilot study provided an opportunity to test the research instrument (Roberts-Holmes, 2005). Following minor revisions to the wording of the questions, the main study was carried out between January and April 2012 following the same processes with six interviews being executed in both the Netherlands and the US and five in China, twenty-four interviews were carried out in total.

The interview guide was divided into four sections: (1) covering knowledge sharing in general and its importance, (2) asking respondents to share a critical incident relating to knowledge sharing, (3) exploring possible categories of influence, and (4) asking demographic questions.

The interviews were analysed using the constant comparison method. The term constant comparative method was coined by Glaser and Strauss 'to aid and abet ongoing analysis' (Bryant and Charmaz, 2007: 43) where gathered data could be analysed while continuing the data collection process. This inductive process lends itself to an exploratory approach with the findings grounded in the data, not in a priori literature and thus is in line with the aim of this article. According to Glaser and Strauss (1967) constant comparison is a process where facts emerging from the data generate open concepts. These open concepts may then be grouped into conceptual categories. The difference between concepts and categories is that the former are directly related to facts in the data while the latter 'stand[...] by itself as a conceptual element of the theory' (Glaser and Strauss, 1967: 36) and can have 'many diverse properties' (Glaser and Strauss, 1967: 62). Constant comparison involves a process of abstraction which was applied to the 24 interviews and is represented diagrammatically below.

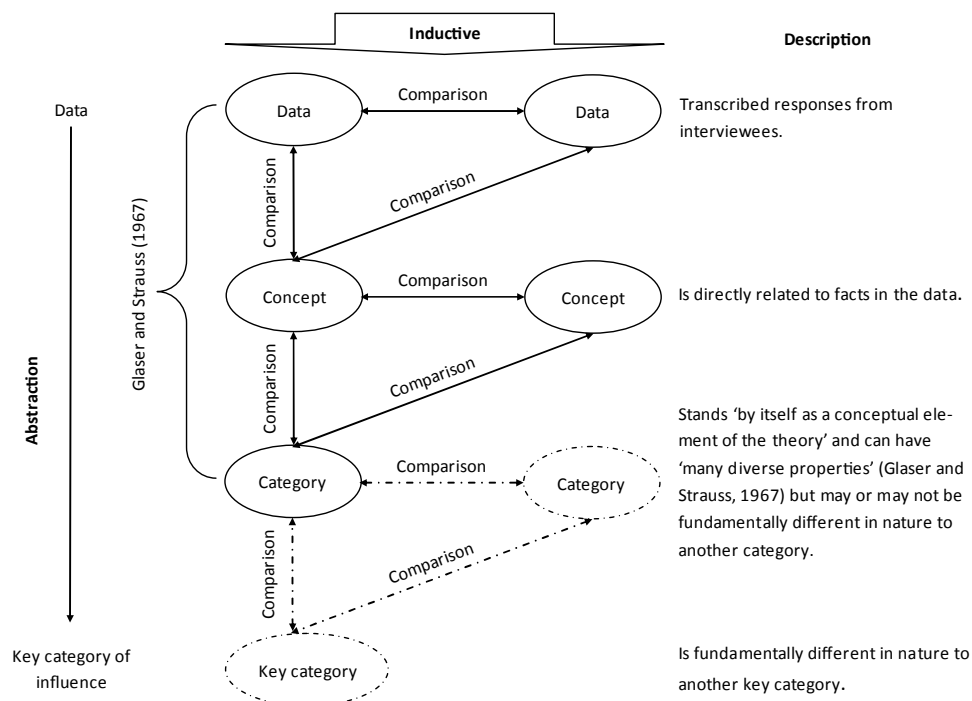


Figure 4 -Constant comparison data analysis technique- data to key category.

As Figure 4 above illustrates, the constant comparison method follows an inductive approach where data are abstracted into key categories of influence. This method enabled the modelling of an intertwined and holistic framework, as elaborated on in the next section.

4 Findings

Based on qualitative interview data from 24 interviewees located in the Chinese, Dutch, UK and US country branches of ITSC, four key categories of influences (where each is fundamentally different in nature) emerged: sharer, relations, institution and knowledge, as shown in Figure 5 below.

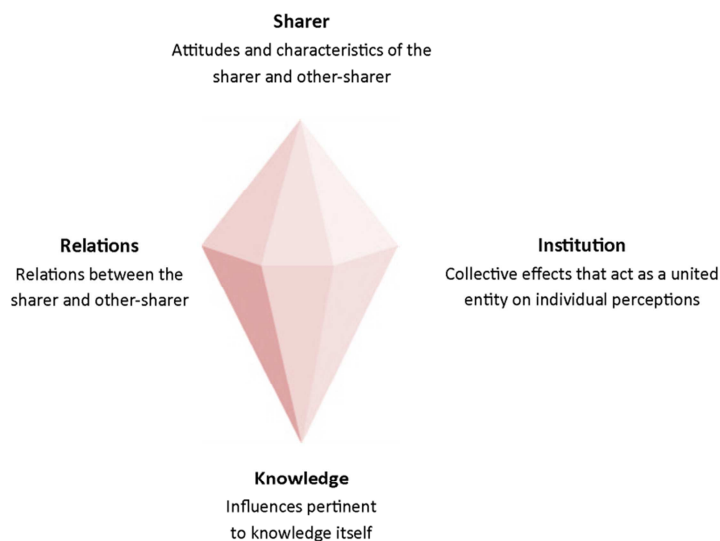


Figure 5 - The four key categories of influences shaping individual perceptions of knowledge sharing.

In order to gain an appreciation of the four key categories of influences shown in Figure 5 above, each is briefly discussed in the following sections.

4.1 Sharer as first key category of influence

The first key category of influence focuses on influences concerning the sharer itself. When analysing the data, interviewees in some instances discussed their own attitudes towards knowledge sharing, while in other cases it was the characteristics of the other-sharer that shaped their perceptions of sharing. In both cases however, the influences relate to an individual.

Concerning their own attitudes, the majority of interviewees located across all four country branches emphasised their attitude towards helping colleagues learn. For example, one interviewee argued that he shared his knowledge to help others advance in their career.

Question: Can you tell me what encourages you to share knowledge?

Answer: The biggest thing, I think, is the benefit the people or the receiver will get from the knowledge sharing. So especially, like a coaching or a mentoring scenario. I get encouraged when I see more junior level people take in the information, apply it, leverage it to better their career. So, I think it's probably the best benefit. US-01

Other interviewees stated that they had the attitude of wanting to promote their department (UK-02) or enhance their recognition (UK-07) via knowledge sharing.

At the same time, interviewees felt that their knowledge sharing is shaped by the personality characteristics of the other-sharer, such as, for example, personality type.

So if you, let's say you're a type A personality. You're aggressive, you get things done, you're not afraid to throw people under the bus, you do whatever it takes at all costs. With that person, I may be more careful about what I say to them because I don't want to be the individual that's thrown under the bus. US-04

Another personality characteristic brought up referred to the value systems inherent in different generations and how they can shape the way one would share his/her knowledge (CN-04).

4.2 Relations as second key category of influence

In contrast to the previous category, relations as an influence in the knowledge sharing process focuses on the relationship between a sharer and other-sharer and how this dyad influences sharing. Interviewees located across all four country branches raised a number of dyadic effects that shape their perceptions.

Two of the more common ones were physical co-location and socialisation outside work:

Question: Is there anything else about your group and knowledge sharing?

Answer: It also has to do with the fact that you're not always in the same [space], it's a location thing. That's what I think. Yeah, that's where the difficulty is. NL-02

You know, when we socialise, if I'm in the city office and I go out for a beer after work, half the conversation is about work and half is not. Then half of the conversation that's about work is probably sharing the experiences and asking questions, answering questions that otherwise we wouldn't get to do. UK-01

As the second quote above exemplifies, should work-related knowledge be shared outside the office, it provides an opportunity to share experiences and respond to questions that could not be answered during working hours. Another UK participant argued that socialising helps to feel 'relaxed and comfortable with each other' and that this in turn may increase knowledge sharing practices or willingness to do so (UK-07). Then again another UK interviewee stated that the similarity or difference in terms of cultural background can influence the depth of knowledge requested and shared (UK-03). It is argued therefore that relations form a second key category as they concern the association between the sharer and other-sharer.

4.3 Institution as third key category of influence

This third key category concentrates on influences that act as a united whole or entity on individual perceptions of knowledge sharing. These united entities, as indicated by interview findings, can be groups, organisations or stem from the broader environment, such as governments. As these influences are above the individual level of analysis and cannot be condensed to individual motives and attributes (DiMaggio and Powell, 2012), they are conceptualised in this paper as institutions. It should be noted however that institutions do not only affect individuals 'top-down', but that individuals can also shape institutions over time (Scott, 2007).

As alluded to above, one type of institutional influence is provided by organisational groups or teams. It can create and maintain a social structure by establishing a 'common language and a common sense' of lived experience by sharing knowledge. In addition to groups, leadership within organisations can shape knowledge sharing as without leaders proactively promoting and encouraging sharing, time set aside for staff to engage in knowledge sharing and training is reduced (US-06). Finally, influences stemming from the environment overall can also shape individual perceptions of knowledge sharing, as entities such as ITSC have

to comply with a broad range of regulations, including environmental and financial rules. However, for staff to be made aware of them, they need to be communicated. Interviewees described the above as follows:

For a team we needed to work together very well. We need to have a common language and we also have a common sense and so the way we achieve is to share the many, many things [...]. CN-03

Going back to your question, does the company or management or whatever you want to put it, really support this concept? This type of sharing of knowledge and I don't think it does as much as it should. US-06

All regulations which you need to follow cause some knowledge sharing, I think. The law dictates certain things and if you want that everybody here in this facility follows the laws then you [...] need to tell them about it. And that's very broad area because you have so many laws. Environmental, you have financial [...]. NL-04

In summary, the third key category of influence, fundamentally different in nature to the other three categories, focuses on institutional influences that act as a united entity on individual perceptions of knowledge sharing.

4.4 Knowledge as fourth key category of influence

The fourth key category that emerges from the interview data concerns knowledge and the nature of knowledge. The majority of interviewees described how knowledge itself can influence their perceptions of knowledge sharing. The dominant concern was confidentiality associated with certain knowledge. One reason for this is that ITSC is continually developing, testing and releasing products and services to the market. During the process of designing and developing products, only a select number of staff are informed about the upcoming products and their respective details.

I deal with a lot of very extremely confidential information constantly in my job. And so I have to be very cognizant of "can I actually speak about this to that person?" US-02

As exemplified above, confidentiality can influence knowledge sharing as employees who are privy to the product details cannot share their knowledge with many colleagues until it is released to the wider audience.

Another aspect raised by the nature of knowledge relates to where it lies and to whether knowledge resides in individual memories and therefore can be shared promptly or if knowledge needs to be sourced elsewhere, which could delay its sharing (NL-06).

4.5 Interrelationships between the four key categories of influences

Up to this point, the sharer, relations, institution and knowledge key categories of influences have been presented independently. However, an additional key finding arising from the interview data points towards the significance of the interrelationships between the four key categories. For instance, if there is no congruence between an institutional culture and the personality of a sharer, then this can have a detrimental influence on knowledge sharing. Relatedly, a sharer's attitude can be connected with the age difference between the sharer and other-sharer (i.e. relations key category). Relations in turn are also interrelated to the institution key category as the need for relationships between two sharers can be influenced by different institutional norms. Interviewees illustrated some of these interrelationships as follows:

It's a company I worked for that has a completely different culture [...]. And so, like I said at the beginning, you don't reciprocate and then naturally you then realise because I am who I am this is not my environment. UK-02

I can see how generational differences do influence knowledge sharing. How I relate to someone influences the way in which I share knowledge with them. The extent to which I relate to someone, superficially, is influenced by their generation or age. I might feel like I can

be more familiar or casual in my interaction with someone my age, whereas with someone that is twice my age I might not feel the same sense of familiarity. I might more freely share knowledge with them. If I cannot relate to someone, the opposite can be true. US-04

Furthermore, each of the three key categories above is interrelated with the nature of knowledge. For example national policies influence the degree of confidentiality associated with knowledge and this subsequently influences knowledge sharing. Yet confidentiality of knowledge is not only dependent on institutional laws but also on the attitude of individuals, such as seeing knowledge as power. In addition, having a trusting relationship with the other-sharer influences the degree to which confidential or sensitive knowledge is shared:

[In France] generally it takes much longer to get the approval export controls. So that impacts everything even training or sharing information, particularly sharing information. So there could be times like I share information with a colleague in the UK and I won't be able to share that same information with somebody in France. US-02

I'm sure I went through the stage seeing knowledge is power. You know, I have this knowledge and you can't have it because that then shows that I'm no value to people and if I give this away, I'm not getting anything for it. UK-03

The more conformable you feel with someone, the more willing you are to share knowledge because you develop a trusting relationship with that person. So even if it's sensitive information. US-04

The interrelationships between these four categories are depicted in Figure 6 beneath.

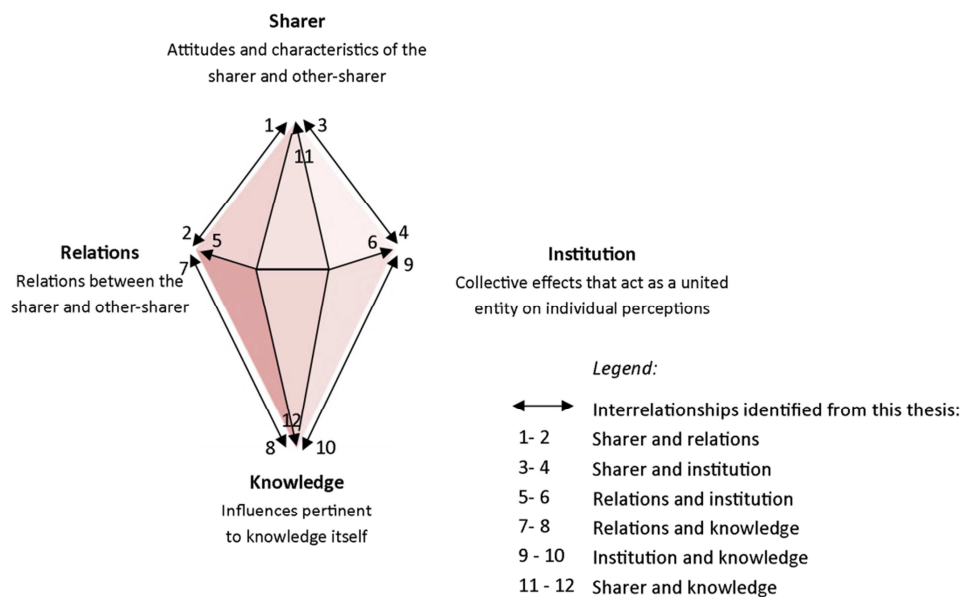


Figure 6 - Interrelationships between the four key categories of influences.

These categories of influences and their interrelationships form the framework presented above which, it is argued, provides a new and different understanding of the knowledge sharing phenomenon compared to the literature presented in Section 2, as expanded and discussed in the next section.

5 Discussion

Wang and Noe (2010) perceived knowledge sharing to be influenced by five main categories and four interrelationships between the categories. The holistic ShaRInK framework that was developed in this research, on the other hand, indicates that there are four key categories of influences but twelve interrelationships between the key categories that shape

individual perceptions of knowledge sharing, modelled in a diamond shaped configuration. The similarities and differences between the two frameworks are depicted in Figure 7 below.

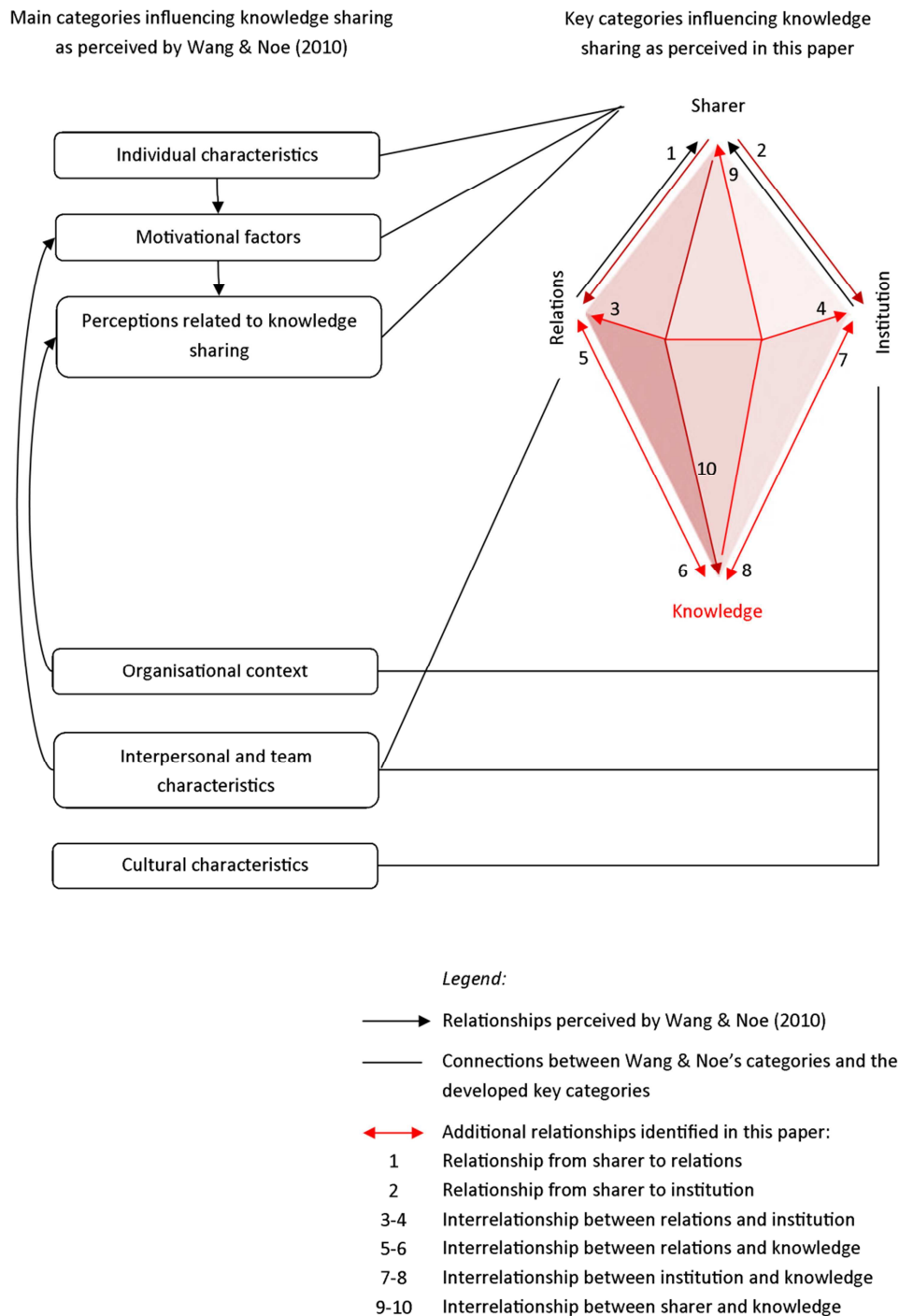


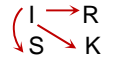


Figure 7. Comparison of Wang and Noe (2010) with conceptualisation of key categories of influences in this article.

The figure above illustrates four aspects. Firstly, several categories in Wang and Noe's framework (e.g. individual characteristics, motivational factors and perceptions related to knowledge sharing) are of similar nature as they focus on influences pertinent to the sharer and thus can be combined under one key category. Secondly, the 'interpersonal and team characteristics' category merges both relational and institutional influences, while findings from this article portray them as two different key influences. Thirdly, Wang and Noe (2010) depicted four interrelationships, of which two are recognised in the new ShaRInK framework

to span key categories while the remaining two are within the sharer key category. In addition to the two interrelationships between categories that the authors presented, the ShaRInK framework identifies a further ten connections between the key categories in the diamond (see the red arrows in Figure 7). Lastly, Wang and Noe's framework omitted the influence that knowledge itself can have on individual perceptions. Based on the findings above, it is argued that the developed ShaRInK framework provides an additional and more complete perspective of individual perceptions of knowledge sharing as it takes into account high level influences of a fundamentally different nature, as well as interrelationships between the four key categories.

This is substantiated when mapping the eight meta-analyses and narrative reviews identified in Section 2 against the four key categories of the ShaRInK framework. As can be seen from Table 2 below, one out of eight reviews had categories that covered all four key categories identified in the findings from this research (i.e. Cummings, 2003) while the remaining seven acknowledged some of the key categories. In addition, Contandriopoulos et al. (2010) recognised one, Wang and Noe (2010) and Witherspoon et al. (2013) two and Cummings (2003) three interrelationships between the key categories, while the ShaRInK framework presented here identifies twelve interrelationships within the diamond. Therefore it is argued that the identified meta-analyses and narrative reviews developed so far have provided a limited perspective on knowledge sharing.

Table 2. Meta-analyses and narrative reviews mapped against the newly developed ShaRInK framework

Author(s)	Key categories	Sharer	Relations	Institution	Knowledge	Interrelatedness ^a
Cummings (2003)		*Source *Recipient	*Relations	*Environment	*Knowledge	
Mitton et al. (2007)		*Individual *Communication	*Time/timing *Communication	*Organisation *Communication		I R S K
Van Wijk et al. (2008)			*Network	*Organisation	*Knowledge	I R S K
Luo and Yin (2008)		*Knowledge provider/receiver	*Other factor	*Organisational culture *Other factor	*Knowledge features	I R S K
Wang and Noe (2010)		*Individual *Motivation	*Interpersonal/team	*Organisation *Cultural *Interpersonal/team		
Contandriopoulos et al. (2010)		*Individual			*Nature and use of knowledge	I ↔ R S K
Meese and McMahon (2012)			*Collaboration *Social learning *Social networks *Technology transfer	*Collaboration *Decision support *Education *Measurement *Public participation	*Technology transfer	I R S K
Witherspoon et al. (2013)		*Intentions/attitudes *Gender *Rewards		*Organisational culture		

Note. *categories identified by the author(s). ^aInterrelationships identified by the author(s) between the four key categories (S = sharer; R = relations; I = institution; K = knowledge). ^bThis category is related across two or more key categories of the ShaRInK framework. ^cSocial networks were found to influence knowledge sharing and grouped by the authors under the organisational culture category (i.e. institutions) compared to this article which considers these under the relations key category.

As can be seen from Table 2, Mitton et al. (2007), Wang and Noe (2010) and Witherspoon et al. (2013) for example omitted knowledge as an influence into the knowledge sharing process, while Van Wijk et al. (2008) did not include influences relating to the sharer category. Cummings (2003), as stated before, is the only review identified in this article that addressed all four key categories, including two that matched the terminology adopted here (i.e. relations and knowledge). Cummings separated influences related to the sharer into two categories: source and recipient. On the other hand, the ShaRInK framework illustrates that source and recipient are similar in nature as both revolve around the attitudes and personality characteristics of individuals. Thus, it is proposed that the two can further be grouped under a single category of influence. Lastly, what is called the institution in the ShaRInK framework equates to Cummings's environmental context.


The second difference between Cummings (2003) and the ShaRInK framework is that the former recognised that the environment (i.e. institutions) can influence the sharer, relations and knowledge, by stating that the environment 'need[s] to be examined to determine the extent to which [it] play[s] a role in affecting the micro-context variables [i.e. relational, knowledge, source and recipient contexts]' (2003: 32). The ShaRInK framework goes one step further by arguing that all four key categories are intertwined and that there are additional interrelationships between the key categories to the three outlined by Cummings (2003).

A similar picture to that discussed above emerges when evaluating the developed ShaRInK framework against the primary research and conceptual papers introduced in Section 2. The majority of the papers identified the sharer and institution related influences, while the key role of relations in influencing knowledge sharing practices was highlighted only by Borges (2013) and knowledge related influences were identified only by Bi and Yu (2010, July), Westphal and Shaw (2005) and Yang and Chen (2007). However, none of these previous studies acknowledged that perceptions of knowledge sharing can be shaped by four categories fundamentally different in nature, as shown in Table 3.

Table 3. 13 Primary research and conceptual papers mapped against the newly developed ShaRInK framework

Author(s)	Key categories	Author(s) additional category ^b	Sharer	Relations	Institution	Knowledge
Bhaskar and Zhang (2007)			X ^c		X	
		Technology				
Bi and Yu (2010, July)		Subjects of knowledge sharing	X		X	X
		Means			X	
		Environment			X	
Bock et al. (2005)			X		X	
		Group				
Borges (2013)			X		X	
		Environment		X		
Evans (2012)			X		X	
		Technology				
Hauck (2005)			X		X	
Ismail et al. (2009)			X		X	
Jewels and Ford (2006)			X		X	
		Team				
		Professional discipline				
Michailova and Hutchings (2006)			X		X	
		Group				
		Country				
Nita (2008)			X		X	
Rahab et al. (2011)			X		X	

(continued on the next page)

Westphal and Shaw (2005)	X	X	X
Acquisition integration characteristics			
Yang and Chen (2007)	X	X	X

Note. ^aAdditional categories identified by the listed authors that can be mapped onto one or more of the four key categories identified in this article. ^cCategories identified by the listed authors that can be mapped directly to the four key categories of influences.

Table 3 however illustrates another important aspect in that the ShaRInK framework developed here seems to provide sufficient flexibility to accommodate a wide range of categories and underlying concepts discovered by other studies. This suggests that the four key categories comprised in it have a high level of abstraction that can be applicable beyond the findings from this study. For example Bhaskar and Zhang (2007) classified technology as an influence, in addition to institution and sharer. This is in line with other authors, such as Alvesson and Kärreman (2001), Eze et al. (2013), Alotaibi et al. (2014) and others, who argued that technology is a main driver in knowledge sharing. Yet further analysis of the propositions by Bhaskar and Zhang (2007) reveals that the authors argued that it is important to have the correct technology within an organisation. Thus as an organisational artefact, we would consider it as part of a set of institutional influences. This is supported by interviewees who stated that technology itself is less of an influence on knowledge sharing compared to an organisational culture that encourages use of technology through its open environment. Furthermore, literature has argued that technology is an enabler for knowledge management and sharing but not a solution driver in its own right (Paroutis and Saleh, 2009, Prieto et al., 2009). As Yu et al. (2010: 34) expressed it: 'Information technologies can be thought of as artefacts that reflect social values and norms. If the community encourages sharing knowledge, then members are expected to open the flow of knowledge to enact the norm. Therefore, we might expect open and organic cultures to increase the use of technology for knowledge sharing'.

Bi and Yu (2010, July) grouped individual, team and organisational influences, arguing that it represents the subject of knowledge sharing (while knowledge is the object of knowledge sharing). They considered a third set of influences, knowledge sharing means, i.e. computer networks and communication platforms. It is similar to what Bhaskar and Zhang (2007) called technology and, as explained above, is classified in the ShaRInK framework under the institution key category. The fourth category Bi and Yu (2010, July: 123) listed is the environment, which they defined as 'a variety of objective conditions'. Although there is no explicit definition of what an environment is, the authors seem to conceptualise it as the organisational environment encompassing organisational support and high level emphasis, a flat organisational structure as well as a good corporate culture (Bi and Yu, 2010, July). These conceptualisations suggest influences that shape individual perceptions as a whole and thus equate to the institution category in the ShaRInK framework presented here

Based on the foregoing discussion it is argued that the framework developed in this article augments the perspectives identified in previous studies as it not only focuses on institutions and sharers as key influences in the knowledge sharing process, but also on how knowledge and relations can shape individual perceptions of knowledge sharing. Furthermore, the ShaRInK framework presented here depicts that the four key categories do not shape individual perceptions in isolation but are intertwined as modelled in the diamond shaped configuration and together they influence knowledge sharing. Lastly, the four key categories developed in the ShaRInK framework have a high level of abstraction which provides sufficient flexibility to accommodate a wide range of categories and underlying concepts discovered by other studies.

6 Conclusion and limitations

This paper presents the findings of a study on influences that shape knowledge sharing amongst individuals in an organisational context. It argues that knowledge sharing is a more complex phenomenon than currently portrayed by the literature and thus offers a range of avenues that can be explored based on the proposed ShaRInK framework. The findings indicate that four key categories of influences can shape individual perceptions of knowledge sharing and that each is fundamentally different in nature. The first is concerned with influences pertinent to sharers, the second with relationships between sharers, the third with collective influences, and the fourth with aspects associated with knowledge itself. This paper further argues that these four key categories of influences not only shape individual perceptions directly, but are intertwined and interact with each other and this combined effect provides a holistic framework of influences that can shape knowledge sharing.

The ShaRInK framework presented here can provide an avenue for researchers to categorise existing studies and indicate areas for further research. Further, it can be used to more efficiently locate existing studies that have investigated the knowledge sharing phenomenon from an individual perspective. Studies mapped according to the ShaRInK framework can be drawn upon more efficiently to evaluate their synergies and divergences and through this obtain a more nuanced understanding of the knowledge sharing phenomenon.

From a practical perspective organisations that intend to implement or have established a knowledge sharing strategy and have encountered obstacles can utilise the ShaRInK framework with its key categories and interrelationships to structure their strategy and/or audit processes. That is, the ShaRInK framework visualises four main influences that are fundamentally different in nature and shows how an initiative focusing on one key category might affect other programmes in other key categories and that this needs to be explored before implementing a new initiative. Similarly, organisations facing difficulties could utilise Figure 7 with the four key categories and 12 interrelationships to structure their audit process. As symptoms in one key category might have underlying root causes in other key categories or stem from interrelationships, the ShaRInK framework can provide a systematic approach where each key category and each interrelationship can be progressively explored and the findings subsequently structured according to the key categories and interrelationships.

A limitation of this study is that it is based on a single organisation and within that on 24 interviews in total, yet the overall ShaRInK framework could be extrapolated beyond the organisation that originally served as a basis for its development, as illustrated in Section 5. The second limitation of this study is that knowledge sharing has been examined from the perspective of individuals. Team, organisational or inter-organisational levels could shed a different light onto this phenomenon (Wang and Noe, 2010) but according to Mohammed et al. (2009) studying these levels requires access to and cooperation of the majority of members in that team, or employees in the organisation(s) which may not always be practical in terms of resources. Another potential limitation is cooperation bias which may have influenced the interviewees participating in the present study. This means that employees that share knowledge are willing to be interviewed about the subject.

Despite such limitations, there are areas for possible future research to build upon the findings from this study. It would be interesting to assess the developed ShaRInK framework in other contexts and to carry out studies at different levels of analysis (e.g. team, organisation) in order to advance the knowledge sharing field. There may be potential to augment the ShaRInK framework by introducing new key influences that are different in nature to effects stemming from the sharer or other-sharer's attitudes and characteristics, relationships between the sharers, united entities, and knowledge itself.

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