

DEVELOPING A THEORY OF KNOWLEDGE IDENTIFICATION EFFECTIVENESS IN KNOWLEDGE MANAGEMENT

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Abstract

This paper reports on research conducted to explore the problems that organisations have with respect to a key first step in effective Knowledge Management: Knowledge Identification. The paper reports on the results from an exploratory, interpretive investigation on the problems organisations have with respect to identifying what knowledge exists within their boundaries. The research conducted 17 interviews of Knowledge Management practitioners, the data from which were analysed using domain analysis and cognitive mapping. The research identified 25 lower-level problems with Knowledge Identification and 4 higher-level factors that potentially explain Knowledge Identification Effectiveness: Knowledge Needs Identification, Knowledge Recording, KI Methods Effectiveness and KI Operationalisation. The paper explains the four factors and formulates them into a nascent (untested) theory that explains Knowledge Identification Effectiveness, which is further hypothesised to influence Knowledge Management Effectiveness.

Keywords: Knowledge Management, Organisational Science, Knowledge Identification.

1 INTRODUCTION

The field of Knowledge Management (KM) is relatively young and immature. The successes of the field are modest and arguably insufficient. Many organisations still struggle with KM, both as a concept and its practical application, and are dissatisfied with their lack of success in practicing KM. Two surveys carried out in 2009 and 2011 with 1430 and 1230 respondents respectively, consisting of international executives across multiple sectors, found KM to be significantly below average satisfaction ratings, even though KM was in the top ten most used management tools in both surveys (Rigby and Bilodeau 2009, 2011).

But why is this so? In seeking answers to this question, we found a vast number of references to processes and problems around Knowledge Sharing and capturing tacit knowledge (e.g. see Hinds and Pfeffer 2002; Mitchell 2005; Polanyi 1966). That is to say that Knowledge Sharing and capturing tacit knowledge are two significant problems that organisations face with KM; and that the two contribute to KM effectiveness and success.

Instead of walking down this well-travelled path of Knowledge Sharing and capturing tacit knowledge, we directed our attention to another KM problem: organisations often do not know what they (already) know (i.e. their internal organisational knowledge).

It is a significant problem. Numerous research papers provide opinions and evidence that indicate that organisations have problems with identifying or leveraging internal organisational knowledge (Alavi and Leidner 2001; Davenport and Prusak 2000; Evans and Ali 2013; Hibbard 1997, Hinds and Pfeffer 2002; Nevo, Benbasat, and Wand 2009, 2012; O'Dell and Grayson 1998).

Organisations that are unaware of the knowledge that they have, because they do not know who or where their sources of relevant and needed knowledge are or what knowledge these sources hold, face not only a significant problem, but a complex one. It is a problem which is at the source of many subsequent (and downstream) problems that organisations face with respect to leveraging knowledge that they have for organisation performance. It is a problem which affects organisations at both an organisation level and at an employee level and its ramifications are several.

Unknown knowledge is not necessarily tacit knowledge (knowledge that is hard to express or codify). Unknown knowledge can fall anywhere on the knowledge-form spectrum, from tacit knowledge (of which the holder may not even be aware and is inexpressible or very hard to express), through implicit knowledge (knowledge that can be expressed or codified but for various reasons is not), to explicit knowledge (knowledge that is already expressed or codified in knowledge repositories).

Put simply, organisations cannot leverage or tap into knowledge they do not know they have. Organisations cannot use this knowledge or share it with others to use. This often means that employees possessing knowledge and skills that could be relevant and needed by both colleagues and managers within the same organisation are unknown to those same colleagues and managers.

This represents a significant strategic gap between what organisations do with the knowledge that they know they have and what they actually could do – if they only knew what knowledge they already have. The ability of organisations to identify who has relevant and needed knowledge or where relevant and needed knowledge resides affects their ability to leverage the knowledge that they have for organisational performance.

The most obvious solution to the problem is thought to lie in knowledge-sharing programmes. The rationale for this is that by providing employees with a space where they can write down what they know, organisations can then determine who the sources of the knowledge are and what knowledge the sources hold, but this solution comes with its own problems (see Hinds and Pfeffer 2002; O'Dell and Grayson 1998).

We investigated this problem through a different lens, by examining one seemingly commonly overlooked and problematic KM process: the process whereby organisations proactively take steps to identify what knowledge already exists within their boundaries. This process is known as Knowledge Identification (KI).

Our literature review shows a lack of attention to KI. This is reflected in practice. A recent survey of Australian KM practitioners that specifically addressed KI (Newk-Fon Hey Tow et al., 2012) found a severe mismatch between the respondents' perceived importance of knowledge identification and the extent to which their organisations have identified their internal knowledge.

When asked "How important is it to identify what knowledge exists within your organisation?", on a five-point scale from "Not at all" to "To a great extent", 49% chose 'To a great extent', while another 40% chose the second highest point, with an average rating of 4.36 (near the top of the 1-5 scale). However, when asked: "To what extent has knowledge that exists within your organisation been identified?", on the same five-point scale, 41% chose the second point on the scale, 33% chose the middle point and 19% chose the next point, with an average rating of only 2.74 (well below the midpoint in the scale).

Our literature review also shows that we know little about what problems organisations have with respect to identifying the knowledge that exists within their boundaries (KI) and with KI methods. That is, we know little about the problems that could affect the effectiveness of KI, and in the same vein, the factors that influence the effectiveness of KI. Based on the literature gaps identified, this research addresses the following research questions: RQ1: What are the problems different KM stakeholders face with respect to KI? RQ2: What are the factors that influence KI Effectiveness?

In the following sections, we review the literature surrounding KI before describing the methodology used, and, finally, presenting and discussing the research findings.

2 LITERATURE REVIEW

2.1 Knowledge Identification (KI) and Its Role in Knowledge Management (KM)

Knowledge Identification is a process within Knowledge Management. We start therefore with the KM literature; we define KM and look at the role KI plays in KM, before examining the KI process individually.

Despite the persisting disagreements around what exactly KM is and is not, there is general consensus over what the overarching purpose of KM is: to leverage knowledge for organisation performance. This is evidenced by the numerous studies that have demonstrated that leveraging organisational knowledge effectively impacts positively on organisation performance (e.g. see O'Dell and Hubert 2011; Quast 2012; Wu and Holsapple 2013).

Thus, we defined KM in this research as "the process whereby organisations identify and leverage knowledge assets to support organisational performance" (Jennex, Smolnik, and Croasdell 2007; O'Dell and Grayson 1998). We define KM effectiveness as "the extent to which organisations are able to identify and leverage their knowledge assets to support organisational performance".

Knowledge Identification refers to the process of proactively identifying internal organisational knowledge. Other researchers use different terms to refer to KI. Debenham and Clark (1994) call it the Knowledge Audit. Gray and Meister (2004) call it Knowledge Sourcing. That said, Knowledge Identification is the oldest term used in the literature. KI is part of the well-known KM framework by Probst et al. (2000) as adapted in figure 1 on the next page. For these reasons and for the purpose of harmonising the terms used in this paper, we use the term KI. We also developed our own definition of

KI. In this research, we define KI as “the KM process whereby organisations take steps to identify the relevant and needed knowledge that exists within their boundaries”.

KI is a key process in KM. Perhaps the best way to draw attention to the critical role that KI plays in KM is through a well-known KM framework. Figure 1 below depicts a KM framework adapted from Probst et al. (2000). In figure 1, KI (with the heavier outline) is the first KM process to be executed in a cycle of six activities in a KM initiative. It is followed by knowledge acquisition, development, distribution, utilisation, and retention. The KM framework suggests that the outcomes or deliverables of KI even enable or improve subsequent KM processes. Once relevant and needed knowledge has been identified, the knowledge can then be acquired, developed and shared.

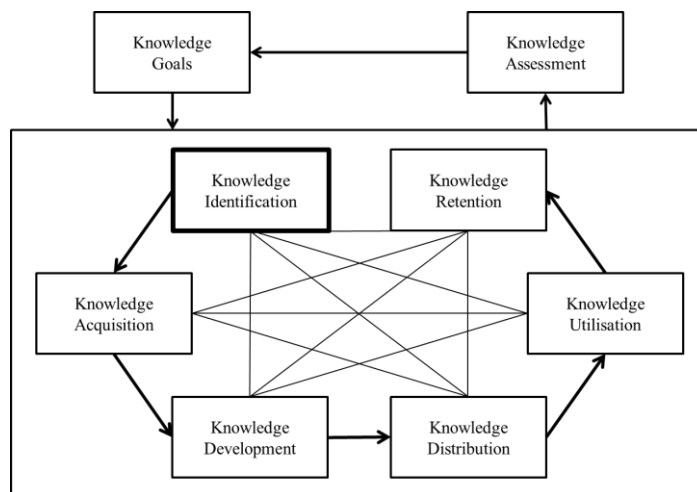


Figure 1. KM processes (adapted from Probst et al. 2000, p. 30).

This particular KM framework is not the only place where we can observe or be reminded of the critical nature of KI. Some academics argue that KI is the quintessential process when undertaking a KM initiative. For example, Hylton (2003) argues that a knowledge audit (a synonym for KI) is the “indisputable first step in a knowledge management initiative” and to not have a knowledge audit is “a travesty of justice to knowledge management.”

As further evidence of the critical nature of KI, Pedersen et al. (2011) found that “internal sources of knowledge appear extremely important to [organisational] performance.” They found that external knowledge, on the other hand, rarely determines organisational performance. To realise the full potential of external knowledge, that knowledge needs to first be transformed and internalised.

The benefits of practising KI are seemingly clear. KI has a positive impact on other KM processes and ultimately impacts KM positively. KI potentially influences KM effectiveness. If organisations are to leverage the knowledge that they have effectively for organisation performance (e.g. by acquiring, developing, sharing or using knowledge), they need to know who or where their knowledge sources are and what knowledge those sources hold in the first place. The next section looks at KI and the gaps in the literature that this research attempts to fill.

2.2 KI and its Literature Gaps.

Literature review suggests that attention to and research into KI is lacking. Figure 2 on the next page depicts a graph from Google Ngram Viewer, showing the usage of the terms Knowledge Identification, Knowledge Audit (a synonym for KI), Knowledge Sourcing (another synonym for KI), Knowledge

Creation, Knowledge Sharing, Knowledge Management (case-insensitive) in the English corpus between 1950 and 2008. The presence of KI and its synonyms in the English corpus pales in comparison to that of KM and even to that of Knowledge Sharing and Knowledge Creation, which are other KM activities or processes.

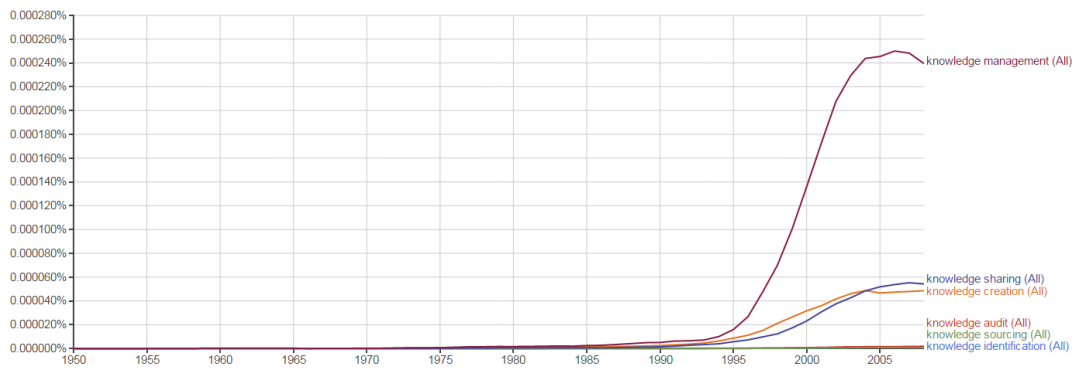


Figure 2. *KI in the English Corpus (Google Ngram Viewer 2015).*

One potential reason for the lack of attention to KI is the fact that it can be difficult to clearly define what KI is or what KI entails. The reason for this is that KI is virtually embedded within all KM processes and it can be difficult to disentangle or delineate KI from other KM processes.

For example, when an employee shares his or her knowledge (Knowledge Sharing), he or she implicitly first identifies what knowledge he or she wants or is meant to share. Likewise, to retain knowledge (Knowledge Retention), an organisation first identifies what knowledge needs to be retained. Yet, when describing the KM processes of Knowledge Sharing or Knowledge Retention, this step of identifying what knowledge is to be shared or what knowledge is to be retained is often overlooked or barely mentioned in the literature.

So, where are the gaps in the literature around KI? In the introduction section, we mentioned the findings of Newk-Fon Hey Tow et al. (2012) that there is a large mismatch between the high need for and importance ascribed to KI by KM practitioners and the low level of KI practice and identification of extant internal organisational knowledge. The incongruence between the importance that organisations attach to KI and how effectively organisations actually practise KI indicates that organisations may have serious problems in practising KI.

The literature describes several available methods, tools, and systems for practising KI, which should facilitate KI and enhance KI effectiveness. These include Knowledge Sharing Systems (KSS), with which employees write down what they know (Hinds and Pfeffer 2002), Expert Finding systems, with which organisations mine knowledge repositories to identify who knows what (Maybury 2006), Organisational Network Analysis (ONA), with which organisations identify who knows whom (Parise et al. 2005), Knowledge Mapping, which resembles ONA, but provides a graphical representation (Wexler 2001), and the ExTra approach, used by knowledge managers to identify key holders of knowledge (Weber et al. 2007).

There is, however, little research that investigates the effectiveness or the adoption in practice of these methods. Newk-Fon Hey Tow et al. (2012) did investigate what KI methods are used. They reported little take-up of the above methods, except for Knowledge Sharing Systems (56% of respondents reported that their organisations use them. However, KSS are also used downstream from KI (e.g. in knowledge distribution), so their use for KI purposes may be very limited.

They reported the use of many other methods, which were mostly ad-hoc approaches. Moreover, many of the KI methods reported weren't actually for KI, but for knowledge distribution. Our further

interpretation of the findings in Newk-Fon Hey Tow et al. (2012) leads to the further possibility that some, perhaps many, respondents weren't actually clear about what KI is (as opposed to other KM activities).

The lack of attention to KI in the research literature and the above findings about the lack of KI in practice beg an important question: Why? This is a key gap in the research literature surrounding KI. This research addresses the following research questions: RQ1: What are the problems different KM stakeholders face with respect to KI? RQ2: What are the factors that influence KI Effectiveness? We define a problem in this research as "a perceived difference between what is and what ought to be" (Kroenke 2006, p. 31). The next sections discuss research design and the findings obtained.

3 RESEARCH DESIGN

The design of a research project or program is based on the sort of research question(s) that is (are) being asked and their context in the literature. The above research questions and the lack of literature around them indicate that theory building is necessary. The constructs needed to form a theory and possible relationships are not available, with the exception of a notion of KI effectiveness.

The research question is one about human behaviour, actions, methods, and perceptions about them. Such a research context suggests that an interpretive approach to identify relevant phenomena and formulate them as a theory is needed. We decided to collect qualitative data from KM stakeholders, largely using interviews (but also collecting documents where available). We also used an interpretive approach to interpretive data analysis called domain analysis (Spradley 1979, Atkinson and Abu El Haj 1996). The rest of this section describes the research design in more detail.

3.1 Source of Data

Our source of data for this research was interviews with KM stakeholders, from non-management to management; individuals with and without overall KM responsibility. Recruitment of participants was done in two ways. First, theoretical sampling was applied to a list available to the authors of KM practitioners. As we sought to surface phenomena and constructs, we selected the initial sample to obtain as much breadth as possible. Theoretical sampling considerations included: the KI methods used, organisational positions, organisation size, and KI effectiveness.

Second, snowball sampling was applied on participants who passed through the selection screen. The rationale behind the snowball sampling is that the participants who have been through the interviews are likely to know others who also have targeted characteristics. The purpose of the interviews was made clear to the participants by means of an information sheet sent to them prior to data collection.

3.2 Data Collection Method

Interviews were chosen as the main method of data collection, since they are more effective in obtaining deeper responses. In-depth and semi-structured interviews were conducted, mostly over the telephone, since the respondents were widely dispersed geographically.

Only one researcher conducted the interviews. How the interviews were conducted was informed by Spradley (1979) and Sorrell and Redmond (1995). Spradley (1979) emphasises development of rapport and trust between interviewer and participant. Interviews began with a general, descriptive, 'grand tour' questioning style before becoming more and more specific.

For example, one of the questions asked in the early stage of the interviews was: “There are a lot of definitions of Knowledge Management out there but in your opinion, what is knowledge management?”. One of the questions asked in the late stage of the interviews was: “Is there anything that you particularly perceive is problematic in these methods? Could you give me an example?”.

Structural questions were used to organise and verify information gleaned from the informant, and to ask for explanations (Sorrell and Redmond 1995; Spradley 1979). Finally, contrast questions, which involve asking participants to compare different terms, were employed to help understand the meanings of key words used by participants (Sorrell and Redmond 1995; Spradley 1979).

Transcription and analysis of the interview data began after the first interview. Transcription and analysis of the interview data continued throughout the data collection phase. Concurrent data analysis and collection allowed the researcher to know when to stop data collection. Data collection was stopped when information saturation had been reached.

The interviews were conducted until theoretical saturation or informational redundancy (the point in time during data collection when new data no longer brought additional insights to the research questions) was reached. For data analysis purposes, the interviews were usually recorded. Consent was sought from the participants to record the interviews. Notes were also taken during the interviews. The interview notes and transcripts (as well as some documents gathered) were used for the data analysis that followed.

3.3 Data Analysis Method

A combination of domain analysis and cognitive mapping was chosen as the method of data analysis for the interview notes and transcripts. While domain analysis, a qualitative data analysis method (akin to a ‘Glaserian’ grounded theory) further explicated below, helped surface the ‘units of meaning’, the preliminary categories and the relationships among the preliminary categories, cognitive mapping helped focus on the cause-consequence relationships among the preliminary categories. Two of the researchers (including the researcher who conducted the interviews) had previous experience in domain analysis and one had extensive experience with cognitive mapping.

As Graneheim and Lundman (2004, p. 111) reflect: “In qualitative content analysis interpretation involves a balancing act. On one hand, it is impossible and undesirable for the researcher not to add a particular perspective to the phenomena under study. On the other hand, the researcher must ‘let the text talk’ and not impute meaning that is not there.” The researcher who conducted the interviews carried out the data analysis. To ensure reliability and rigour of the analysis, the other two researchers provided feedback on the analysis as ‘sanity checks’.

The domain analysis (Spradley 1979, Atkinson and Abu El Haj 1996) consisted of three stages. The first stage segments the interview data collected into ‘units of meaning’. Segments were separated in the text where the participant’s purpose changed and each segment categorised, thus taking into account Henri’s (1991) observation that texts should be analysed based on their meaning, not syntactical structures. Prior to the segmentation process, the interview data is read three times to ensure that the researcher is immersed in the ‘flow’ and interprets the data correctly.

In the second stage, the units of meaning are grouped into preliminary categories. This involves looking for similarities, themes and patterns in the data, while ensuring that sufficient information about the context from which the units of meaning were derived was included (Seaman 1999). The similarities, themes and patterns found in the data involve a number of varying relationships including: ‘is a’ relationships, ‘causes’ relationships, or ‘forms’ relationships. These preliminary categories developed may have multiple levels of grouping.

In the third stage, the preliminary categories are refined and consolidated to obtain a list of the dominant categories - also known as domains. For quality assurance, the units of meaning are then allocated back to their respective domains and scrutinised to identify relationships between the domains.

In parallel with the domain analysis, the research used cognitive mapping (Venable 2005) to identify, analyse, and model the cause-consequence relationships among the preliminary categories and the domains. Cognitive mapping is a form of causal mapping; a diagramming technique for analysing causes and consequences of problems.

Based on the preliminary categories and domains identified, we developed a list of potential factors influencing KI effectiveness. The causal analysis with cognitive mapping further supported building a preliminary and untested theoretical model incorporating those factors.

4 FINDINGS

4.1 About the Interviewees and the Interviews

A list of 51 potential respondents KM stakeholders based on previous research was available to the researchers. Of these 51 potential participants, 12 (or 24 per cent) agreed to participate and were interviewed. From the 12 interviewees, a further five referrals (from snowball sampling) were made, yielding a total of 17 interviews, which were conducted over a period of eight months.

14 (or 82 per cent) out of the 17 interviewed were management employees. The remaining three were non-management. Of the five referrals, two were management employees and three were non-management. Eight out of the 14 management employees (or 47 per cent of the total interviewees) had overall KM responsibility at their respective organisations. In two organisations, no one held overall KM responsibility.

All of the interviewees were in Australia, with 59 per cent of the interviewees located in the Eastern states of Australia (NSW, VIC, QLD). The 17 interviewees came from 17 different organisations. The 17 organisations were from various industry including (grouping based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006): Public Administration and Safety (x1), Education and Training (x1), Professional, Scientific and Technical Services (x3), Mining (x6), Electricity, Gas, Water and Waste Services (x2), Financial and Insurance Services (x1) Health Care and Social Assistance (x1), and Public Administration and Safety (x2).

The researcher conducting the interviews was successful in building rapport with the interviewees. This is evidenced by interviewees sharing internal organisational knowledge including internal documents such as presentation slides or information management strategies. The duration of the interviews ranged from 22 minutes to 34 minutes for management interviewees and from 26 minutes to one hour and six minutes for non-management interviewees.

4.2 Interviewee Data Analysis

Saturation was reached after the fifth interview, but continued partly because of a lag in analysis after data collection, but also to ensure breadth and to be sure that saturation had actually occurred. The researcher also checked for bias in the interviews (where certain points are raised only by certain individuals) and found none. The format of the interview or the questions drafted at the beginning of data collection stayed more or less the same throughout data collection. How the data collected was analysed is described next.

Out of the 17 interviews conducted, 16 were transcribed. Due to technical issues, one of the interviews was not recorded, but notes taken during the interview were used in the data analysis. The researcher who conducted the interviews transcribed the interviews. The researcher used VideoLAN to slow down the playback speed of the audio recordings, wore a pair of headphones and typed what he heard using Microsoft Word. Each recording took eight to ten times the length of the recording without interruptions.

The interview data was analysed using a combination of domain analysis and cognitive mapping, as described in section 3. Still using Microsoft Word, segments were separated in the text where the participant's purpose changed and each segment categorised. Example segments and preliminary categories are provided in table 1 below.

Interviewees	Units of meaning	Preliminary categories
J[1]	One of the things that's unusual about people is we often think that we are better at things than we are and we often overlook things that we are actually very good at.	Employees may not know what to share.
	So because of the self-nature of the registration, you do get some instances of more recording of what I like to do as opposed to what I can do.	
J[2]	So being a law firm, we're organised into practice groups, into interest groups, and into departments. So each lawyer registers within interest groups, registers within practice groups.	Example of organisation structure used to identify organisational knowledge.
	And so, for tacit skills, the physical skills, how do I do this, how do I do you know, do a matter, the organisational structure will bring you to that skill for your particular discipline.	

Table 1. Units of meaning and preliminary categories.

In the second stage of domain analysis, the units of meaning were grouped and organised into level 2 preliminary categories. The types of relationship among the preliminary categories varied. Cognitive mapping was used to identify cause-consequence relationships, which were the focus of this research. The software Microsoft PowerPoint aided in that effort.

The relevant preliminary categories developed are listed in table 2 below. Note that table 2 provides answers to the first research question (RQ1: What are the problems different KM stakeholders face with respect to KI?)

Preliminary categories - Level 1	Preliminary categories - Level 2
<ul style="list-style-type: none"> Knowledge stored in knowledge repositories is outdated. Searcher requires subject matter and knowledge to be able to craft queries and interpret results. Poor, inconsistent, not-repeatable search results. Patchiness of information leads to a lack of critical mass. Too much reliability on self-identification or voluntary submission. 	Problems with KI methods
<ul style="list-style-type: none"> Employees do not know what to share. Lack of incentives for employees to share their knowledge. 	Problems with KI methods - specific to knowledge-sharing systems
<ul style="list-style-type: none"> Freedom to use own knowledge-structures. Lack of control over what knowledge is shared. 	Problems with KI - relating to employees not writing down what they know
<ul style="list-style-type: none"> Not one single consistent KI method. Not knowing which KI method to use. 	Problems with KI

Preliminary categories - Level 1	Preliminary categories - Level 2
<ul style="list-style-type: none"> • Difficulties in adapting to changes as people learn and move. • Overly complex process in how knowledge is captured and collected. • Lack of formal processes, no accountability. • No trust in currency of knowledge. • Lack of KM policies. • Lack of clear KM policies. 	Problems with KI (Continued)
<ul style="list-style-type: none"> • Weak business case for KI. • Knowledge is not used as currency. • Anatomy of a document is unclear. • No clear knowledge needs. 	Problems with KI - building the case for KI
<ul style="list-style-type: none"> • No clear organisation structure • No clear organisation knowledge structure • No universal taxonomy. Difficulty in getting a common understanding. 	Problems with KI - relating to knowledge and organisation structure.

Table 2. Preliminary categories.

In the third step, the preliminary categories were further refined and consolidated to obtain a list of the dominant categories, or domains. The units of meaning were then allocated to their respective domains and scrutinised to identify relationships between the domains.

The domains identified were: Knowledge Needs Identification, Knowledge Recording, KI Methods Effectiveness and KI Operationalisation. These domains can be considered as the potential factors that influence KI Effectiveness, which answer our second research question (RQ2: What are the factors that influence KI Effectiveness?).

5 A NASCENT THEORY OF KI AND KM EFFECTIVENESS

The four domains resulting from the analysis above are four potential factors that influence KI effectiveness. This section discusses these four potential factors in more detail before positing them as part of a nascent (preliminary and untested) theoretical model (see figure 3 after the discussion of the four factors).

Knowledge Needs Identification: The extent to which an organisation has established and prioritised what knowledge the organisation needs for organisation performance. If an organisation knows what knowledge it needs, the organisation is likely to be more effective in identifying who holds the knowledge or where the knowledge resides. This fits well with the “Knowledge Goals” process in figure 1. This is exemplified in the interview excerpt below:

“I think on the plant, which is the generators, the turbines and the cooling towers, people have an idea, cause you know who knows what.

But it’s, it’s the detail knowledge of who was the last person that pulled apart that turbine, cause you know like, I don’t know a pulveriser, a turbine, it might only be, it might have a major overhaul once every four years,

so umm you know, it’s always ideal to get the person who worked on it last time to you know, be involved because they have such detail knowledge about what might happen.”

Knowledge Recording: The extent to which employees articulate and record what they know. If employees do write down what they know, the knowledge is then captured in knowledge repositories. These knowledge repositories can then be used for later consumption of the knowledge. It is worth noting that knowledge repositories need to be kept up-to-date as well. This is exemplified in the interview excerpt below:

“It’s all open. And that’s what we wanted to do with that because we figured the best way to learn is to leave it [knowledge sharing system] open so they could put anything to it any way that they wanted and we would learn by that.

Because what will happen is all the good stuff will eventually float to the surface and we’ll share that and we’ll be able to replicate that across the organisation and the stuff that doesn’t work well will just fall off.”

KI Methods Effectiveness: The extent to which the KI methods that are used by the organisations are effective. Irrespective of the KI method used, the more effective the KI method is to identify internal organisational knowledge, the more effective the organisation is at practising KI. This is exemplified in the interview excerpt below:

“It’s also hugely interesting area because the types of document management systems that work in the commercial enterprise typically don’t work in a law firm for those sort of reasons because we have to be able to track not only where any document is at any point in time, which is what the normal commercial issue is,

but we also have to be able to track what the entire life history of the document is, who’s ever read this document, who’s ever had access to this document, or who’s ever participated in anything having to do with this document, and those, that extra level of being able to confidently rely, is really why you’d need this sort of document management involvement.”

KI Operationalisation: The extent to which KI is prioritised, proactively practised, and actively managed. Just starting is key. KI is a proactive approach to identifying internal organisational knowledge. If the organisation does not practise KI, it is unlikely that the organisation is effective at identifying its internal knowledge when it needs it (i.e. reactive KI). This is exemplified in the interview excerpt below:

“erm.. (clears throat) it’s not straight forward. It’s complex. It’s difficult. Umm it’s umm a lot of work.. and people are busy and no one wants to put their hand up for something which is difficult and lot of work.

umm and you know it’s not so obvious who should bear responsibility? It’s one of these things, it could be HR, it could be IT, it could be in our library or information services area, it could be.. you know a few other places”

Figure 3 on the next page graphically represents a nascent theory that explains KI effectiveness with the above four factors. Figure 3 further hypothesises that KI Effectiveness will influence KM Effectiveness. This hypothesis is in line with figure 1, in which KI is the first process in the larger KM

cycle and follows from the supposition that its outputs are useful and perhaps even necessary for subsequent KM processes.

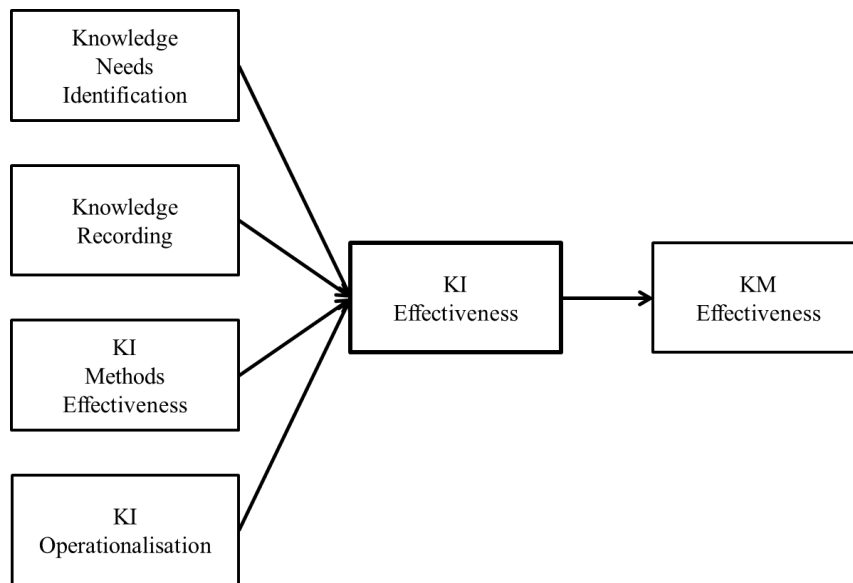


Figure 3. A Nascent Theory of Knowledge Identification Effectiveness

This preliminary and untested theory contains the four elements of theory recommended by Whetten (1989): the what - the factors to be considered as part of the explanation of the phenomena of interest (KI effectiveness), the how - how the factors identified are related to each other (the arrows), the why - the underlying psychological, economic, or social dynamics that justify the selection of factors and the proposed causal relationships (the discussion above), and the who, where and when (the limitations or conditions placed on the theory, pointed out below).

6 CONCLUSION

This paper reports on interpretive research to identify problems organisations have with respect to Knowledge Identification (RQ1), to identify factors that influence Knowledge Identification Effectiveness (RQ2), and to develop a nascent, preliminary model to explain Knowledge Identification Effectiveness and its impact on Knowledge Management Effectiveness.

There are some important limitations to this research, which give rise to opportunities for further research. First, while theoretically selected for breadth, the sample was small in size and not all industries were represented, which may limit the generalisability of any findings. Second, due to resource constraints, the research was constrained to Australian organisations, which may further limit the generalisability of any findings.

Third, and most importantly, the theory built in this research (figure 3 and section 5) has not been rigorously tested. It is therefore difficult to claim that this theory is a grand, middle-range or situation-specific type of theory, although the scope of the sample was broad.

More research is warranted to test the proposed theory, to ascertain whether it applies across all industries or only some, and to evaluate whether the same factors apply in other countries, regions,

and cultures than in Australia. Moreover, the strengths of possible relationships among the factors influencing KI effectiveness introduced in this paper also need to be tested.

References

- Alavi, M. and Leidner, D. E. (2001). "Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues." *MIS Quarterly* 25(1), 107-136.
- Atkinson, S. and Abu El Haj (1996). "How to do (or not to do) ... Domain analysis for qualitative public health data." *Health Policy and Planning* 11(4), 438-442.
- Burstein, F., Sohal, S., Zyngier, S. and Sohal, A. 2010. "Understanding of knowledge management roles and responsibilities: a study in the Australian context," *Knowledge Management Research & Practice* 8, 76-88.
- Davenport, T. H. and Prusak, L. (2000). *Working Knowledge: How Organisations Manage What They Know*. Cambridge: Harvard Business School Press.
- Debenham, J. and Clark, J. (1994). "The Knowledge Audit." *Robotics and Computer Integrated Manufacturing Journal* 11(3), 201-211.
- Evans, M. and Ali, N. (2013). "Bridging Knowledge Management Life Cycle Theory and Practice." *Proceedings of the 10th International Conference on Intellectual Capital, Knowledge Management & Organisational Learning*, Washington.
- Google Ngram Viewer. (2015). *Google books Ngram Viewer*. URL: <https://books.google.com/ngrams> (visited on 01/03/15).
- Graneheim, U. H. and Lundman, B. (2004). "Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness." *Nurse Education Today* 2004(24), 105-112.
- Gray, P. H. and Meister, D. B. (2004). "Knowledge Sourcing Effectiveness." *Management Science* 50(6), 821-834.
- Henri, C. (1991). "Computer Conferencing and Content Analysis." In: *Collaborative Learning through Computer Conferencing*. Ed. by A. Kaye. The Najaden papers, Springer-Verlag, London, pp. 117-136.
- Hibbard, J. (1997). *Knowing what we know*. URL: <http://www.informationweek.com/653/53iukno.htm> (visited on 05/30/2013).
- Hinds, P. J. and Pfeffer, J. (2002). "Why organizations don't "know what they know" - cognitive and motivational factors affecting the transfer of expertise." In: *Sharing Expertise: Beyond Knowledge Management*. Ed. by M. Ackerman, V. Pipek and V. Wulf. MIT Press, Cambridge.
- Hylton, A. (2003). "A KM Initiative is Unlikely to Succeed Without a Knowledge Audit." In: *Proceedings of the Knowledge Management Aston Conference*. Ed. By J Edwards. The Operational Research Society/Aston Business School, Birmingham.
- Jennex, M. E., Smolnik, S. and Croasdell, D. (2007). "Towards Defining Knowledge Management Success." *Proceedings of the 40th Hawaii International Conference on System Sciences*, Waikoloa.
- Kroenke, D. (2006). *Using MIS*. Upper Saddle River, NJ: Prentice-Hall.
- Maybury, M.T. (2006). *Expert Finding Systems*. Mitre Technical Report. URL: http://www.mitre.org/work/tech_papers/tech_papers_06/06_1115/06_1115.pdf (visited on 10/06/12).
- Mitchell, H. J. (2005). "Knowledge Sharing – The Value of Story Telling." *International Journal of Organizational Behaviour* 9(5), 632-641.
- Nevo, D., Benbasat, I. and Wand, Y. (2009). *Who Knows What?* URL: <http://online.wsj.com/article/SB10001424052970203946904574302032097910314.html> (visited on 10/30/2014).
- Nevo, D., Benbasat, I. and Wand, Y. (2012). "The knowledge demands of expertise seekers in two different contexts: Knowledge allocation versus knowledge retrieval." *Decision Support Systems* 53, 482-489.

- Newk-Fon Hey Tow, W., Dell, P., and Venable, J. (2012). "How Organisations Know What They Know: A Survey of Knowledge Identification Methods among Australian Organisations." *Proceedings of the 2012 Australasian Conference in Information Systems (ACIS 2012)*, Geelong, VIC, Australia, 3-5 December, 2012.
- O'Dell, C. and Hubert, C. (2011). *The New Edge in Knowledge: How Knowledge Management Is Changing the Way We Do Business*. Hoboken, NJ: Wiley.
- O'Dell, C. and Grayson C. J. (1998). "If Only We Knew What We Know: Identification and Transfer of Internal Best Practices." *California Management Review* 40(3), 154-174.
- Parise, S., Cross, R. and Davenport, T.H. (2005). "It's Not What but Who You Know: How Organizational Network Analysis Can Help Address Knowledge Loss Crises." Lost Knowledge Roundtable, The Network Roundtable at the University of Virginia.
- Polanyi, M. (1966). *The Tacit Dimension*. Garden City, NY: Anchor Books Doubleday & Co.
- Probst, G., Raub, S. and Romhardt, K. (2000). *Managing Knowledge: Building Blocks for Success*. Chichester: John Wiley & Sons Ltd.
- Quast, L. (2012). *Why Knowledge Management Is Important To The Success Of Your Company*. URL: <http://www.forbes.com/sites/lisaquast/2012/08/20/why-knowledge-management-is-important-to-the-success-of-your-company> (visited on 10/30/2014).
- Rigby, D. and Bilodeau, B. (2009). *Management Tools and Trends 2009*. URL: http://www.bain.com/Images/Management_Tools_2009.pdf (visited on 10/30/2014).
- Rigby, D. and Bilodeau, B. (2011). *Management Tools and Trends 2011*. URL: http://www.bain.com/Images/BAIN_BRIEF_Management_Tools.pdf (visited on 10/30/2014).
- Seaman, C. B. (1999). "Qualitative Methods in Empirical Studies of Software Engineering." *IEEE Transactions on Software Engineering* 25(4), 557-572.
- Sorrell, J. M. and Redmond, G. M. (1995). "Interviews in Qualitative Nursing Research: Differing approaches for ethnographic and phenomenological studies." *Journal of Advanced Nursing* 21, 1117-1122.
- Spradley, J. (1979). *The ethnographic interview*. New York: Holt.
- Venable, J. R. (2005). "Coloured Cognitive Maps for Modelling Decision Contexts", *Proceedings of the First International Workshop on Context Modeling and Decision Support*. Bui, T. and Gachet, A. (Eds.), Paris, France, 5 July 2005, CEUR Workshop Proceedings, ISSN 1613-0073, URL: http://CEUR-WS.org/Vol-144/03_venable.pdf (visited on 28/11/2014).
- Weber, F., Dauphin, E., Fuschini, R., Haarmann, J., Katzung, A. and Wunram, M. (2007). "Expertise transfer: A case study about knowledge retention at Airbus." In S.K. Pawar, K.-D. Thoben & M. Pallot (Eds.), *ICE 2007 Proceedings*. France: Sophia-Antipolis.
- Wexler, M.N. (2001). "The who, what and why of knowledge mapping." *Journal of Knowledge Management* 5(3), 249-263.
- Whetten, D.A. (1989), "What Constitutes a Theoretical Contribution?" *The Academy of Management Review* 14(4), 490-495.
- Wu, J. and Holsapple, C. W. (2013). "Does knowledge management matter? The empirical evidence from market-based valuation." *ACM Transactions on Management Information Systems* 4(2).