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TOWARD MORE EFFECTIVE KNOWLEDGE MANAGEMENT: AN INVESTIGATION OF PROBLEMS IN KNOWLEDGE IDENTIFICATION

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Abstract

One of the first knowledge management (KM) processes, on which subsequent processes depend, has been largely under-researched. A review of the literature shows that in contrast to other processes, the process of Knowledge Identification (KI) has been less researched.

More specifically, what problems face KM stakeholders with respect to KI is yet to be understood. Despite this lack of understanding, a number of KI methods exist and new ones are emerging. This paper has identified and critiqued some of the KI methods. However, whether these KI methods are perceived as effective by KM stakeholders, what other KI methods are currently being used, and what factors influence the effectiveness of KI methods, remain unclear. These constitute research gaps which this research will contribute to fill.

This research project will consist of three phases. To collect data, surveys, interviews, and case studies will be used. A mix of quantitative and qualitative data analysis methods will be carried out on data collected. The results of the data analysis will provide deeper understanding of the problems surrounding KI, and will be used to develop a model of factors influencing the effectiveness of KI methods.

Keywords: Knowledge Management, Knowledge Identification, Organisational Science

1 INTRODUCTION

Organisations often do not know what they know (Huber 1991; Hinds & Pfeffer 2002) despite the fact that much of the knowledge they need already exists within their organisations (Davenport & Prusak 2000; Alavi & Leidner 2001). Employees possessing particular skills and knowledge could be invaluable to both colleagues and managers within the same organisation, but it is more likely than not that those people who could make use of that knowledge do not even know they exist. "Talk about a waste!" (Nevo et al. 2009).

2 THEORETICAL FOUNDATIONS

2.1 Knowledge Identification (KI)

Knowledge Management (KM) has gained in significance since the turn of last century. According to Global Industry Analysts Inc. (2008), global KM market revenues are projected to exceed US$157 billion by 2012, from an estimated US$34.17 billion in 2007.

KM is about managing a flow of knowledge which ideally brings employees the "right knowledge, at the right time, and in the right form to where it is needed." (Mäki 2008, p. 53). KM involves employees across all levels of organisations, makes use of technology and consists of several processes.

According to Probst et al. (2000), KM consists of eight processes beginning with establishing a knowledge activity which supports the broader organisational strategy (Knowledge Goals), and ending with evaluating the outcomes of the KM process (Knowledge Assessment). Between these two processes, as shown in figure 1 below, are six inter-dependent core KM processes.
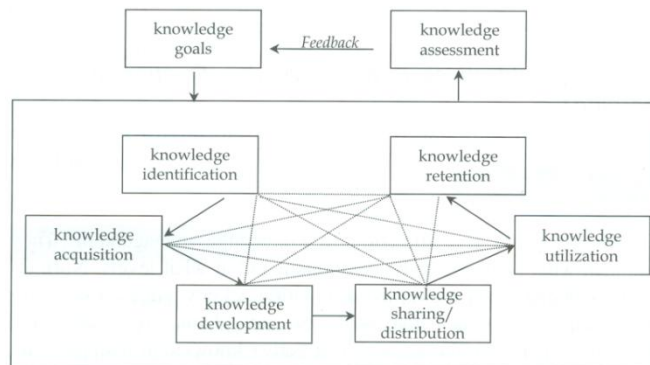

Figure 1.   KM processes according to Probst et al. (2000, p. 30).

To manage a flow of knowledge, management should first establish what knowledge exists within their organisations (Henczel 2000). The Knowledge Identification (KI) process does exactly that. The KI process involves identifying organisational internal knowledge.

The outcomes of KI not only help organisations identify and refine what knowledge is needed to attain organisational goals, but also enable other KM processes as well. For example, Knowledge Retention (KR) practices start with KI.

As Joe et al. (2006) cautions, one of the challenges of retaining knowledge is to determine what valuable knowledge employees have (KI) and thus what knowledge should be retained. Especially now, due to population ageing, the risk of losing knowledge has become a serious concern (DeLong 2004; Stam 2009). According to Parise et al. (2006, p. 31), "knowledge loss resulting from employee turnover is becoming a critical issue that cannot be ignored".

A large body of research exists that shows much of the knowledge that employees gain through experience is not recorded or shared (McAdam et al. 2007, p. 43). This yet-to-be acquired knowledge still remains between the two ears of the employees - the knowledge holders (KHs). For the purpose of this paper, knowledge refers to "facts, information, and skills acquired through experience or education" (Oxford 2010) that are relevant and valuable to the performance of organisations.

This research concentrates on the KI methods and practices of identifying KHs who possess needed knowledge that is yet to be acquired. Identifying these KHs is a step toward enabling management to know what knowledge exists within their organisations and (perhaps more importantly) what knowledge their staff need. But, what KI methods are used by organisations to identify KHs? Proposed and extant means are described in the section below.

2.2 KI Methods

Notable KI methods include: Knowledge Sharing Systems (Hinds & Pfeffer 2002), Expert Finding Systems (Maybury 2006), Organisational Network Analysis (Parise et al. 2005), Knowledge Loss Risk Assessment (Jennex 2009), and ExTra (Weber et al. 2007). Each of these KI methods is discussed in turn below.

The advance in computing and telecommunications technologies in the 90's prompted organisations to invest in Knowledge Sharing Systems (KSSs) like intranets, to facilitate knowledge transfer and sharing (Rumizen 1998; Ipe 2003). The logic was that by providing KHs with a space where they could share their knowledge (and assuming that KHs do share their knowledge), organisations would be able to establish what knowledge exists and ultimately identify KHs.

However, so far, knowledge sharing within organisations has met with little success (Ruggles 1998; Thurm 2006). The literature on the reasons why KSSs failed is extensive (see Hendriks 1999; Cross et al. 2001; Hinds & Pfeffer 2002; Mitchell 2005). The lack of the right organisational culture is one of the reasons (Kluge et al. 2001). Another reason is that the skills and expertise KHs build up after years of experience can be hard to express and share. This type of knowledge is called tacit knowledge (see Polanyi 1966).

A new breed of KSS is emerging. Nevo et al. (2009) for example, propose social-computing tools such as blogs, wikis, social networking sites and tagging as a KI method. Although these social-computing tools, like other KSSs, provide KHs a space to share their knowledge, in contrast to vanilla KSS, social-computing tools according to Nevo et al. (2009) are richer in supporting "softer qualities" such as trustworthiness, communication skills and willingness to help.

A second technology serving a similar purpose to identifying KHs and which has recently gained popularity is the new class of search engines called Expert Finding Systems (EFSs) or Expert Locators (see Mockus & Herbsleb 2002; D'Amore 2005; Shami et al. 2008). To identify KHs, these systems apply different content analysis techniques to large collections of artefacts created by KHs including email (see Balog & De Rijke 2006), instant messages, documents (see De Boer 2006) and briefings (Maybury 2006).

However, Maybury (2006, p. vii) maintains that finding KHs is a difficult task because "their skills and knowledge are rare, expensive, (unevenly) distributed, difficult to qualify, continuously changing, varying in level, and often culturally isolated and oversubscribed." For Nevo et al. (2009) the problem with EFSs is that most are centrally managed efforts, thus requiring additional resources to

constantly review and update the credentials of often rapidly changing roles of experts, to which few organisations commit.

Another KI method, argued for by Parise et al. (2005), is Organisational Network Analysis (ONA). Central to their argument for using ONA is the premise that KHs possess not only skills and expertise but also knowledge of relationships among KHs. ONA draws relationships among KHs. ONA therefore helps identifying who knows whom within organisations, not who knows what. ONA suits organisations which favour collaborative work among KHs over individualistic work. Furthermore, ONA only provides a snapshot of the current relationships among KHs (Borgatti 2005), and therefore does not provide for the constant change among KHs (Maybury 2006). In other words, ONA is not dynamic.

Still, other and newer KI methods exist such as Knowledge Loss Risk Assessment (KLRA) and ExTra. KLRA (Jennex 2009, p. 2) "uses interviews to determine the scope of knowledge to be captured and the actions that should be taken to capture this knowledge."

The ExTra process, promoted by Weber et al. (2007), starts with identifying KHs. "For that purpose, so-called transfer networks are implemented in the different business areas. [T]ransfer networks consist of local management representatives, HR representatives and employees of the knowledge management department and meet typically twice a year for compiling a list of candidates [KHs]." (Weber et al. 2007). However, how exactly the list of KHs is compiled is unknown.

Five KI methods have been discussed above. Davis and Wagner (2003, p. 476) reviewed the literature with a view to "isolating effective measures to use" in identifying KHs. Their review of the literature proved "to be of limited success." They further added that few studies clearly describe the means through which KHs are identified. However, it is eight years since they reviewed the literature and as shown above, a number of KI methods have since been developed, each having its pros and cons.

On the other hand, little is known about whether these KI methods are the only KI methods organisations are currently using to identify KHs, about what other KI methods organisations are using, and about the effectiveness of these KI methods.

More significantly, based on the above discussion on KI methods, it is clear that there are several factors which influence (and possibly predict) the effectiveness of KI methods. Some of the factors identified in this paper include the degree of collaboration among KHs, the organisational culture, the tacitness of knowledge, and the dynamic nature of KHs. However, no research has been undertaken to systematically identify the factors influencing the effectiveness of KI methods. This constitutes a significant knowledge gap in the KM literature.

3   RESEARCH QUESTIONS

The review of KI methods above demonstrates that KI methods have significant weaknesses. If we are to augment the effectiveness of KI methods, we should first understand the problem(s) these methods have, and the KM stakeholders' experiences. The primary research question for this research is thus:

1.   What problems face KM stakeholders with respect to KI?

Before proceeding further, some definitions of the terms used in the question above are required. Firstly, what is a problem? Kroenke (2006, p. 31), defines a problem as "a perceived difference between what is and what ought to be". Secondly, who are KM stakeholders? The list of KM stakeholders is extensive but includes: KM managers or CKO's, KM practitioners, KM researchers,

CIO's, Directors of Human Resources, IT managers, operational staff, KHs, management and customers.

Secondary research questions are as follows:

2. What KI methods are currently used by organisations?

3. What do different stakeholders want, like or desire from KI methods?

4. What do different stakeholders not want, dislike, feel is missing or perceive is problematic in KI methods?

5. What factors influence the effectiveness of KI methods?

Answering these secondary research questions will answer the primary research question.

4   PROPOSED METHODOLOGY

The primary research question (hereafter referred to as RQ 1) of this research is "What problems face KM stakeholders with respect to KI?" This research seeks to understand the stakeholders and their problems "in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them." (Denzin & Lincoln 1994, p. 2). The interpretive paradigm is hence adopted. The research will be conducted by following a three-phase research method. The three phases proposed are described in the following sections. At the time of writing, work is under way on phase one.

4.1   Phase One - Survey

The first phase is primarily concerned with the question of what KI methods are currently used by organisations (RQ two). The population target in this research consists of the Top 1000 organisations in Australia with the greatest number of employees. Such a population was chosen because larger organisations are more likely to have more KHs and more likely to adopt KM initiatives (Guthrie et al. 1999; Zhou & Fink 2003). These organisations have been identified using a list purchased from a commercial list provider.

A short questionnaire survey of these organisations is being conducted. A survey research methodology is adopted because the researcher wants to obtain the characteristics of a large population - breadth rather than depth. No other method of observation can provide this general capability. The short questionnaire also includes open-ended questions related to RQs three and four. The goal in this phase is therefore not only to obtain a list of KI methods but also initial responses to RQs three and four.

Selection of KM stakeholders is informed by Burstein et al. (2010). Their recent survey carried out among Australia's Top 1000 organisations to determine who has authority over KM strategy showed that, four in five organisations have a formal role for authority over KM strategy, and senior executives acknowledged that they have this authority (Burstein et al. 2010). In other words, management is most likely to have overall knowledge of KM and KI initiatives in their organisations. KM stakeholders in phase one will therefore consist of management, including CIO's, CKO's, Directors of Human Resources and IT managers.

The short questionnaire is being sent via post mail, with a prepaid return envelope, to these KM stakeholders of all 1000 organisations. Given the need to follow-up with non-respondents of the

survey and the need for participants in later phases of the research, a non-anonymous questionnaire is used. Respondents are also asked whether they are interested in participating in later phases of the research.

Burstein et al. (2010) obtained a response rate of 9.8 per cent. Zyngier (2002) conducted a similar survey of CEO's, CIO's and Director of Human Resources of Top 1000 organisations in Australia, and obtained a response rate of 15.1 per cent. A desired response rate for this research will be equal or better than those two studies. While the survey is personalised to improve response rates (Edwards et al. 2002), to address possible nonresponse bias, the questionnaire will be sent again to all non-respondents and second-round responses compared to first-round responses.

The data collected from the questionnaires from all respondents (combining the responses from the follow-up survey) will be analysed using quantitative data analysis methods, mostly statistical, including measures of central tendency (frequencies, percentages, mean, median and mode) and association between variables (for example organisation size, KI method used, stage of KM initiatives and organisational role). Data collected from open-ended questions will be analysed using qualitative data analysis and basic descriptive statistics. Phase one will thus yield a list of KI methods currently used by organisations (RQ two) and a baseline for issues to further investigate RQs three and four in phase two.

4.2   Phase Two - Interviews

The second phase is concerned with RQs three to five. The goals in phase two are to follow up on the responses from the survey in phase one, particularly in relation to RQs three to five, identify the factors influencing the effectiveness of KI methods, and develop a model of those factors. Interviews have been chosen as a method of data collection because interviews will enable the researcher to obtain deeper understanding of the meaning of the survey responses, and answers to RQs three and four.

RQs three to five demand that the views of *different* KM stakeholders are obtained. The KM stakeholders in phase two will therefore not be restricted to primarily management like in phase one, but will also include KM practitioners, KM implementers, operational staff and Knowledge Holders.

Recruitment of participants for the interviews will be done in two ways. First, by applying theoretical sampling on the list of respondents from phase one. Examples of issues to be considered in theoretical sampling include different KI technologies used, different organisational roles, organisation size, KM maturity and KI success. Secondly, snowball sampling will be applied on participants who have passed through the selection screen. The logic for the snowball sampling is that the participants who have been through the interviews are likely to know others who also have targeted characteristics.

Semi-structured interviews will be conducted with the participants either via face-to-face or telephone, until theoretical saturation (the point in data collection when new data no longer bring additional insights to the research questions) is reached.

The interviews will be recorded and transcribed, to be then analysed using domain analysis, as suggested by Spradley (1979) and Atkinson and Abu El Haj (1996). The qualitative data analysis tool Nvivo 9 will be used during this domain analysis process. Domain analysis will enable the researcher to identify the factors influencing the effectiveness of KI methods and generate the model of factors.

Domain analysis consists of three stages (Atkison & Abu El Haj, 1996; Spradley 1979). The first stage in the domain analysis process will segment the interview data collected into 'units of meaning'. In the second stage, the units of meaning are organised into preliminary categories. This entails looking for similarities and patterns in the data, and also making sure to include sufficient information about the context from which the units of meaning were derived (Seaman 1999). In the third step, the preliminary categories are refined and consolidated to obtain a list of the dominant categories, or

domains, and the units of meaning are allocated to their respective domains and scrutinised to identify relationships between the domains. These dominant categories together with the relationships will form the KI effectiveness model.

The results of the domain analysis will also enable the researcher to identify themes and patterns in the data that will be used to refine the focus in the next phase - confirmatory case studies. Phase two thus contributes to RQs three to five, and enables the researcher to create a list of willing participants for phase three.

4.3 Phase Three – Confirmatory Case Studies

The third phase is concerned with RQs three to five. The goals in this phase are to verify the KI model produced in phase two, by observing how KM stakeholders face KI issues in their "natural" setting, while also allowing the researcher to obtain more depth in regard to RQs three and four, and refine the model if necessary. Based on the nature of these goals, the fact that control over behavioural events will not be required, and the focus on contemporary events, this phase will use a "confirmatory" case study research strategy (Miles & Huberman 1994, p. 17; Yin, 1994; Schell, 1992).

The results from the domain analysis in phase two will help develop "propositions" that will direct attention to what in particular should be observed during the case studies. "Without such propositions, an investigator might be tempted to collect "everything," which is impossible to do." (Yin, 1994, p. 22). The KM stakeholders in this phase will not be restricted to only management but will also include operational staff, and KHs.

The researcher will use a multiple case design, sacrificing detail and richness in order to make comparisons across different real-life cases. This approach was taken to increase generality of findings and to be able to generate more robust evidence (Herriott & Firestone, 1983) to verify the KI effectiveness model. Due to time and cost restrictions, the case studies will be conducted concurrently.

While snowball sampling will be applied to the list of willing participants in phase two to obtain new participants to verify the model, theoretical sampling will be used to select case studies. Theoretical sampling will be based on the "propositions" developed, with a view to cover the maximum number of factors identified in phase two.

Yin (1994, p. 45, italics in original) argues that "*a major insight is to consider multiple cases as one would consider multiple experiments* – that is, to follow a "replication" logic." Yin (2003, p. 51) goes on to add that "because a sampling logic should not be used, the typical criteria regarding sample size also are irrelevant." Instead, "even with two cases, you have the possibility of direct replication." Conclusions arising from two cases are more powerful than those coming from a single case alone. (Yin, 2003, p. 54).

In fact, case study is known as a "triangulated research strategy" (Tellis, 1997). The sources of evidence are multiple, including documents and archival records (manuals, letters, reports), interviews (open-ended questions), direct observations, participant observation (assuming a role in the situation and getting an inside view of the events) and physical artefacts. In other words, "data triangulation" (Denzin, 2009, p. 301) will be used.

Data (including field notes) collected will be transcribed, and cross-case pattern matching analysis will be applied. The results of cross-case analysis will be used to verify and if necessary, improve the KI effectiveness model. Phase three thus contributes to answering RQs three to five.

5   CURRENT STAGE OF THE RESEARCH

The first round of survey is complete and a second round of follow-up surveys to non-respondents is currently under way. So far, phase one has yielded a response rate of eight per cent. The survey has found a list of KI methods currently used. From ad-hoc and non-automated approaches to automated and enterprise-wide systems, numerous methods exist to identify organisational knowledge.

The first round of survey also established that while the practice of establishing what knowledge exists within organisations – or what knowledge employees within organisations possess – is perceived as important, it is not extensively applied.

A large proportion of responding organisations find the methods they do use to be problematic. When asked "Are the current methods of identifying who knows what within your organisation problematic?", on a five-point scale with 1 being "Not at all" and 5 being "To a great extent", 35% chose 4 on the scale while another 29% chose 5. Combined, 64% indicated significant problems.

The researcher is currently working on phase two of the research.

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