

Knowledge Harvesting : An Experiential Case Study

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Visiting Professor Link Centre Wits University (2012)

Paper Presented in the 3rd Knowledge Management Conference in Abudhabi (2012)

Abstract

Purpose: The aim of the paper is to present an experiential case study in which a Systematic Knowledge Harvesting Architecture Model was used for knowledge harvesting and the challenges experienced. The paper invites discussion and research in the area of Knowledge Harvesting process and instrument development.

Methodology: A Participatory Research method was used since the author was part of the conceptualisation and implementation process of Knowledge Harvesting. The methodology followed was based on the Systematic Knowledge Harvesting Architecture Model (SKHAM). A practical methodology rather than a strict scientific methodology was applied . SKHAM suggests process steps which were followed in the case study. Therefore, only the SKHAM methodology that is presented in the paper as a methodology.

Findings:

The paper discusses the practical processes of conducting Knowledge Harvesting using SKHAM. The difficulty in mining the in-depth knowledge which is residing in the unconscious mind was established. The challenge of measuring the quality of harvested knowledge was identified since there was no metrics found in this regard both in the literature and locally. While, Sternberg, et.al. (1995) conducted some tests in measuring tacit knowledge, that work did not include how to measure the quality of harvested tacit knowledge. Development of robust instruments for knowledge harvesting was tedious and rigorous because the aim was to arrive at high precision. Lack of reward and recognition system posed another challenge as staff members were not happy with parting what they considered their intellectual property. The case study revealed that there is very little attention that has been given to knowledge harvesting as a mechanism and a process towards organisational learning and learning organisations.

Value: The case study has its own limitations, firstly, it is more of an experience than a case study per se. The paper will lead to discussion and research on how to develop knowledge harvesting instruments that can mine in-depth learning and knowledge which reside in the unconscious mind. Critically, is finding better measures and processes to assess the quality of harvested tacit knowledge.

Keywords: Harvesting, Knowledge, Learning, Consciousness, Preservation and Memory

Background

Knowledge Management (KM) and its techniques are increasingly gaining recognition in organisations. This is the consequence of reasonable growth of KM theories leading to mechanisms and techniques that promote knowledge sharing and knowledge flow intra and inter-organisationally. In the endeavour to implement Knowledge Management strategies, organisations have realised the importance of creating a knowledge base. While this is becoming a norm regarding explicit knowledge, progress is steadily moving towards establishing a tacit knowledge base. Many scholars at theoretical level have defined and discussed the concept of tacit knowledge and to a limited extent attempted to measure tacit knowledge (Horvath *et.al.*, 1999; Torf *et.al.*, 1998; Wagner *et.al.*, 1999; Steinberg, 1995). Tacit knowledge has been defined as un-codified intangible knowledge that has been gained through learning and work experience (Howell, 1995; Zucker *et. al.*, 1998; Lei, 1997). Furthermore, tacit knowledge is often referred to as articulated knowledge. This term is more suitable as not all tacit knowledge can be articulated. Tacit knowledge is believed to be of great value regarding preservation of institutional memory, influencing learning and entrenching organisational learning (OL) leading to a learning organisation (LO). Although many scholars have written extensively to define and explain tacit knowledge, little has been documented on measuring and management of this type of knowledge. Additionally, very limited research has been conducted or written on knowledge harvesting (KH), (Wilson, 2002) as a mechanism or method to extract tacit knowledge that can be preserved for learning and sharing.

This paper is presenting an experiential case study in South Africa on Knowledge Harvesting as a mechanism to tap into tacit knowledge. It attempts to measure the quality of harvested knowledge. Of essence is the discussion on the level of precision of the instruments used in the process of KH.

Case Study Context

There is a growing concern within South African institutions and government departments that knowledge developed, created and obtained by staff through work experience together with

the lessons learned are constantly lost. This situation is mainly caused by continuous staff turnover within these organisations. Most employees including managers in many organisations do not know how to learn; neither do they understand what learning is about in an organisation at both individual and group levels (DPSA 2008). This limited ability to learn occurs despite the establishment of systematic processes and mechanisms to promote a LO. A study conducted by Department of Public Service Administration in South Africa (DPSA, 2008), confirmed that government loses substantive operational knowledge when employees leave through resignation, retirement or unplanned events. This phenomenon poses a serious challenge for business continuity in both government and other organs of the State and impacts negatively in service delivery and productivity. Departments are struggling in transforming themselves to learning organisations. This situation is constantly described as requiring a strong learning process hence KH was identified as a mechanism that could be applied to improve learning in various government departments in South Africa. The case study is based on one directorate of a national government department in South Africa. The head of the directorate was concerned with staff turnover within the directorate. Due to the unique nature of the work involved, the directorate is not mentioned in the paper. This omission is important to maintain the principle of confidentiality as an agreement to publish the case study. Although there are restrictions in revealing the work and the directorate, the paper achieves its objective of bringing forward quality assurance measurements related to tacit knowledge, including issues of knowledge harvesting, methods and instruments used.

The objectives of this programme were to establish an institutional memory, share knowledge, learn from lessons, shorten a learning curve for new employees and entrench the culture of a learning organisation. This directorate established a facility called the Knowledge Lab (K-Lab) to harvest the tacit knowledge of those employees whose knowledge was considered to be at risk of being lost to the directorate. The K-Lab was implemented as an audio-visual facility and used state of the art technology, including high technology multimedia equipment such as a video camera, television screen and Tricaster as the main technologies, furnished by a DVD writer and player to review harvested knowledge.

A lab technician was appointed to manage the array of technologies. The primary purpose of the K-Lab was to capture and preserve the critical knowledge that would be needed to take the functions of the directorate forward and beyond the departure of staff members. Additionally, the knowledge, harvested through the K-Lab, was critical for knowledge sharing within the directorates and other stakeholders in departments at all levels of government as it

was streamed to the official website when completed. The harvested knowledge initiated the forming of a knowledge base for the directorate. Critical in knowledge harvesting was capturing of lessons learned, since harvested knowledge included project knowledge. Therefore, the knowledge continuity programme focused on critical knowledge management practices which included knowledge sharing, knowledge preservation, lessons learned and preservation of institutional memory.

Theories on Learning Organisations and Organisational Learning

Organisational Learning (OL) and *Learning Organisations (LOs)* are concepts that have received more attention since the 1990s although interest in organisational learning can be traced back to the 1950s (Agyris, 1992; Senge, 1992). This concept has been explored and examined in the late 1990s and early 2000s. Nonaka and Takeuchi (1996) emphasized that interaction between tacit and explicit knowledge underpin organisational learning. There are four paths to learning: tacit to tacit, tacit to explicit, explicit to explicit and explicit to tacit knowledge. Organisations are regarded as learning entities if a process of creating new knowledge or modifying existing knowledge has been established. From a knowledge management perspective, knowledge forms the basis for learning organisations.

LOs through institutional experience and tradition were clearly described by Shrivastava (1983). Knowledge harvesting appears to have borrowed substantially from Shrivastava's work as this process is focused on experience and tradition (operations, context and perspective). Daft and Huber (1986) emphasized the systematic nature of organisational learning as they suggest the need for organisations to develop mechanisms for dissemination and utilization of information. Today, organisations engage in systematic learning processes to capture knowledge that is shared among employees and partners. This process could be defined as the living legacy of Daft and Huber (1986), Shrivastava (1983), Kiernan (1993), Nonaka (1998), Senge (1990) and Wilson (2002).

Organisational memory creation, preservation and retrieval have contributed to the institutional ability and capability to embark on learning processes and knowledge sharing (Hedberg, 1981; Walsh and Ungson, 1991; Huber, 1991; Hebowitz, 2009). Quite important, is the realization that organisational ability to learn depends on the absorptive capacity of employees to learn as teams and from one another. The literature on organisational learning explains that OL and LOs are processes that are based on the creative use of direct and in direct experiences of employees. OL and LOs are complex and multi-dimensional processes that unfold over time.

These processes link the harvested knowledge to improved performance. However, learning remains a difficult concept when it comes to its application, particularly at organisational level (Serkan and Ozen Kutenis, 2003).

It is important to differentiate between harvesting processes that are based on abilities founded mainly on clearly defined, practical experience and those undefined with intuitive value residing in the unconsciousness level. Learning at this level does not lend itself easily to formalisation of rules and procedures embedded in its process of articulation and application ((Serkan and Ozen Kutenis, 2003). Managers and employees need to understand that learning requires more than skills and expertise but conscious engagement. This consciousness is described by Wilson (2002) as the realm of human consciousness. Consciousness can be explained in different forms such as consciousness, sub-consciousness, unconsciousness, institutional consciousness and collective consciousness.

McLeod (2009) related how Freud referred to the unconscious mind, as containing memories that have never been consciously experienced and are thus not available to recall. Although the conscious mind is not aware of these memories, they affect human behaviour in all spheres of life including learning. Also, the unconscious mind concept can be expanded and explained as the source of artistic, scientific knowledge and aspiration. All these facets of the unconscious mind are attempts to illustrate how knowledge elements such as intuition and instincts are delivered (CALM Research Centre, nd). The subconscious mind acts as unlimited storage facility for the information and knowledge received through the conscious mind. The theory of consciousness provides insight on how knowledge, wisdom and work experiences can be targeted, captured and infused into the LO process. Collective consciousness is made up of populations and societal ways of thinking and interactions (CALM Research Centre, nd). These levels of consciousness have an influence on how people learn and what level is engaged consciously and unconsciously in the learning process, spilling over to OL and LO.

In this experiential case study, it was assumed that people learn by engaging all the levels of consciousness available to them and the objective was to extract learning that has taken place at various levels. To arrive at different learning levels of consciousness, a knowledge harvesting process was engaged using instruments that would assist in capturing knowledge and experiences as contained at all levels of consciousness. The implementation methodology of knowledge harvesting is explained as part of methodology below.

Methodology

It should be noted that the paper used a participatory approach in the case study as the author was involved in the project conceptualisation and implementation of knowledge harvesting. Therefore, a systematic scientific process has not been followed, only the knowledge harvesting methodology that is provided in the paper. The relevance of this paper is the reviewing of the knowledge harvesting processes using a Systematic Knowledge Harvesting Architectural Model (SKHAM). This model was developed using internal knowledge and a range of literature related to knowledge harvesting. This methodology was followed since scant literature existed specifically on knowledge harvesting (Wille, 1982; Steinberg, 1995; Wilson, 2002 Heraty, 2004).

A Systematic Knowledge Harvesting Architectural Model (SKHAM)

The directorate decided on developing a model based on a scientific process for knowledge harvesting. The intention was to provide a model that would be practical while considering research principles for replication purposes. The SKHAM was designed to meet identified knowledge needs, based on problem identification, interaction, process, knowledge structure and quality assurance (Figure 1). The senior manager interacted with the staff members and the KM expert (author). Processes to be engaged in were defined by the senior manager and the KM expert including staff members. Knowledge structure was developed by the senior manager and the KM expert. Quality assurance measures to evaluate the quality of the knowledge harvested were developed collectively during a series of meetings and discussions before the actual knowledge harvesting activity took place. These discussions led to the Systematic Knowledge Harvesting Architecture Model.

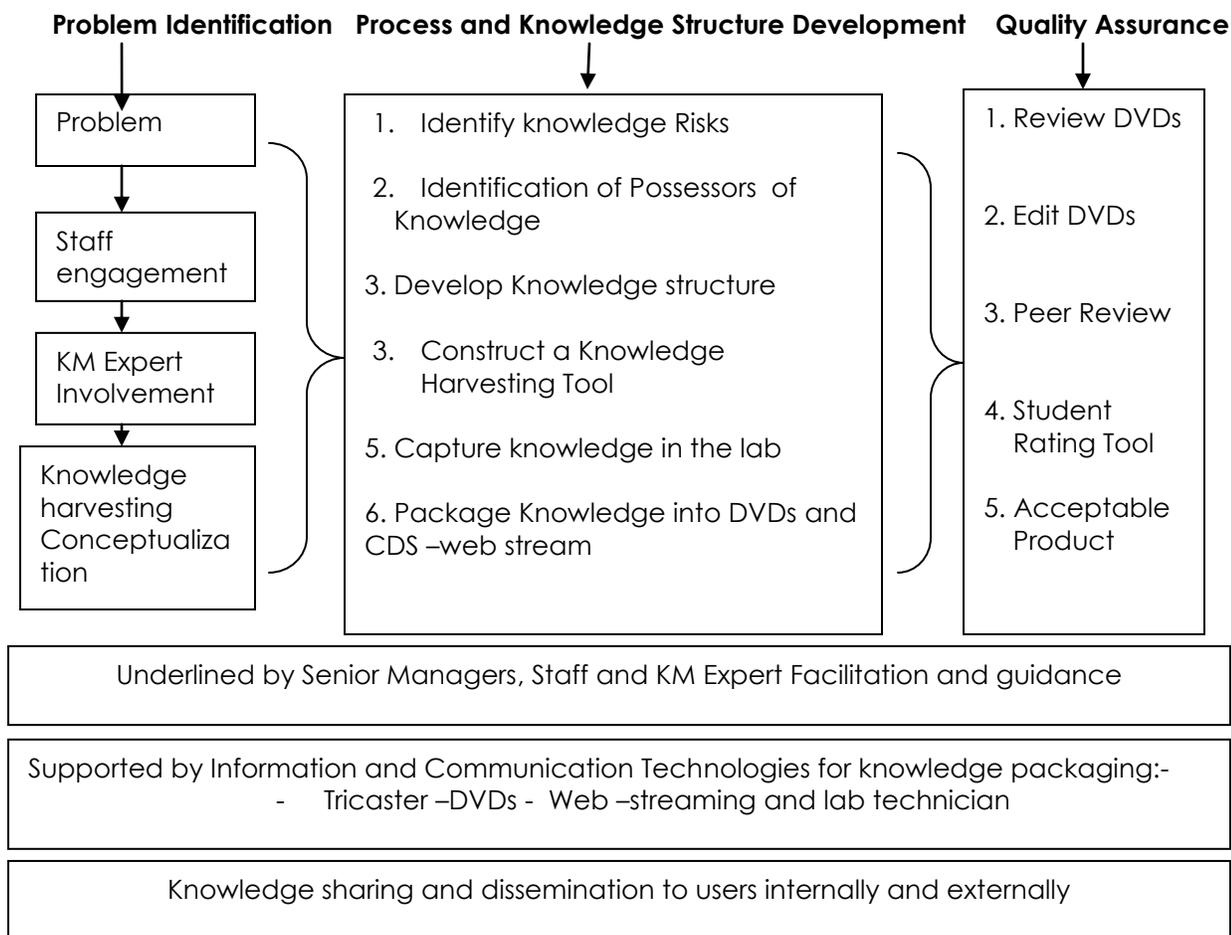


Figure 1: Systematic Knowledge Harvesting Architecture Model

Knowledge Structure Identification Process

The knowledge structure involved a review of the current work and functions of the harvestee (the employee whose knowledge was being harvested). Work assessment was conducted by a senior manager with extensive knowledge of the functions. The manager identified the changes and areas of critical knowledge (knowledge at risk) for harvesting. The Knowledge Management Expert (KM Expert) played an important role in assisting the manager in the work assessment process. It was at this stage that the scope of knowledge harvesting was defined, determining the breadth, depth, time, resources and the technologies to be used in the K-Lab. During work assessments, new functions emerged which implied new competencies and skills required for the future. The next step was to identify knowledge that has been gained by the harvestee over time which was referred to as the knowledge structure.

Knowledge Structure Development

A short semi-structured questionnaire was developed, requiring employees to answer questions related to their work since a) commencement of the functions, b) over the last two years and c) at present. The timeframe was important in identifying knowledge dynamics in the work they do and how these influenced performance over time. This was critical in scheduling subsequent knowledge harvesting processes for employees. Knowledge dynamics, growth and development assessment determined the frequency of knowledge harvesting for each employee. Caution was taken to allow enough time after changes in work functions to ensure that sufficient new knowledge would be yielded. This Knowledge Harvesting Frequency (KHF) varied among functions. Those functions which were stable required knowledge harvesting to be conducted at twelve monthly intervals, while dynamic functions required six monthly intervals. Data generated by the semi-structured questionnaires were qualitatively analysed to produce knowledge themes and sub-themes, which formed the knowledge structure. The knowledge structure was used in developing a Knowledge Harvesting Tool.

Knowledge Harvesting using a Knowledge Harvesting Tool (KHT)

The KHT considered knowledge aspects such as: Operations, Context and Perspective. These considerations were important to ensure that relevant harvested knowledge was fed into the developed knowledge structure. The *context* in the directorate referred to the understanding of the functions of the directorate and different spheres of government. The *perspective* was based on political, developmental and strategic direction of the country. The directorate realised that loss of knowledge in all three aspects was delaying progress in project implementation even if new people have been employed because of staff turnover.

A schedule was developed for staff members to undergo knowledge harvesting. The schedule consisted of the name of the staff member whose knowledge was to be harvested (the harvestee), the person to conduct the interviews (the harvester) and the date for harvesting. The KHTs were distributed to the harvestees, the harvester and the K-Lab technician at least two weeks before knowledge harvesting took place. The mechanism used for knowledge harvesting was interviews. The interviewer was a member of the staff who was trained on interviewing skills by the KM Expert. The harvested knowledge was stored on DVDs. Content review was part of quality assurance measures.

Product Quality Assurance (PQA)

PQA was conducted by the senior manager, peers and KM expert. Measures to assess quality were developed collectively. Quality assurance was conducted at various stages. Senior

managers and the KM expert listened to the DVD, marking areas that needed editing. Peer review of DVD content was conducted by staff members working in the same area where knowledge was harvested. Interns, mostly students, also participated in content review. Interns were asked to listen to the DVDs followed by completion of a questionnaire. The questionnaire focused on the content of the DVD. Answers were scored out of 100, where 100 was a total score. If Interns scored more than 65 out of 100, the quality of knowledge was regarded as good. In the case where quality was questionable, the harvestee was recalled for a further interview. The score of 65% was arbitrary based on the theory that all measurements have a degree of error. According to Wagner *et.al.* (1992), the rule of thumb can be used in measuring tacit knowledge. No literature was found regarding quality assurance metrics/measures for the knowledge captured through such a process.

Discussion

This paper has attempted to simplify a complex knowledge harvesting process using a Systematic Knowledge Harvesting Architecture Model. This model required consideration of rigorous and robust methods to tap into tacit knowledge, otherwise the whole process would be futile. Achieving the objectives of knowledge harvesting using this model was immensely difficult because of various challenges. These challenges were categorized into three different levels of the process: - (i) Concept understanding (ii) Policy and legal framework and (iii) a Level of precision of the instrument (KHT) in extracting knowledge at various levels of consciousness. The instrument was valid and reliable enough in capturing knowledge and learning that was contained in the conscious and subconscious mind. The content of DVDs reflected most knowledge that was expected by the senior managers as confirmed during the reviews, suggesting that the KHT was reliable and valid. The harvested knowledge included knowledge that could be articulated and was not part of the existing documented knowledge. The aim of knowledge harvesting is not to capture knowledge that is available in documents but knowledge that can be articulated and which is not documented. Therefore, it is a process of transforming tacit knowledge into explicit knowledge as derived from experience and the work environment, i.e. knowledge within the consciousness, sub-consciousness and environmental consciousness.

As indicated earlier, organisations learn using different levels of consciousness. Organisations are conscious of the work, projects and programmes in which they are engaged, enabled by organisational conscious mind; the staff members. Today, organisations have Information Communication and Technology Systems (ICTS). These systems store information and knowledge

that can be retrieved at any time. Therefore, these systems represent the organisational subconscious mind. Sometimes organisations engage in activities and programmes over time and fail to remember that such activities were never done before or how they were done. Some of the “forgotten” activities and processes (knowledge) which cannot be consciously retrieved reside in the unconscious mind of organisations. Sometimes knowledge of these activities is reflected through repeated mistakes and duplications, as organisational behaviours. Other activities and experiences form part of intuitive value, i.e. competences, intelligence, intuition etc. which are part of in-depth learning. Knowledge harvesting is meant to target the knowledge with intuitive value. Tapping into this knowledge is difficult because the rules embedded in such learning are not easily defined.

Easily defined and articulated rules of learning can be used firstly to develop rules for extracting knowledge obtained through learning. For instance, in education there are rules for learning which can be defined and therefore, rules to tap into the knowledge learned can be set in the form of educational examinations. The collective unconscious mind of employees forms the organisational unconscious mind consisting of competencies, innovative capabilities, talent etc. It is this reason that when employees leave organisations that all levels of organisations’ unconsciousness are affected. The remedy to this situation is talent retention. If there is no talent retention strategy, organisations will continue to lose their unconscious mind with invaluable in-depth learning resulting in inefficiencies and business ineffectiveness. Therefore, in the absence of instruments that can capture knowledge and learning that reside in organisations’ unconscious mind, organisations must entrench a culture of talent retention and management to retain all levels of consciousness.

In this case study, it appeared that the KHT level of precision was lower than was believed in extracting knowledge residing in the unconscious mind. Among employees who were involved in knowledge harvesting there were few who were talented and innovative. The content could not show the difference between the talented employees and those who were not. Even when these employees were specifically asked what informed their innovative capabilities it was not easy to explain the source of such knowledge. The earlier literature review suggested that innovation and talent are reflective of the unconscious mind. It becomes clear that some unique competencies come from the unconscious mind. Unfortunately, this is the knowledge that organisations require to entrench innovation and a competitive edge. There seemed to be a great deal of learning and knowledge that reside in the unconscious mind and this is the knowledge that KH should target. The challenge was that limited instruments existed to precisely

capture the in-depth learning and knowledge residing in the unconscious mind. It is not clear yet whether hypnosis and bio-electrodes could be used successfully in knowledge harvesting to capture the knowledge that is contained in the unconscious mind of employees. Therefore, more research is required to develop knowledge harvesting instruments with high precision levels to mine the unconscious knowledge and improve organisational learning, the learning organisation, innovation and preservation of institutional memory. Lack of policy and a legal framework for knowledge harvesting was a challenge as employees thought that the knowledge harvesting process was misappropriating what they believed was their intellectual property. This situation was exacerbated by the fact that there was no rewards and recognition system for those staff members who underwent knowledge harvesting.

Conclusion

Knowledge Harvesting is a new technique and process in South Africa that has not yet found valid and reliable instruments to mine the unconscious knowledge. The paper has presented the practical processes of conducting Knowledge Harvesting using SKHAM. The difficulty in mining the in-depth knowledge which is residing in the unconscious mind was established. The challenge of measuring the quality of harvested knowledge was identified since there was no metrics found in this regard both in the literature and locally. While, Sternberg, et. al. (1995) conducted some tests in measuring tacit knowledge, that work did not include how to measure the quality of tacit knowledge. Development of robust instruments for knowledge harvesting was tedious and rigorous because the aim was to arrive at high precision. Lack of reward and recognition system posed another challenge as staff members were not happy with parting what they considered their intellectual property. The case study revealed that there is very little attention that has been given to knowledge harvesting as a mechanism and a process towards organisational learning and learning organisation.

However, the Systematic Knowledge Harvesting Architecture Model (SKHA) seems to be reliable in capturing knowledge that resides in the conscious mind, sub-conscious mind and environmental conscious mind (organisational consciousness). However, more research is required to develop robust instruments. Rewards and recognition policies and legal frameworks are necessary to support knowledge harvesting. This process demands willingness, passion and faithfulness from employees without which the quality of captured knowledge will be poor. Despite, all the challenges, the model elicited useful knowledge for the directorate and retention of its memory.

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