KNOWLEDGE AUDIT METHODOLOGY
WITH EMPHASIS ON CORE PROCESSES

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Abstract

The paper proposes a knowledge audit methodology which has been particularly developed focusing on core processes approach. Organizational and knowledge management criteria are considered to select the core processes to be audited. The knowledge audit methodology proposed contains ten stages: Acquire organizational strategic information and identify organizational processes; Identify organization's core processes and establish measurement criteria; Prioritize and select organization's core processes; Identify key people; Meeting with key people; Obtaining knowledge inventory; Analyzing knowledge flow; Knowledge mapping; Knowledge audit reporting; and Continuous knowledge re-auditing. Applying this strategy cyclically will be an efficient tactic to audit the key knowledge within organization and detect some opportunities to make immediate improvements. After implement this methodology entirely, it is possible to know if the organization has valuable assets, knowledge flow and adequate organizational atmosphere to carry out knowledge management initiatives.

Keywords: Knowledge audit, core processes, knowledge management, knowledge mapping, knowledge flow.

1 INTRODUCTION

Many organizations are familiar with managing their operations, marketing, finance, sales or even supply chain. However, it is far from adequate for them to win in the very dynamic and highly competitive markets nowadays.

In face of such an arena, those that want to succeed must be innovative. Leveraging on organizational knowledge and learning to create new knowledge and to demonstrate uniqueness in capability for innovations have become the critical strategic issue for organizations that capitalize on innovation. In

recent years, many organizations have focused on knowledge management (KM) and used it as an enabler for such capabilities. It is found that if knowledge is managed well, organizations can leverage on their knowledge, internal and external, for creation of new knowledge and innovation. It thus helps them to create values to the organizations (Cheung et al., 2005).

The aim of this paper is to propose a knowledge audit methodology with emphasis on organizational core processes. Applying this approach in a cycling manner will be an efficient strategy to audit the key knowledge within organization. The structure of this paper first describes some concepts related to knowledge in organizations, knowledge audit, core processes; finally some knowledge audit methodologies are analyzed. Second, it introduces the ten stages knowledge audit processes. Each methodology stages in terms of its contribution to knowledge audit are discussed. It concludes by examining the potential benefits of using this methodology as a strategy to know a suitable place where knowledge audit process should be initiated and if the organization has valuable assets, knowledge flow and an adequate organizational atmosphere to carry out knowledge management initiatives.

2 CONCEPTUAL FRAMEWORK

Some of the main topics related to knowledge in organizations, knowledge audit, organizational processes, core processes and knowledge audit methodologies will be explained in this section.

2.1 Knowledge in organizations

It is very common the distinction between 'tacit knowledge' and 'explicit knowledge.' As (Polanyi, 1996) put it, 'We can know more than we can tell'. This phrase was used to describe tacit knowledge. Tacit knowledge is the knowledge that a person posses and that it is described as knowledge embedded in the individual's experience and it has a personal quality, which makes it hard to formalize and communicate. In his words, it 'indwells' in a comprehensive cognizance of the human mind and body. This experience can be communicated and exchanged in a direct and effective way in the socialization process (Nonaka and Takeuchi, 1995). The explicit knowledge refers to the knowledge that is transferable in a formal and systematic way, by means of a language, since it can be easily articulated and interchanged, because it is independent of the individual's mind.

Another particular classification establishes a separation among the declarative, procedural and heuristic knowledge (Vasconcelos et al., 2000). Declarative knowledge is related with the physical aspects of the knowledge and responds to the questions: What? Who? Where? and When?. It is a knowledge that serves to describe specific actions to perform certain tasks. Procedural knowledge describes actions for the following step and responds to the question: How? Finally, Heuristic knowledge describes the implicit reasoning and the individual's experience. This knowledge uses declarative and procedural knowledge to solve problems and there for to answer the question Why?

2.2 Knowledge audit

A knowledge audit (an assessment of the way knowledge processes meet an organization's knowledge goals) is to understand the processes that constitute the activities of a knowledge worker, and see how well they address the "knowledge goals" of the organization (Lauer and Tanniru, 2001). Liebowitz defines a knowledge audit as a tool that assets potential stores of knowledge. It is the first part of any KM strategy. By discovering that knowledge is possessed, it is then possible to find the most effective method of storage and dissemination. It can then be used as the basis for evaluating the extent to which change needs to be introduced to enterprise. Part of the knowledge audit is capturing "tacit" knowledge (Liebowitz et al., 2000).

The knowledge audit is the most important first phase, stage or step of a KM initiative. It is used to provide a sound investigation into the organization's knowledge "health". The knowledge audit is a discovery, verification and validation tool, providing fact-finding, analysis, interpretation, and reports. It includes a study of corporate information and knowledge policies and practices, of its information and knowledge structure and flow. The knowledge audit examines knowledge sources and use: how and why knowledge is acquired, accessed, disseminated, shared and used. The knowledge audit will seek to give qualified insight as to whether the organization is ready, especially socially and politically, to become knowledge-based or knowledge-centred (Hylton, 2002b).

S. Capshaw believes that a knowledge audit should provide the following outputs (Capshaw, 1999): an assessment of current levels of knowledge usage and interchange; knowledge management propensity within the enterprise; identification and analysis of knowledge management opportunities; isolation of potential problem areas; and an evaluation of the perceived value in knowledge within the enterprise.

Many of the mistakes of both, earlier and more recent adopters of KM can be traced to the serious oversight of not including the knowledge audit in their overall KM strategies and initiatives. Knowledge audit is the indisputable first major step or stage in a KM initiative (Burnet et al., 2004), (Henczel, 2000), (Hylton, 2002b), yet it has not been sufficiently recognized as being of supreme importance to every KM undertaking. To effectively design the KM systems both the organizational knowledge and the KM functions must be individuated by conducting the knowledge audit of the same organization, as these are needed to perform the business processes (Iazzolino and Pietrantonio, 2005).

2.3   Core Processes

A process is a collection of activities that converts inputs into outputs or results. Core processes are a collection of cross-functional activities that are essential for external customer satisfaction and achieving the mission of the organization. These activities integrate people, materials, energy, equipment and information (Gryna, 2001). A limited number of processes in which results, if they are satisfactory, will ensure successful competitive performance for the organization, in short, they are the few key processes where things must go right (Rockart, 1979). Core processes are the fundamental activities or group of activities that are so critical to an organization's success that failure to perform them will result in deterioration of the organization. These are typically processes that directly touch the organization's customers, reflect the major cost drivers in the organization, or are on the critical path in the service chain (ProccessDriven, 2003).

Organization's core processes must be identified. Processes that has experienced people and Knowledge located in them must be documented and shared to other people within core processes, this will avoid falling in past errors, "re-inventing the wheel", and the best practices should be applied to solve new problems (Perez-Soltero, 1997). Considering the core processes concept defined by (Gryna, 2001), to select core processes, an evaluation of all processes of the organization must be made and select those that better fulfil the following characteristics:
- It has a direct impact with mission and vision.
- It generates revenues or is the most critical to overall success of the organization.
- It has impact and it gives an added value to organization.
- It allows satisfy customer requirements.
- It has valuable human, technological and information resources.

2.4   Knowledge Audit Methodologies

According to (Robertson, 2002) there are many benefits in applying a KM framework or methodology: offers legitimacy, provides consistent language, outlines a process, provides a checklist, offers a source of ideas and Addresses non-technical aspects.

Gartner Group contends, for example, that a "knowledge audit" needs to be undertaken during the initial stages of the KM program. They state: The audit should identify the knowledge requirements of all processes that are heavily dependent on intellectual assets and that underlie the targeted business objectives. The audit ought to identify knowledge sources that can fulfil these knowledge requirements and the high-level business process steps where that knowledge must be applied (Gartner Group, 2000).

Company executives would do well to give serious consideration to undertaking a knowledge audit – even a small one. It is perfectly acceptable, and highly recommended that an organization begins a corporate knowledge audit by auditing one small team, unit, department, or a business process (Hylton, 2002a).

A knowledge audit will consist of two major tasks, each of which can be done without the other. The first, often called knowledge mapping, involves locating repositories of knowledge throughout the organization. This effort is primarily technological and usually prepares the way for creating a knowledge database. The knowledge mapping process is relatively straightforward. It takes an inventory of what people in the organization have written down or entered into information systems, as well as identifying sources of information employees use that come from the outside (such as public or university libraries, Web sites or subscription services). Finding and organizing all that data may be time-consuming, but it is not conceptually difficult. The second, more intensive category of audit task attempts to capture the patterns of knowledge flow in the organization. This knowledge flow audit examines how people process information that ultimately determines how well an organization uses and shares its knowledge (Stevens, 2000).

While there seem to be several ways of conducting a knowledge audit (Skyrme, 2002), (Hylton, 2002b), (Liebowitz et al., 2000), (Burnet et al., 2004), (Jones, 2005), (Jackson, 2005), (Cheung et al, 2005), in general knowledge audits consist of: the identification of knowledge needs through the use of questionnaires, interviews and focus groups; the development of a knowledge inventory mainly focusing on the types of knowledge available; where this knowledge is located; how it is maintained and store, what it is used for and how relevant it is; analysis of knowledge flows in terms of people, processes and systems, the creation of a knowledge map; finally an audit detailed report.

Given the apparent lack of specific methodologies arising from the scientific literature and the business practice (Liebowitz et al., 2000), we can frequently find references to reputable consulting enterprises that own proprietary knowledge audit methodologies. Such methodologies are not publicly available but can be acquired for a fee, if one wishes to implement KM within an enterprise. This may not always be an economically viable option for an enterprise, nor does it provide any opportunities for the client to compare the suitability of each technique. Despite the lack of published accounts that precisely detail how to execute a standard KM audit methodology, it is possible to extract sufficient insight from existing literature to develop a basis for the creation of a knowledge audit methodology (Schwikkard and Du Toit, 2004).

Although different organizations may hold different types of knowledge and carry out different types of processes, it is hoped that the next knowledge audit methodology proposed will essentially provides a basic outline considering core processes approach that may be of potential benefit to organizations.

3   KNOWLEDGE AUDIT METHODOLOGY WITH EMPHASIS ON CORE PROCESSES

Some organizations are embarking on knowledge management programs without an understanding of why their knowledge assets are important. Rather than being in a position to make informed decisions about what knowledge they need to manage, they attempt to manage everything, whether it is significant or not (Henczel, 2000). After reviewing different knowledge audit methodologies or strategies to audit knowledge (Liebowitz et al., 2000), (Henczel, 2000), (Hylton, 2002b), (Schwikkard and du Toit, 2004), (Burnet et al., 2004), (Jackson, 2005), (Iazzolino & Pietrantonio, 2005), (Cheung

et al., 2005), we have found that they do not establish a clear strategy explaining a suitable place where the knowledge audit in a enterprise or area should be initiated to give an order to complete the audit, in other words, they attempt to audit everything, significant or not to the organization. Other deficiencies found in the great majority of the knowledge audit methodologies examined, is that they do not establish measurement criteria to verify the impact related to KM processes. Finally, the methodologies analyzed need to be completed applied to detect problems/opportunities and then propose some improvements to the organization in relation to KM. Focusing on knowledge that exists in core processes ensure not only that those knowledge assets exist, but that it identifies those that are critical to an organization's success. The KM strategy can then focus on the knowledge assets at their various levels of criticality, rather than managing everything regardless of its significance. Just as there is no universally accepted definition of a knowledge audit, there is also no universally accepted knowledge audit methodology because of the dramatically varying structures, natures and circumstances of the organizations in which they are conducted. The ten-stage knowledge audit methodology proposed, as shown in figure 1, illustrates the knowledge audit process stage-by-stage highlighting those aspects of the process that are critical to its success and the issues that you may face that can impact on the value of outcomes. The aim for the methodology presented here is to propose improvements focusing on core processes approach to solve some disadvantages and problems found in other knowledge audit methodologies previously explained.
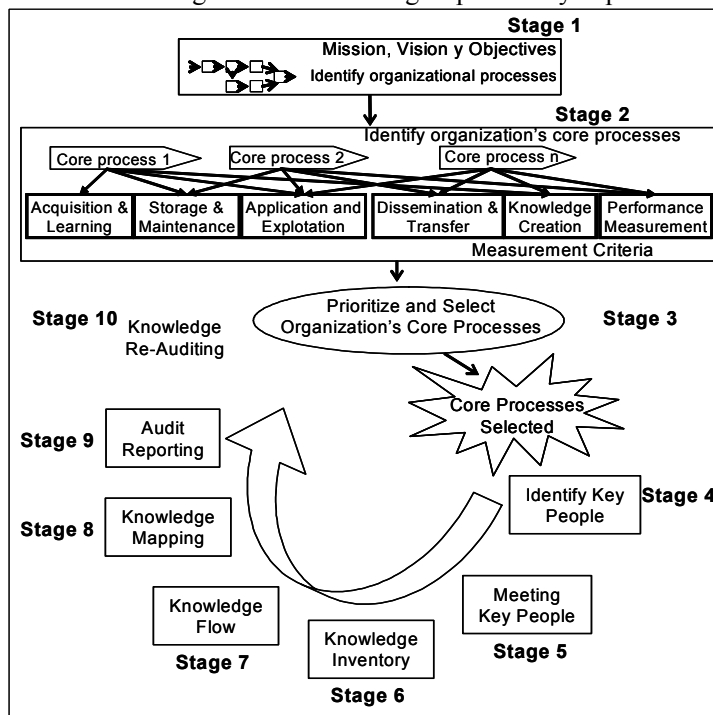

Figure 1.   Knowledge Audit Methodology with emphasis on core processes

Each methodology's stages will be explained describing its objective, how to implement it and support tools required.

Stage 1.- Acquire organizational strategic information and identify organizational processes.

Objective: Identify mission, vision and organizational objectives considering the environment, culture and traditions. *How to do it*: First, an initial meeting with the organizational managers is necessary. Knowledge, KM and knowledge audit concepts, must be explained. It is an important emphasis on knowledge audit process that allows the identification of knowledge assets and the flow of the knowledge within the organization. On the other hand organizational managers must determine which their expectations to develop a project of KM. To identify mission, vision and organizational

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objectives the main enterprise's documentary information needs to be evaluated. To obtain all the information about organizational processes, verify the organizational documentary information and find the information related to its processes, how they are accomplished, inputs, outputs, suppliers of information and direct clients of the process. In case that it is not counted on sufficient and detailed documentation, or the way the processes are carried out is doubted, it is recommended to make visits to the organization. Organizational managers must provide documentary information of the organization that serves as base to know the organization and its processes. In this stage an exploratory questionnaire is applied. This questionnaire will have questions that provide information to support stages one, two and four. To support this stage, the exploratory questionnaire includes a group of questions that will be focused on how to determine the degree of interest from the organization's members on acquiring and sharing knowledge. *Support tools*: Interviews, organization's strategic manual, general documentation of the enterprise, direct inspection, Web site of the organization, information of the press, information of other organizations at the same sector and some answers from the exploratory questionnaire.

Stage 2. - Identify organization's core processes and establish measurement criteria

Objective: Identify organization's core processes that contain useful knowledge to be managed; measure the performance of the knowledge processes within core processes. *How to do it*: In order to find the organization's core processes, it is important to determine the critical success factors to satisfy clients (i.e. efficiency, service time, reliability, price, quality, technical support), how they can be reached and the processes of the organization that are involved. Also the processes respect to the profit and the organization's mission must be valuated. In order to determine the impact of the process and if it gives an added value to the organization, it is important to know aspects like the impact respect the revenues generated, costumer attended or costumer's satisfaction. These aspects need to be evaluated preferable numerically or by adequate criteria defined by organizational managers. To support this stage, the exploratory questionnaire applied in stage one must contain a group of related questions to determine which are the organization's core processes and other questions to measure each individual's perceptions of their performance and the core processes in carrying out the knowledge activities or processes identified as the KM process: Acquisition & Learning; Storage & Maintenance; Application and Exploitation; Dissemination & Transfer; Knowledge Creation; and Performance Measurement (Burnett et al., 2004). *Support tools*: some answers from the exploratory questionnaire, general documentation of the enterprise, quantitative documentation (income, sales, and costumers' information), and documents that allows valuing the impact of the processes respect organization's mission and clients satisfaction requirements. To measure knowledge processes within the selected core processes, the knowledge management process model proposed by Centre for Knowledge Management could be applied (Burnett et al., 2004).

Stage 3. - Prioritize and select organization's core processes

Objective: Prioritize and select organization's core processes according to the criteria defined at second stage. In order to achieve substantial improvements, the core processes with the highest impact on organizational performance are selected and targeted as the initial study objects. This however does not mean that the remaining processes can be neglected. The argument for selecting a sub-set of processes first follows the Pareto-principle, i.e. that a small number of processes account for the largest share of potential improvement. *How to do it*: Review diverse literature about core processes to design a core processes priority table according to the enterprise, including the criteria defined by organizational managers and KM processes established in the previous stage. Once prioritized the core processes, organization's managers determine which and how many core processes will be taken to obtain the knowledge inventory and knowledge flow. *Support tools*: Information obtained of the previous stage, on core processes priority table.

Stage 4. - Identify key people

Objective: Identify the key people who participate in the selected core processes. *How to do it*: Reviewing organization's documents, interviewing organization's managers or asking people in

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charge in areas related to core processes, is possible determine the people who works in them. In order to know the profile, studies, preparation and experience of the involved personnel, the curricula of the personnel can be consulted. In case the organization does not have sufficient documentation, the exploratory questionnaire applied in stage one with a group of questions that allow identifying the people who are important in the core processes can be included. *Support tools*: General documentation of the organization, curriculum of the personnel, some answers from the exploratory questionnaire (optional).

Stage 5. – Meeting with key people.

Objective: Give information to key people about knowledge audit and knowledge management processes. How to do it: Organize a meeting to explain the importance of the knowledge audit and knowledge management processes. In this meeting organizational managers will be in attendance and the key people previously identified. It is important that organizational managers are involved in informing, orienting and understanding the participants so that they feel supported and know these processes are the initiative of people in charge of the organization. Support tools: Material and slides on knowledge audit and knowledge management topics.

Stage 6. – Obtaining knowledge inventory

Objective: Locate and obtain existing knowledge assets within the organization. *How to do it*: In this stage the depth-questionnaire and/or depth-interview is applied. This depth-questionnaire and/or depth-interview will have questions to provide information to support stages six and seven. To support this stage some questions will be focused on details of knowledge (tacit and explicit) that exists in core processes and where it is located within the organization. S. Burnet recommends that if interviews are applied it is recommendable recording and later transcribing them, obviously having the interviewed individual's authorization (Burnet et al., 2004). Because some core processes were selected to initiate the knowledge audit process, the assets identified will correspond in first instance to those core processes, once the rest of the organization's core processes are analyzed, and they will be integrated with the rest of the assets until the general inventory of the organization is obtained. *Support tools*: Some answers from the Depth-questionnaire and/or depth-interview.

Stage 7. - Analyzing knowledge flow

Objective: Analyze how knowledge within the organization flows. *How to do it*: To support this stage, the depth-questionnaire and/or depth-interview applied in stage six must contain a group of associated questions to determine how the explicit and tacit knowledge within the organization flows. A similar situation will happen here like in the previous stages, because some core processes were selected to initiate the knowledge audit process, the flows will correspond to the first core processes selected, once it is analyzed the rest of the organization's core processes will be integrated with the rest of the flows until the general knowledge flow of the organization is obtained. *Support tools*: Some answers from the Depth-questionnaire and/or depth-interview.

Stage 8.- Knowledge mapping

Objective: Visually represent organizational knowledge. This map includes knowledge inventory and knowledge flow within the organization. *How to do it*: Once information about the corporate knowledge sources, ownership, distribution and use has been gathered, from the knowledge inventory and knowledge flow, that information can now be mapped to visually demonstrate who has knowledge, where these persons are located, the level of accessibility to them, and with who they most often share and exchange knowledge (Hylton, 2002b). Because some core processes were selected to initiate the knowledge audit process, the assets and flows identified will correspond in first instance to that core processes and will be in an initial version of the knowledge map. Once the rest of organization's core processes are analyzed, the rest of assets will be added and integrated until the general inventory and knowledge flows of the organization are obtained. The final product will be a complete organization's knowledge map. *Support tools*: Diagrams, graphs, tables, software knowledge maps.

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Stage 9.- Knowledge Audit Reporting

Objective: Give the organizational managers' outcome of knowledge audit. The results form valuable information for strategic planning. This report gives the final validation and justification for the short, medium and long term KM strategy and investment. *How to do it*: Having analyzed the information gathering from the knowledge map, some innovative recommendations deemed beneficially to the KM initiative can be made. A preliminary knowledge audit report based on the first core process examinee should be elaborated including some problems/opportunities detected and suggest improvement. Some enhancements could be applied immediately and others will be part of a complete KM initiative. The final knowledge audit report is produced based on the findings from the previous stages when all core processes have been analyzed. The report outlines the existing status of knowledge assets, the knowledge maps, the effectiveness of the enterprise in accomplishing the business processes, the knowledge gaps as well as the recommendations for the organization to drive continuous improvement. The final knowledge audit will be analyzed by organizational managers and they will take the decision for a KM initiative. *Support tools*: Knowledge map.

Stage 10.- Continuous Knowledge Re-auditing

Objective: There are two main objectives at this stage, first, analyze and select the rest of the core processes to complete the knowledge audit, second, update any changes of the knowledge inventory, knowledge flow, knowledge map, and the knowledge processes. *How to do it*: Once the first group of core processes selected was audited, continue with the rest of the core processes to complete the knowledge audit considering priorities defined in stage 3. Knowledge re-auditing is usually conducted periodically in order to allow an organization to update any changes of the knowledge inventory, knowledge map, knowledge flow and the knowledge processes. It is also required to measure success, analyze the performance of the KM strategy and KM implementation in order to monitor and drive continuous improvement.

4   CURRENT AND FUTURE WORK

Nowadays, the exploratory questionnaire, depth-questionnaire, depth-interview and core process priority table are being developed. This methodology will be tested in a high level education institution in a specific department dedicated to international and institutional relationships. Implementing the methodology proposed, the expected organizational benefits will be provide a formalized and evidence based accounting of knowledge that exists, embedded or moves through the organization; via the inventory details 'what knowledge exists in the organization and where it exists'; facilitates the identification of inefficiencies reflected in duplication of efforts, knowledge gaps and knowledge-bottlenecks; helps the organization to identify and chart the knowledge that is required to support its goals and the individual tasks and activities. These benefits are expected to be accomplished because the methodology proposed details where the knowledge audit should be launched, establishes measurement criteria to verify the impact related to KM processes, finally detect problems/opportunities shortly to propose some improvements to the organization in relation to KM. To evaluate and validate its functionality will be compared the outputs obtained against the expected in each stage; at least one KM initiative should be in progress before the knowledge audit have been completed; managers need to be inquired to evaluate the anticipated organizational benefits and his expectative against the knowledge audit outputs. Little changes to improve the phases are expected after the whole methodology has been tested. We expect to have the first results in a short time taking advantages of the knowledge audit methodology proposed.

5   CONCLUSIONS

The knowledge audit methodology proposed has been developed focusing on the core processes approach. Applying this strategy in a cycling manner will be an efficient tactic to audit the key

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knowledge within an organization and detect some opportunities to make immediately improvements. Organizational and knowledge management criteria are considered to select core processes to be audited. This methodology suggests improvements of some absences found in other methodologies in literature. The knowledge audit methodology proposed recommends a suitable place where the knowledge audit in a organization or area should be initiated, it suggests measurement criteria to verify the impact of core processes related to KM processes, cyclically analyzes all the core processes until the finished auditing, permits the detection of problems/opportunities early and then proposes some improvements to the organization related to KM, finally, applying this methodology entirely, it is possible to know if the organization has valuable assets, knowledge flow and an adequate organizational atmosphere to carry out a KM initiative.

Acknowledgements

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