

A Systematic Approach to Knowledge Audit: A Literature Review

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Abstract

The importance of effective Knowledge Management in the 21st century knowledge economy cannot be further emphasised. The most critical step in managing knowledge effectively is an organisation's ability to identify knowledge gaps, that is, determining what knowledge is required, where it is required, and who requires that knowledge. This is tantamount to carrying out a knowledge audit. This paper seeks to identify the views of Knowledge Management authors on what a knowledge audit is all about and the purpose it serves. It also outlines their views on the specific objectives a knowledge audit is meant to achieve and the organisational circumstances warranting the carrying out of an audit. The paper also outlines Knowledge Management authors' views on what aspects should be included in a knowledge audit and the steps that should be followed in carrying out a knowledge audit. Finally, a knowledge audit model focusing on the organisation's core processes is outlined

Keywords: Knowledge Management, knowledge audit, knowledge needs, knowledge inventory, knowledge map, knowledge audit model.

1. Introduction

Henczel (2000) argues that the 21st century economy has become predominantly knowledge-based and those organisations that do not have a clear and effective strategy to harness and utilise knowledge will find it extremely difficult to compete on the local, regional and global markets. This makes it important for managers of organisations to be able to identify the knowledge needs as well as knowledge assets of their organisations and how to manage them effectively and efficiently to give them a competitive edge over their rivals. Some organisations operate without utilising the knowledge they need because they do not know where to find it. Consequently, there are often significant gaps in consistencies and duplications in knowledge resources within the organisations. This makes knowledge audit a critical necessity for any organisation that is serious about managing its knowledge in a systematic manner.

2. Knowledge Audit

Hylton (2008) intimates that the fundamental cause of most of the failures in Knowledge Management is the serious oversight of excluding a knowledge audit in the organisation's overall knowledge management plans and initiatives." Yet an audit can uncover important insights about the state of knowledge in an organisation and how it flows. This helps an organisation to shape and determine an effective knowledge management strategy. A knowledge audit is therefore a critical step in a knowledge management programme. It is generally viewed as an assessment of the business needs of an organisation and its culture as well as an examination of the form of knowledge that is needed, available, and missing, and also who needs this knowledge (Paramasivan, 2003).

3. Objectives of a Knowledge Audit

Debate has raged over many years over what a knowledge audit is and what it is not, and what it should cover in order to qualify as a knowledge audit. According to Liebowitz and Rubenstein-Montano (2000), the now generally agreed principle is that a knowledge audit does not necessarily have to be an expensive and in depth exercise to qualify as an audit. It can focus on a department or certain processes of an organisation.

Chong (2004) and Paramasivan (2000) believe that a knowledge audit is a fact finding mission. It is an analysis, interpretation and a reporting activity which includes a study of the company's information and knowledge regulations and policies, and its knowledge structure and flow. In its basic form, a knowledge audit serves the following objectives, among others:

- To give a high level view of the extent, nature, and structure of knowledge in a specific area
- To identify the relevant knowledge repositories within the organisation
- To provide a statement of the qualitative characteristics of the chunks of knowledge within a particular knowledge repository.
- To identify key areas of knowledge that need managing effectively to improve business performance
- To unearth gaps in knowledge provision
- To identify duplication of effort in accessing or maintaining information
- To generate a high level map of knowledge which can be used as an indication of where knowledge is in an



organisation, and where is it required. To identify and diagnose blockages in knowledge flows across the organisation

- To identify key knowledge holders whose loss would be detrimental to the organisation
- To develop an effective Knowledge Management strategy for the organisation
- To provide a benchmark against which best practices and knowledge management progress can be evaluated.

According to Hylton (n.d) and Chong (2004) successful and effective knowledge audit is modeled along a sequence of steps as follows:

- i. Scoping and planning This is determining how wide and deep the audit should be including the areas to be covered and the amount of effort to be expended.
- ii. Fact finding This is the process of collecting data on knowledge needs, accessibility and quality of knowledge, and knowledge flows and blockages, and also reviews contextual factors that impact on effective knowledge management. It must be considered that effective knowledge management needs to take into consideration the organisational context which determines what knowledge is and what it is not from a sense making perspective.
- iii. Analysis and interpretation This involves identifying critical knowledge areas that need more and heightened attention based on the organisation's key business processes, goals, objectives and current usefulness. It is at this stage that the audit should unearth knowledge gaps and duplications in the implementation of a knowledge management initiative.
- iv. Developing deliverables This highlights the outcome of a knowledge audit process. It culminates in a report and also includes lists and characteristics of knowledge resources and sources. The outcome of the audit actually feeds into the organisation's knowledge management strategy and stimulates whatever action an organisation takes to right what is wrong with regards to the knowledge management programme that satisfies the unique needs and requirements of the organisation taking cognisance of its unique needs and the environment.
- v. Stimulating action it is not the sole purpose of a knowledge audit to identify knowledge needs and produce a report. Doing so will be a waste of resources, time and energy. Simply reporting on the state of knowledge resources in the organisation will not bring any positive change until there is follow-up to the audit findings and putting any recommendations into action.

4. When should a knowledge audit be carried out?

Paramasivan (2003) and Alavi and Leidner (2001) postulate that a knowledge audit is a practical way for the organisation to get to grips with knowing what it knows, which enables it to identify owners, users, uses and key attributes of its core knowledge assets. It is often carried out in conjunction with a knowledge management assessment as a baseline on which to develop a knowledge management strategy.

Olivier (2008) argues that it is not necessary to carry out a knowledge audit whenever an organisation feels like and that indicators that make the carrying out of a knowledge audit worthwhile include:

- Managers and professionals feel the symptoms of information overload
- · Key knowledge and information is difficult and slow to find
- Useful sources of information and knowledge are frequently stumbled across and accidentally
- There is a duplication of knowledge gathering activities taking place across different departments.
- Questions are being raised about the value and quality of available knowledge or information systems.
- Not knowing where to go for expertise in a specific area.

Debenham and Clark (2004) argue that a knowledge audit is a planning document which provides a structural overview of a designated section of an organisation's knowledge as well as details of the qualitative and quantitative characteristics of the individual chunks of knowledge within that designated section. The document also identifies the knowledge repositories in which those chunks reside.

According to Prinz, B. and Syri, K. (2007), a knowledge audit assesses potential stores of knowledge. It is the first part of any knowledge management strategy. By discovering what knowledge is possessed, it is then possible to find the most effective method of storage and dissemination. It can be used as the basis for evaluating the extent to which change needs to be introduced in terms of how the organisation is managing its knowledge assets to gain competitive advantage.

5. Components of a knowledge audit

Paramasivan (2003) posits that a knowledge audit comprises a wide variety of elements with varying levels of coverage and detail. As a general rule, most knowledge audits will involve some or all of the following (Debenham and Clark, 2004; Henczel, 2000; Hylton, 2008)



5.1 Identifying knowledge needs

This is usually the first step in most knowledge audits and it involves getting clear about exactly what knowledge the organisation, its people and its teams require to enable them to achieve organisational objectives and goals. Ways of identifying knowledge needs include questionnaire-based surveys, in depth interviews, group discussions and so on. By asking people in an organisation to think and articulate their goals and objectives, the core processes of their work or departments, the activities they perform at work as well as decisions they make in the process of carrying out their responsibilities at work, the knowledge auditor will be able to identify the key knowledge required by these people. The auditor can also ask these people about main challenges and problems they face in the execution of their responsibilities and ask them to tell how faster access to better knowledge might help them deal more effectively with such challenges and problems. Beginning a knowledge audit with knowledge needs identification is always ideal as these enable the auditor to then use his/her understating of these needs to drive and guide the rest of the audit process and ensure that the audit remains focused on the knowledge that is relevant to the functioning of an organisation.

5.2 Drawing up a knowledge inventory

A knowledge inventory is a kind of stock – take to identify and locate knowledge assets or resources of an organisation that will have an impact on the quality and quantity of knowledge available to the organisation. It involves counting and categorizing the organisation's tacit and explicit knowledge in order to determine its extent. Explicit knowledge will include things like (Paramasiyan, 2003):

- What knowledge we have numbers, types, and categories of documents, databases, libraries, intranet, websites, and links and subscriptions to external resources.
- Where the knowledge is locations in the organisation, and in what systems.
- Organisation and access how knowledge resources are organized, how easy it is for people to find and access them.
- Purpose, relevance and quality why do these resources exist and how relevant and appropriate are they for that purpose; are they of good quality, for example, are they up – to – date, reliable, evidence – based, and so on.
- Usage are the resources actually being used; who is using them; how often are they used, and what for. In the case of tacit knowledge, the knowledge inventory will focus on people and examine the following, among others:
- Who we have numbers, and categories of people
- Where they are locations in departments, teams and buildings
- What they do job levels and types
- What they know academic and professional qualifications, core knowledge and experience
- What they are learning on the job training, learning and development

The knowledge inventory provides a snapshot of the knowledge assets or resources prevailing in an organisation. A comparison of the knowledge inventory identified and the knowledge needs lead to identification of knowledge gaps in the organisation as well as areas of unnecessary duplication.

5.3 Analyzing knowledge flows

According to Olivier (2008), while a knowledge assets inventory indicates the type and quantity of knowledge resources available in an organisation, a knowledge flow analysis examines how that knowledge moves around the organisation from where the knowledge is residing currently to where it is needed, depending on the organisation's operational activities. An analysis of knowledge flow seeks to discover how people find the knowledge they require in their day to day activities, and how they share the knowledge that they possess. Also, knowledge flow analysis focuses on both tacit and explicit knowledge as well as people, processes, and systems as follows (Paramasivan, 2003):

- People the focus of the knowledge flow analysis is the people, that is, their attitudes towards knowledge sharing and use, their behaviours and habits concerning their skills in knowledge sharing and use. Questionnaires, followed by individual in depth interviews and facilitated group discussions, are usually employed to determine the role of people in knowledge flow in an organisation.
- Processes This entails examining how people go about their daily work activities and to what extent they seek, share and use (or not) knowledge in the process of undertaking those daily chores. The audit at this stage also looks at what policies and practices currently affect the flow and use of knowledge in the organisation. The focus will be on determining whether policies on issues such as information handling, records management, and web publishing do exist, and whether there are other wider policies and practices that act as enablers or barriers to effective knowledge practices.



Systems – At this stage, an assessment is required of key capabilities that will be used in any
recommended actions or solutions. The focus will be on technical infrastructure, that is, information
technology systems, management of content, accessibility and ease of use of technology, and current
levels of use of the technology. In other words, the question to be asked and answered here is to what
extent the organisation's systems effectively facilitate knowledge flows and help to connect people with
information and the people who need information.

A knowledge flow analysis allows the knowledge auditor to further identify gaps in the organisation's knowledge and areas of knowledge duplication. It will also identify blockages and barriers to smooth and effective flow and use of knowledge in the organisation. This will in turn guide and direct the organisation in terms of where it needs to deploy more attention pertaining to knowledge management initiatives in order to facilitate faster movement of knowledge from where it currently resides to where it is required (Paramasivan, 2003).

5.4 Creating a knowledge map

Paramasivan (2003) postulates that "A knowledge map is a visual representation of an organisation's knowledge." Knowledge mapping may simply mean mapping knowledge resources and assets, showing what knowledge exist in the organisation and where it is located, or it may imply inclusion of knowledge flows, showing how that knowledge moves around the organisation from its reservoir to where it is required. This latter approach provides the most complete picture for the knowledge audit. If the knowledge audit is properly and effectively done, it will be very clear which knowledge is available and where it is needed; how it flows in the organisation and what the impediments to the smooth flow are, and how the knowledge is used. In other words a properly done knowledge audit has obvious benefits to the organisation.

Liebowitz and Rubenstein-Montano (2000) and Paramasivan (2003) outline the benefits of a properly done knowledge audit as follows:

- It helps the organisation identify its core knowledge assets and knowledge flows, that is, who creates and who uses what knowledge. It allows the knowledge assets to become more visible in the organisation.
- It enables organisations to identify gaps in information and knowledge needed to manage the business more effectively than competitors.
- It helps an organisation to identify areas of information policy and ownership that need to be improved in order to facilitate faster and more effective sharing and movement of information and knowledge.
- It provides opportunities for organisations to reduce information handling costs by determining the critical information and knowledge needed by departments and that which is not required, hence does not need to be stored at a cost to the organisation.
- It offers opportunities for the organisation to improve coordination and access to commonly needed information and knowledge. A knowledge audit clearly outlines which knowledge is required, where and by whom, hence it becomes fairly easy for those in charge of departments or sections to coordinate knowledge activities and ensure faster access to knowledge by team members.
- It enables organisations to have a clearer understanding of the immense contribution of knowledge to business results. In some organisations today, the role knowledge plays in business performance remains unknown to some people including by some in management. After a knowledge audit has been carried out in an organisation, most people will be left with a clearer idea of what knowledge is and its importance in business strategy in the 21st century knowledge economy.
- A knowledge audit helps the organisation to clearly identify and enumerate what knowledge is needed to support overall organisational goals as well as individual and team activities and where it is needed. This will entail availability of relevant and up to date knowledge in organisational units.
- It gives tangible evidence of the extent to which knowledge is being effectively managed and indicates areas that require improvement and that management should pay particular attention to in order to enhance the organisation's knowledge management practices.
- It provides vital information for the development of effective knowledge management programmes and initiatives that are directly relevant to the organisation's specific knowledge needs and current situation.

6. The knowledge audit process

Debenham and Clark (2004) argue that to achieve the objectives of an effective Knowledge Management programme, a knowledge audit of an organisation should be carried out as follows:

- i. Identification of knowledge currently existing in the targeted areas.
 - Determining existing and potential knowledge sinks, sources, flows and constraints in the targeted areas.



- ii. Identification of the knowledge missing in the targeted areas.
 - Performing a gap analysis to determine the knowledge missing that inhibits pursuance of business goals
 of an organisation
 - Identification of people who need the missing knowledge.
- iii. Coming up with recommendations on the knowledge status of an organisation and possible areas needing improvement.

Shah (1998) argues that in coming up with recommendations on the knowledge status of an organisation and identifying possible areas that need improvement, some or all of the following questions will be asked:

i. Business concept.

- How do you conceptualize the business?
- The mission or objectives of the team.

ii. Enterprise know-how.

- How dependent are the people on the knowledge and know-how.
- Knowledge generation how knowledge is generated
- Description of various methods knowledge is codified, for example, knowledge mapping of who knows what, printed sources such as hand books, experience data bases, and so on.
- Whether they codify knowledge related to both successful and failure experiences.
- Mechanisms that exist to transfer knowledge from experts to other team members, for example, training, mentoring, informal talks

iii. Knowledge worker

- Whether they are focused on what they are best at.
- Whether there is partnership between them and management.
- How training and team processes are used to enhance knowledge.
- How compensation is linked with knowledge /skill levels.
- iv. Knowledge mediated through Information Technology.
 - Whether Information Technology is used to process data or to manage knowledge
 - How Information System projects related to Knowledge Management are implemented

v. Organisational Design

- Whether the flow of information in the departments fosters or hinders innovation
- The college's closeness to being a modern, networked, flat and adaptable organisation.

According to Hylton (2012), researchers use the following knowledge analysis methods:

Table 1: Knowledge Analysis Methods

Knowledge analysis method	Usage in Knowledge Audit
Questionnaire-based knowledge	To obtain broad overviews of operation's knowledge status
Middle management target group sessions	To identify knowledge –related conditions that want management
	attention
Task environment analysis	To understand which knowledge is present in the organisation
	and its role
Knowledge mapping	To develop concept maps indicating the flow of knowledge
Critical knowledge function analysis	To locate knowledge sensitive areas
Knowledge use and requirements analysis	To identify how knowledge is used for business purposes and
	determine how it can be improved
Knowledge flow analysis	To gain overview of knowledge exchanges, losses, in the
	organisation in the business processes

Researchers also use Booking's knowledge audit approach in carrying out knowledge audit as follows (Brooking, 1999):

Categorisation of an organisation's critical knowledge items

These are knowledge items critical to the tasks staff carries out at work which include:

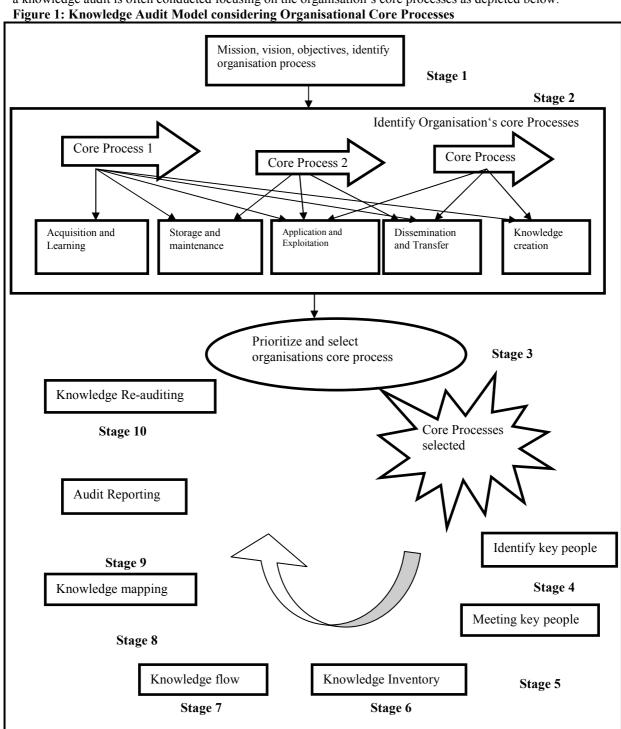
- Knowledge about the users of the organisation's output, products and services or assets that give an organisation power in the market place (Market Knowledge)
- Knowledge about the collective expertise, creativity and leadership and managerial skills of people in the college human centered knowledge.
- Knowledge about the way the college operates, that is, processes and standards, leadership and



- management, culture and values involved in its operations infrastructure knowledge.
- Knowledge about products of mental processes in the college that legally belong to it such as the name, logo, brands, product designs, partnerships, licenses knowledge of intellectual property.

7. Knowledge Audit Model Considering Core Processes

According to Perez-Soltero, Barcelo-Varenzuela, Sanchez-Schmitz, Martin-Rubio, and Palma- Mendez, (2007), a knowledge audit is often conducted focusing on the organisation's core processes as depicted below:



Source: Perez-Soltero et al. (2007)

Firstly, the model shows the diverse elements with which an organisation counts, that is, the strategic elements namely mission, vision and organisational objectives, and the structural elements namely workers, processes, and technologies. Second, the model



considers the core processes of the organisation, that is, cross-functional activities that are essential for the achievement of organisational goals. They integrate people, materials, equipment, information, and so on (Chua and Lam, 2005). Valuable knowledge that exists in these core processes is identified, evaluated, and classified, while the people who determine the efficiency of knowledge flow are also identified. Third, the knowledge audit process is done, constituted by activities related to identifying workers who participate in core processes, determining the knowledge assets that workers, processes, and systems possess, obtaining knowledge inventory, and determining the knowledge flow into the organisation. This considers the Knowledge Management processes, that is, acquisition, creation, transfer, storage, and application of knowledge. All these activities are depicted in these stages (Perez-Soltero, 2007):

Stage 1 – Acquiring organisational strategic information and identifying organisational processes

This is to identify the organisation's mission, vision and objectives considering the environment, culture and traditions. This is done through an initial meeting with the managers, the organisation to explain knowledge, Knowledge management and knowledge audit concepts. The main enterprise documentary information is evaluated to identify the mission, vision and organisation objectives, as well as organisational processes. An exploratory questionnaire including a group of questions focused on how to determine the degree of interest on acquiring and sharing knowledge is applied. Interviews, websites the press and so on are used to obtain relevant data.

Stage 2 - identifying organisation's core processes and establishment of measurement criteria

The objective is to identify the organisation's core processes that contain knowledge and information to be managed and measure the performance of the knowledge processes. Key activities that lead to customer satisfaction and achievement of the organisation's mission are determined. The questionnaire (stage 1) should have questions to measure individual's perceptions of their performance in carrying out duties in the core processes in relation to knowledge processes such as knowledge acquisition, sharing application and creation.

Stage 3 - Prioritize and select organisation's core processes

Core processes with the highest impact on organisational performance are selected and targeted for study. A core process priority table is used.

Stage 4 - Identify the key people

These are the key people who are involved in the processes. This is done through reviewing the organisation's documents, interviewing managers and those in charge of core processes to point out the key people in their areas. The CVs of these key people are consulted to identify their profiles, studies, experience, and so on. The questionnaire can also solicit for this vital information.

Stage 5 - Meeting with key people

This is meant to give the key people information about knowledge audit and knowledge processes. A meeting is organized for this purpose, involving managers and key people as identified in earlier stages (stage 4).

Stage 6 - Obtaining knowledge inventory

The idea is to locate and obtain existing knowledge assets within the organisation. In-depth interviews and questionnaire are used with questions focusing on the details of tacit and explicit knowledge related to the core processes and their location in the organisation.

Stage 7 - Analyzing knowledge flow

This is to determine how knowledge moves within the organisation. In-depth interviews and questionnaires continue to be used to obtain data on these aspects, that is, to explain how tacit and explicit knowledge is transferred from those who possess it to where they are required.

Stage 8 - Knowledge mapping

The idea here is to visually represent the location of organisational knowledge, that is showing knowledge inventory and knowledge flow on a map of the organisation. The gathered inventory of knowledge (stage 6) is represented with a map to visually demonstrate who has knowledge, where the people with knowledge are located, how easily they are accessible to those who need the knowledge, and who they share and exchange knowledge with.

Stage 9 - Knowledge audit reporting

This is outlining the outcome of the audit. The results of the audit are documented for the benefit of stakeholders enabling them to establish the knowledge health of their organisation and identifying areas that need serious



attention. Conclusions and recommendations will be outlined, highlighting the observations of the auditor and suggested solutions to weaknesses in the organisation's knowledge management initiative. Overall, the final report will highlight the status of the organisation's 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 organisation to foster continuous improvement and right what is wrong (Perez-Soltero et al., 2007).

Stage 10 - Continuous knowledge re-auditing

Knowledge re-audits are conducted periodically for the organisation to keep abreast with any changes in the knowledge inventory, knowledge flow and knowledge processes and to continue determining the success of the organisation's knowledge management strategy.

8. Conclusion

The fact that the world economy has become predominantly knowledge-based implies a serious need for an organisation to effectively harness and manage the knowledge resource. For this to happen, an organisation should be able to identify correctly the type and form of knowledge it requires for the effective performance of its processes. It should then identify knowledge assets at its disposal (knowledge inventory), how the knowledge flows around the organisation, and then how it is used for the benefit of the organisation. All this entails carrying out a knowledge audit which enables the organisation to determine what it knows and what it does not know which it needs to know. In other words, if a knowledge audit is carried out properly, it enables an organisation to determine its knowledge health (status) based on its core processes that need to be carried out effectively to enhance its performance.

There is no universally agreed methodology for carrying out a knowledge audit, but the general principle seems to be that it begins by identifying the knowledge needed by the organisation, and then draw up the inventory of knowledge in order to establish gaps in knowledge. An analysis of knowledge flow then follows which leads to identification of barriers to knowledge flow. This will help an organisation determine how it fares in terms of generating, sharing and using knowledge.

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