A Study on Knowledge Audit Tools for Malaysia Energy Sector

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Abstract

Energy Sector industry is important for Malaysia economic growth, which make organizations under this industry need to implement knowledge management as it played a significant part for the innovation improvement. In order have a successful implementation of knowledge management, it is important for an organization to conduct Knowledge Audit first. However, although there are plenty of elaboration on Knowledge Audit process and activities in the literature, there is still a scarce on the definition on Knowledge Audit tools and most importantly on what tools are suitable to be used in Energy Sector industry. This research is going to identify what Knowledge Audit tools that are currently being used in Energy Sector and to develop a more suitable tool from there. This research has adopted concurrent triangulation strategy and using face-to-face interview and survey questionnaire for data collection. The analysis of the findings gathered and as well as the implication of these findings is discussed.

Keywords: Energy Sector, Knowledge Audit, Knowledge Audit Tools, Knowledge Management

1. Research Background

Knowledge is a vital asset to any organization to gain competitive advantages. While it is known how important knowledge is, there are still some organizations that have not fully benefited their knowledge resources as they are still unsure on how to manage their knowledge. For an organization to have a better management on their knowledge resources, they need to implement knowledge management. As agreed by several researchers such as[1] and[2], the first step before implementing knowledge management, is to conduct a knowledge audit. Knowledge Audit will provide insights into organization current strengths and weaknesses in the areas of knowledge management[3] and it will also help to investigate the status of the knowledge health of an organization[4,5].

Previous researches on Knowledge Audit (KA) have showed that KA has been conducted in various organizations and each has adopted different KA methodologies wherein these methodologies had catered the different needs of organizations[5]. While it is agreed that KA is important and there are several available existing models of KA, there is still no universally accepted model for Knowledge Audit process yet[5–9]. KA also represents a process which could be applied in all organizations and it is important to create guideline for its proper imple-

mentation[1]. Prior researches have analyzed several KA methodologies and proposed activities during KA process[10,11]. However, they have not elaborated on the tools that should be used in every phase of KA. The use of appropriate KA tools is very significant as it ensures that knowledge that resides in every process and transactions are well captured.

Due to importance of energy industry for Malaysia economic growth, it is important that organization in this industry to implement knowledge management as it helps in the innovation improvement. One of the industry in Energy Sector is oil and gas, which has taken advantage of knowledge management developments for more than a decade and knowledge management initiative have played a part in making operations more efficient and effective[12]. Some of the organization in Energy Sector that are among the leader in knowledge management are in the oil and gas field exploration and development such as BP, Shell and Schlumberger and the operation of electricity generating plants[13]. However, despite the widely use of knowledge management in the energy sector, some organization still have not yet found the benefits of knowledge management or even aware of it. As a developing and important industry that contributes to Malaysia's economic growth, knowledge management should be made aware in Energy Sector industry in Malaysia and to check whether the Energy Sector in Malaysia has fully utilized their knowledge, KA should be conducted.

The main objective of this research is to develop the appropriate tools to be use while conducting KA in Malaysia energy sector. As there is no universally accepted model of KA yet, this research will first analyze the existing models of KA to find what the main activities during KA. Next, from the activities identified, tools for each activity during KA process will be identified that is suitable to be use in Energy Sector in Malaysia.

2. Literature Review

Knowledge Audit as it is known in the literatures is the first important activity of a knowledge management initiative as it is a tool that assesses the potential stores of knowledge and is also used to provide a sound investigation into any company or organization's knowledge health[2,14,15]. Reference[10] has stated that Knowledge Audit is an assessment of organizational knowledge resources to determine organization knowledge condition by identifying existing knowledge, critical knowledge and untapped knowledge in order to establish KM needs, strengths, weaknesses, opportunities, threats and risks.

Knowledge Audits generally consist of the identification of knowledge needs through the use of questionnaires, interviews and focus groups. It focuses on the development of a knowledge inventory with thrust on the types of knowledge available; where this knowledge is located; how it is maintained and stored; what it is used for and how relevant it is; and the analysis of knowledge flows in terms of people, processes and systems[16]. Knowledge Audit is also an important process through which organizations can understand what knowledge is needed, available and used for their current activities and also identify what knowledge is missing and how this omission restricts the organization's activities[17].

Reference[9] has summarized that an organization could learn more about the status of its knowledge before it could implement any knowledge management strategy or initiative with KA as KA will help the organization to identify what is the main and critical knowledge for it business value, where or how it stores knowledge and also on how the organization's knowledge flow among the business process and how it shared among the employees.

3. Research Method

This research adopted the concurrent triangulation strategy as the strategy of enquiry. Two (2) main companies from energy industries in Malaysia have been chosen for this research. As for the data collection, this research has applied both face-to-face semi-structured interview and survey questionnaire. The survey questionnaires were derived from the questionnaire that has been used by previous researchers that are related with this research. Some of the questions are also created based on the research objectives and research questions of this research. The companies that were chosen are based on these two main reasons which are, first, they are one of the important leading companies in Energy Sector in Malaysia and they are also known to have the experience of Knowledge Audit based on findings in journals and their company profile which were beneficial to this research. The participants that were chosen are selected based on non-probability sampling that was adopted by this research as this sampling is very economical and it is also easily performed by first timer researcher.

4. Data Analysis and Findings

This research has looked for respondents and participants with the background of Energy Sector which is electricity and oil and gas industry. There were 26 companies found and were asked to collaborate for interview or survey questionnaire but only six (6) companies has responded with only two (2) out of six that were available and agreed to participate in this research. For qualitative data, one (1) main company from electricity industry that has agreed to participate for an interview was Tenaga Nasional Berhad (TNB) from the Generation division.

Two (2) of its employee with a management position has been interviewed for this research. One (1) company from the background of oil and gas industry has agreed to conduct an interview session for this research and there were two (2) people under the department of Knowledge Management itself has agreed to collaborate with this research. While for quantitative data, survey questionnaires have been send manually and by email to respective persons with the working background of intended sector. The sum of all respondents for questionnaires is 47 people. There are 68% (n = 32) of respondents are from the electricity industry and another 32% (n = 15) are from oil and gas industry. There are six (6) main findings gathered and are explained as below.

4.1 Knowledge Management has already been Practiced by Energy Sector Companies in Malaysia

Based on the responds obtained from both interview participants and survey respondents, it is learned that they are already familiarized with what knowledge management is. Interviewees from the oil and gas industry has stated that knowledge management has been around in their company since the past ten (10) years but before knowledge management is implemented in their company, people are already practicing but only within their department. Their company has then unified knowledge management by coming out with knowledge management initiatives, identifying stakeholders and helps the company itself to achieve its business goals using knowledge management. While for the electricity industry, knowledge management has only been in practice by their company in serious manner in just recent times and it is driven under SOE (Settle of Excellence).

As for the survey questionnaire respondents, 65.5% (n = 31) of all the respondents from both energy sectors

has agreed that there is a general consensus on knowledge management in their company. However, there is only also a segment of 34.5% (n = 16) from the respondents that has disagreed that the company they are working for does not has a general consensus of knowledge management yet. Out from this 34.5%, only 13% (n = 2) has stated that their company has not involved at all in knowledge management. In addition, 87% (n = 41) of the survey questionnaire has agreed that knowledge management is important in the company they are working with. There is only a small portion of 13% (n = 6) from the rest of the respondent that has chosen that knowledge management is not very important in their company.

To summarize, it shows that knowledge management is already known and practiced by most Energy Sector company in Malaysia. This can be seen by the results from the interview sessions that were being held which show that some of the company in the Energy Sector has already involving themselves with knowledge management for years. Most of the survey respondents have also agreed that there is already a consensus on what knowledge management is, that knowledge management is indeed important and they already have years of involvement with knowledge management in their current company.

4.2 Knowledge Audit is not Widely Practices in Energy Sector Companies in Malaysia yet

Although most companies have already practices knowledge management in their organization but Knowledge Audit is not widely conducted in energy sector's company yet. This is proven as the interviewee from an electric company has stated that their company has not conduct any Knowledge Audit yet as they are just starting to implement knowledge management initiative. As of now, auditing is only been done internally or externally.

It is however different with oil and gas company as they already have the experience of conducting Knowledge Audit in their organization and they even have their own Knowledge Management department. From the interview session that was held, it is learned that the approaches that they used for conducting Knowledge Audit for their organization is by engaging with consultant to teach them about KM practices first. They are trained under consultant and from there they will do some modification on the provided method to adapt it to their process, culture and operation. The method of framework and guideline to conduct Knowledge Audit that they have followed is known as guideline of Knowledge Mapping. Interviewees from the oil and gas company have also stated that they have studied existing Knowledge Audit framework and implemented it in their organization.

As for the survey questionnaire respondents, 53% (n = 25) from all the respondents has chosen the option beginner when asked on their understanding on knowledge audit. Other 32% (n = 15) answered that their understanding on Knowledge Audit is intermediate, and followed by 4% (n = 2) which choose the answer advance and other 11% (n = 5) admitted that they have no knowledge at all on knowledge audit. When asked if the respondents have participated in Knowledge Audit exercise in the company they currently working for, 68% (n = 32) of the respondents has disagreed that they have. While only a small percentage of 32% (n = 15) of the respondents has agreed that they have instead participate in their company's Knowledge Audit exercise.

4.3 There are Limited Tools being used during Knowledge Audit in Current Situation

The interviewees from electricity company has stated that their organization has just starting to implement knowl-
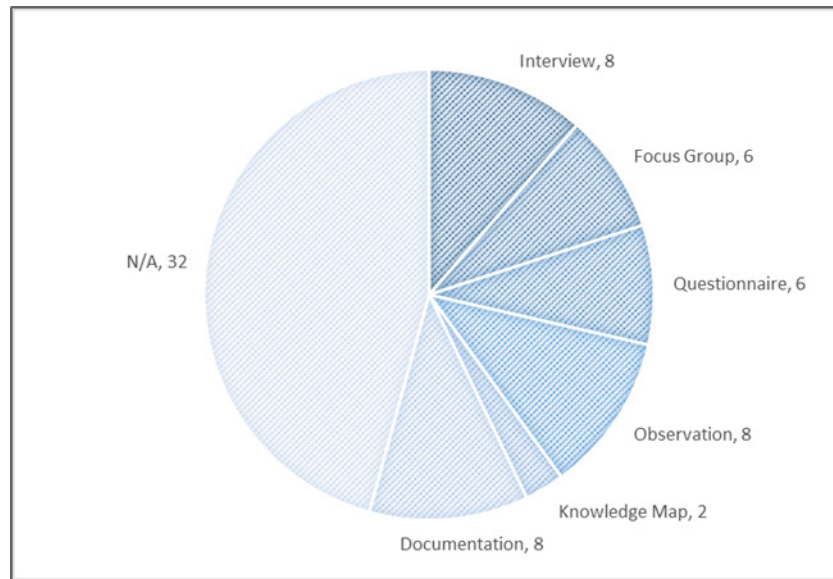
Figure 1. Knowledge Audit tools used by Energy Sector employees.

edge management initiative for now which mean they do not have any hands-on experience with Knowledge Audit conduction yet.

While for the representatives from the oil and gas company has shared on how they conducted Knowledge Audit in their company. Knowledge Audit for their organization will be carried out through a workshop mode that they call as knowledge mapping exercise. The workshop will take around two (2) to three (3) days depending on the department or division size. During the workshop, participant is needed to list down the input and output of their works into mah-jong paper and sticky notes and shared with other participants. The input and output gaps will be generated and populated into an excel sheet to be analyzed.

As for the survey respondents, they are asked to choose the tools that they have used during Knowledge Audit process in their organization. Respondents were asked to choose more than one tools that they have used

before and the results for their answers are shown in Figure 1 below.

From the pie chart above, we could see that the three most used Knowledge Audit's tools that are chosen by the respondents are Interview, Observation and Documentation which each has the same percentage of 17% (n = 8) from the rest. They are followed by Focus Group and Questionnaire which each has the share of 13% (n = 6). Finally, only 4% (n = 2) of the respondents has indicated that they have used Knowledge Map as a Knowledge Audit tools during their participation in Knowledge Audit's process.

4.4 Usage of Proper Tools could benefit KA process

Tools that are used during the conduction of Knowledge Audit process is one of the vital element of the auditing process itself as it will help to understand and to see the knowledge gap. From what is learned during the inter-

view session with the representative from the oil and gas company, during knowledge audit, it is important to know what is the critical function of a department and the proper usage of tools will help in identifying what input is needed for worker to perform their work as they need to provide the necessary input of what they know. Other than that, proper tools will also help in identifying what output can be generated from the Knowledge Audit's process which the output later will be used when engaging with the stakeholder.

Furthermore, the right usage of tools during the Knowledge Audit process is considered as an important matter as it will help the participants to see the value of doing the auditing. As an example, which is gathered from the interview session, during the Knowledge Audit's workshop, participant is needed to list down the input and output of their work into a mah-jong paper and show it for the other participant from another department to see. When participants from the other departments see it, they will then realize that they needed the same thing too for their own department. This will also help participant to collaborate with each other and to be more aware across division and unit.

4.5 Problem and Challenges Faced by Energy Sector in Malaysia in conducting Knowledge Audit

One of the main concerns that were mentioned by the interviewees from the oil and gas company was the reluctance to share knowledge among employees. According to them, people are still refusing to share knowledge and this is the biggest challenge in conducting Knowledge Audit as they need to capture on everything that all the participants of the audit knows. Survey respondents were asked what the current knowledge problems that they faced are

in their current company. From the breakdown shown in Figure 2, the three problems faced by the respondents with the highest percentages are first, with 29% (n = 22) is no time to share knowledge. This problem has also been mentioned by one of the interviewee, as there are some of the participants have admitted that although they know knowledge sharing would make their job better, but they don't have the time do so. Second problem is not using technology to share knowledge effectively at 25% (n = 19) and followed by difficulties in capturing tacit knowledge at 22% (n = 17).

The interviewees have also stated that people are still resisting to change and to contribute effectively. As a result, people will keep on reinventing the wheel and doing the same thing twice. Reinventing the wheel is also chosen by 6% (n = 5) of the survey respondents when asked about their company current knowledge problem. They have suggested that to overcome this problem, people need to open up and be willingly to collaborate with each other. However, the interviewees have also stated that people have beginning to be more aware and realize the importance of knowledge sharing after they participate in the Knowledge Audit session.

Other problem that has been shared by the interviewees was that the Knowledge Audit workshop is a tedious process. Another challenge that has been mentioned by the interviewees is that there are always changes in the business and with the recent drop in oil price and with people leaving, there is not enough time to capture all knowledge. Hence things need to be done in more flexible manner and not to be rigid on certain method. Therefore, it is important to use the right tools during the conduction of Knowledge Audit so that knowledge can be captured thoroughly and in timely manner and people also need to be more open in sharing knowledge with each other.
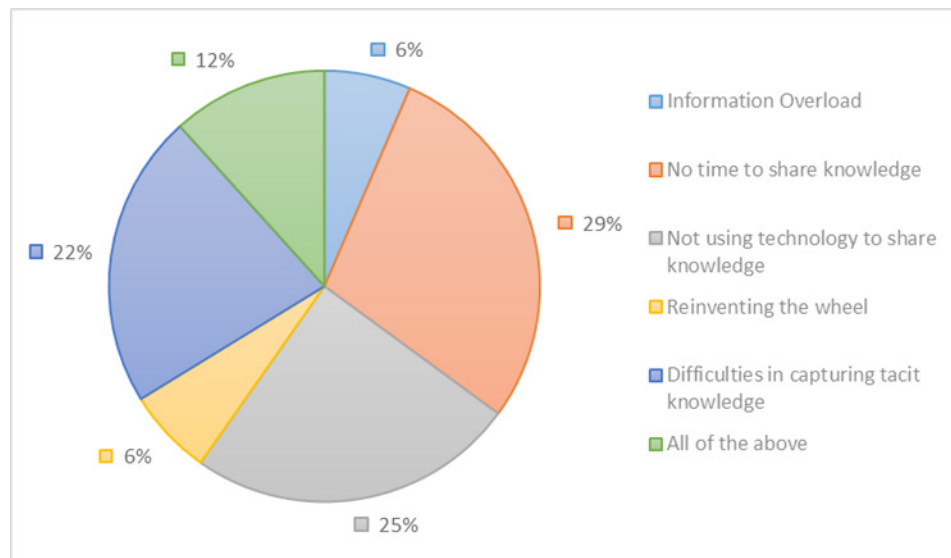
Figure 2. Current knowledge problem.

4.6 Knowledge Audit Tools are important in formulating Knowledge Strategy

As Energy Sector covers a variety of business process and operations, it is crucial that the right tools are used during Knowledge Audit process so that every knowledge reside in the organization will be well captured to come out with a proper knowledge strategy. Interviewees from the oil and gas company have also stated that the results and outcome from Knowledge Audit will be used to formulate the strategies. It will help to see what the gaps are and the knowledge requirements after Knowledge Audit conduction. Gaps founded will be represented to participants for them to verify and realization will come to participants when they are doing Knowledge Audit exercise on what they have missed before. The founded gaps will also be represented the top management for their agreement.

Findings from the Knowledge Audit exercise will also leads to analysis that of what will be the recommendation, strategy, roadmap, intervention plan etc. Examples of the recommendation provided by the interviewees are knowledge management strategy, knowledge management training and document management system.

In conclusion, the usage of the right Knowledge Audit tools is important in formulating knowledge strategy as knowledge needs to be captured and managed thoroughly during the conduction of Knowledge Audit as it will help to produce solution and recommendation.

5. Conclusion

In conclusion based on these six (6) findings, Knowledge Audit is still not widely practiced yet and only some has indeed participated in it. This lead to limited availability of Knowledge Audit tools and it is important to have the right tools to be used during Knowledge Audit as it will help to capture all necessary knowledge needed and to instill knowledge sharing among people as knowledge sharing is still one of the main challenges faced by those companies. The importance of Knowledge Audit tool is

also to help in formulating the company knowledge strategy. This research is expected to develop the appropriate tools in assisting Knowledge Audit process for knowledge management implementation in energy companies and thus would result in better leveraging of organizational knowledge resources in translating and fulfilling the needs and requirements of the business to improve the business performance and efficiency of these companies.

6. Acknowledgement

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