

SS INTERNATIONAL RESEARCH NETWORK

Available online at www.ssirn.com**SS INTERNATIONAL JOURNAL OF ECONOMICS AND
MANAGEMENT**

(Internationally Indexed, Listed & Referred E-Journal)

**Systematic Knowledge Management Audit Methodology - Empirical Analysis
from Pump Manufacturing Cluster in South India****R.Sujatha* & Dr.R.Krishnaveni****

*Associate Professor, PSG Institute of Management, Avinashi Road, Peelamedu, Coimbatore Tamil Nadu, India

**Professor, PSG Institute of Management, Coimbatore Tamil Nadu, India

Abstract

The growing importance of knowledge as a critical business resource has compelled organizations to examine the knowledge underlying their business, giving rise to Knowledge Management initiatives. But, this discipline lacks methods for auditing the knowledge management practices. Knowledge audit is agreed by most researchers to be one of the most important and even considered as the first step of knowledge management. This paper proposes a knowledge management audit methodology to assist organizations to understand the extent of knowledge management practices and the strategies to review and refine the practices. Manufacturing industry is the backbone for any country and India's emergence as a low-cost manufacturing hub increased its presence in world market. The pump manufacturing firms are located as clusters in and around major cities, including Coimbatore in South India. The indigenous knowledge that has accumulated over the decades in these clusters has to be managed to build the capacity of the workforce. Hence this research gains significance to be conducted in this part of the region which would boost the economy. The practical application of the knowledge management audit methodology is illustrated in the manufacturing cluster and brainstorming intervention was used to discuss the implications of audit methodology.

Keywords : Manufacturing Cluster, Knowledge Management, Knowledge Management Audit, Brainstorming

Introduction

The knowledge economy and the knowledge revolution are driving the organizations at a fast pace to constantly innovate and sustain in business. Although the term 'knowledge' is very abstract (Alavi, 1999), it is always

recognized as a most crucial and powerful asset to improve business performance (Carlucci and Schiuma, 2006; Anantatmula, 2007; Sigala and Chalkiti, 2007). Knowledge is the only asset which cannot be easily imitated by others in the competitive

environment (Alavi et. al., 2005; Davenport et. al. 1998; Yang, 2007). Knowledge is information that is combined with experience, values, context and reflection (Davenport, et. al. 1998). Many organizations in the corporate sector look to Knowledge Management as a solution to the new challenges of the information age. Knowledge and information are becoming core assets for business, and organizations have to handle these assets in new ways. Organizations find that they have to share knowledge internally and learn to adapt more quickly to external circumstances in order to retain their innovative performance and competitive advantage (Lin, 2007; Saenz et. al, 2009). Understanding the importance of Knowledge Management cycle (knowledge creation, acquisition, sharing, storage and reuse) in organizations, a considerable body of literature addresses the management of knowledge from a variety of perspectives. Specifically, knowledge sharing and resultant knowledge creation are crucial for organizations to gain and sustain competitiveness (Han and Anantatmula, 2007).

Literature Review

Knowledge Management (KM) provides an integrated approach to identifying, managing, and sharing an organization's information

assets. These assets include databases, documents, policies and procedures, as well as unarticulated expertise and experience residing within individual workers. The overall purpose of KM is to maximize the organization's knowledge related effectiveness and returns from its knowledge assets and to recreate them constantly. KM these days is fast emerging as a core strategy and organizations are managing and leveraging organizational knowledge for competitive business advantage (Alavi, 1999; Kamya et. al., 2010). Jimmy and Li (2003) argue that KM is the process of capturing a company's collective expertise wherever it resides and distributing it whenever needed can help produce the biggest payoffs. Robinson et. al. (2001) define Knowledge Management as a systematic and organized attempt to use knowledge within an organization to transform its ability to store and use knowledge to improve performance. Moreover KM provides organizations the operational ability to identify their internal strengths and weakness and bring out the hidden potential of the employees (Hlupic, et. al. 2002). Given the importance of knowledge management and organizations are focusing towards implementing it, there exists a potential need to systematically audit

the existing knowledge management practices and build it.

Knowledge Management Audit

Knowledge audit and knowledge management audit are used interchangeably but both the terminologies are different from each other. Knowledge audit refers to the process of identifying and naming the existing and missing knowledge of an organization. A lot of researchers state that knowledge audit is important and has become one of success factors for effective knowledge management (Liebowitz et. al., 2000; Lin and Tseng, 2005; Handzic et. al., 2008; Pa et. al. 2012; Perez-Soltero et. al. 2013). Suo et. al. (2009) considered knowledge audit as a means of knowledge management capability evaluation involving discovering, analyzing, measuring and evaluating an organization's knowledge asset. Liebowitz et. al. (2000) states that knowledge audit assess potential stores of knowledge and it is the first part of any knowledge management strategy. Juling and Jiankang (2010) considered knowledge as the main factor in knowledge audit process and introduced knowledge acquisition, knowledge storage, knowledge sharing, knowledge transfer and knowledge application as process involved in knowledge audit. A knowledge management audit refers

to the auditing process of creating, acquiring and reusing, distributing, transferring, sharing and reusing the institutional knowledge of an organization (Wang and Xiao, 2009). Paramasivan (2003) states that knowledge management audit is an investigation, analysis, explanation and report tool including the study of organization information, knowledge policy, knowledge structure and knowledge flow.

Review of Knowledge Management Audit Models

From the definitions given by various researchers, knowledge management audit is the first step for an organization which provides review about the extent to which knowledge management practices exist and to enhance those practices. Many researchers have proposed knowledge management audit framework and models for organizations to conduct the audit process. Cheung et. al. (2007) proposed a framework consisting of eight steps which are orientation and background studies, cultural assessment, in-depth investigation, building knowledge inventory and knowledge mapping, knowledge network analysis, recommendation of knowledge management strategy, deploying knowledge management tools and building collaborative culture and then re-audit for measuring the success of

knowledge management implementation. Handzic et. al. (2008) proposed a model that extends the core knowledge-process-enabler framework and incorporated additional drivers, outcomes and knowledge management contingencies and illustrated the model in local government environment. Wang and Xiao (2009) proposed a knowledge management audit process involving four stages – preparatory stage, analysis stage, implementation stage and summary stage. The analysis stage includes knowledge management competence audit involving create, store, share and use of knowledge in organizations. Based on knowledge management audit models and methods given by the researchers, this paper proposes a systematic knowledge management audit methodology for empirical assessment of knowledge management practices based on the knowledge management life cycle stages.

There has been numerous KM life cycle models researched by various authors (Carlile and Rebentisch, 2003; Jashapara, 2004; Monavvarian and Kasaei, 2007; King, 2009; Lee and Hong, 2012). The researchers proposed various KM life cycle levels/stages and based on the review of literature, knowledge creation, acquisition, sharing,

storage and use are the five practices identified for the KM Audit.

Knowledge Creation

Knowledge creation is the first process in the KM cycle. Nonaka and Toyama (2002) state that ‘ba’ is a place where information is given meaning through interpretation to become knowledge and new knowledge is created out of existing knowledge through the change of meanings and contexts. There are four types of ba : originating, dialoguing, systematizing and exercising. The characteristics of each type of ‘ba’ (Figure 3.1) as given by Nonaka and Nishiguchi (2001) are : Originating ba is the place where individuals share feelings, emotions, experiences and mental models. Physical face-to-face experiences are the key in converting tacit knowledge into tacit knowledge. Dialoguing ba is a situation, where by means of dialogue individuals share their experience and abilities. Systematizing ba is a place of interaction in a virtual world instead of sharing of space and time in reality. Exercising ba supports focused training with mentors and colleagues through continued exercising. The knowledge generated in each ba is eventually shared and forms the knowledge base for organizations. The knowledge creating ba and the literature support is given in Table 1.

Knowledge Acquisition

Hoe and Mcshane (2010) define knowledge acquisition as the development or creation of skills, insights and relationships. Nonaka and Nishiguchi (2001) had developed a spiral model called Socialization-Externalization-Combination-Internalization (SECI) and the four types of knowledge conversion process are : Socialization emphasizes the importance of joint activities in the process of converting new tacit knowledge through shared experiences. Externalization is the process of articulating tacit to explicit knowledge in forms such as metaphors, concepts, hypothesis, diagrams, models so that it can be understood by others. Combination is the process of converging explicit knowledge into more complex and systematic explicit knowledge. Knowledge is exchanged and combined through such media as documents, meetings, telephone conversations or communication networks. Internalization is the process of embodying explicit knowledge into tacit knowledge and related to learning by doing. The knowledge acquisition process and the literature support is given in Table 2.

Knowledge Sharing

For an organization, knowledge sharing is capturing, organizing, reusing and transferring experience-based knowledge that resides within the organization and making

that knowledge available to others in the business (Lin, 2007). Various studies carried out to understand the factors influencing knowledge sharing among employees in organizations are given below.

Knowledge Storage

Knowledge storage is recording knowledge, retaining and maintaining knowledge and signposting the knowledge directory (Wang and Ahmed, 2005). Tacit and explicit knowledge needs different storage mechanisms. Explicit knowledge can be easily collected, documented, stored and retrieved through technology (Zaim 2006). Tacit knowledge has to be codified and converted into explicit form before storing. Duffy (2000) states information technology is an enabler for KM and plays a vital role in managing the storage and access of documents. From the above discussions, this research adopted systematic processes for storing tacit and explicit knowledge, technology for storing of knowledge as practices for knowledge storage in organizations (given in Table 4).

Knowledge Utilization**Objectives of the Study**

Manufacturing industry is the backbone for any country and India's emergence as a low-cost manufacturing hub increased its presence in world market. India has been a

traditional producer of pumps with a seven decade history. India produces more than two million pump units per year, with about 95 percent of demand accounted for by domestic manufacturers and imports making up the remaining percentage. The pump manufacturing firms in India are located as clusters in and around major cities like Ahmedabad, Kolkata, Hyderabad, Coimbatore etc. The pump and motor industry in Coimbatore started way back in early 1900's and the first pump was developed in 1928 in Coimbatore. The indigenous knowledge that has accumulated over the decades needs to be managed to build the capacity of the workforce for better prospects. Hence this research gains significance to be conducted in this part of the region which would boost the economy. The given literature review identifies the necessity to build a step-by-step method for auditing the knowledge management practices at the organizational level to identify the practices that are lagging and develop strategies to enhance the practices. The study presented here is mainly done to

- To propose a systematic audit process for evaluating the practice of Knowledge Management.
- To assess the five knowledge management practices among pump

manufacturing organizations included in the study

- To develop and deploy strategies to enhance the practice of knowledge management of the pump manufacturing organizations.

Proposed KM Audit Methodology

The proposed KM Audit Methodology is presented in Figure 1. The figure depicts the five main step-by-step approach and their interrelationships. The first step is to assess the KM practices currently prevalent in organizations. Any audit process has to start from the grassroots level to identify the extent to which the KM practices exist and practiced. This first task helps organizations to build on the existing practices and set benchmark for future development. The second step involves forming a multi-stakeholder working group. Consultation with concerned stakeholders is important for inclusive growth of the organizations (Kwiatkowski et. al., 2009). The stakeholders want to be involved in the development, implementation and interpretation of impact assessment which affects their organization. Hence a multi-stakeholder group has to be formed to advice on the current practices and develop and recommend strategies to enhance the knowledge management. The third step is to

develop demand-strategies to bring together the organizations in cluster with the core responsibility of developing the KM practices. The strategies developed should be demand-driven by the cluster and should be holistic and integrated with co-ordination. The strategies can be physical, technical/managerial and human-resource based with an overall integrated effort of increasing organizational performance. The fourth step is to implement the strategies developed and the final step is to do a review of the KM practices and refine the processes so that the whole cluster benefits and sustain in the long-term.

Research Methodology

Knowledge Management Audit

Instrument

An instrument has been developed and validated to evaluate the extent of adoption of KM practices among pump manufacturing organizations. The instrument had two sections, the first part to capture the demographic information about the respondents like gender, age, education, work experience and position in the organization. The second part had five sections to capture the five KM practices. The questionnaire was further validated and checked for reliability.

A reliability score of greater than 0.90 was considered excellent, greater than 0.80 was

considered reasonable and above 0.70 were acceptable (Nunnally, 1978). The Table 6 gives the convergent validity scores ie, AVE and composite reliability values for all the constructs. The table reveals that all the constructs have AVE values greater than 0.5 and composite reliability greater than 0.7 showing a good convergent validity and unidimensionality of the construct.

Population and Sample

The population for this study consisted of pump manufacturing firms in the city of Coimbatore in India. Pump and motor cluster is predominant in Coimbatore and hence the descriptive research study is conducted in this part of the region. The sampling frame was decided as those pump manufacturing companies who were members of South India Engineering Manufacturers Association (SIEMA). There were about 239 firms listed as members in SIEMA website who were engaged in manufacturing a variety of engineering products. Out of these 239 firms, 103 pump manufacturing firms were shortlisted for the purpose of this research study. All 103 organizations were included in the study. The respondents were employees occupying middle level managerial positions and should have worked for more than 2 years in the organization, because they know the

functioning of the organization and will have the proficiency to fill the questionnaire.

Data Collection

The organizations had four major departments – Production, Quality Control, Design and Development and General Administration. So four employees from each organization representing the four departments were targeted and questionnaires were sent to them. The respondents were contacted in person or through telephone and the importance of the research were explained to them before the questionnaire was administered. Out of 412 (4 employees from each organization and a total of 103 organizations) probable respondents, a total of 239 responses were collected, and used for analysis at a response rate of 58%. It was ensured that atleast one response was collected from every organization so that the sample and the data truly represented the population.

Analysis and Findings

The instrument developed for this research was used to assess the agreement level of the employees with respect to knowledge management practices prevailing in the organizations. The respondents were instructed to mark a score of ‘5’ if they perceive that particular knowledge management practice was carried out at the

acceptable level. The total score for a particular knowledge management practice is calculated as,

$$\text{Total number of questionnaire items for that practice} \times \text{Maximum score} \times \text{Total number of respondents}$$

The corresponding assessment scores for knowledge management practices obtained by the pump manufacturing cluster as a whole is calculated as,

$$\text{Sum of all the scores marked by the respondents for that practice}$$

The assessment score for a particular knowledge practice is calculated as a percentage of the calculated score obtained by the cluster to the total score. A knowledge management practice which is adopted and practiced in the organizations in concurrence with the employees had a high assessment score and the one which is not adopted received a low assessment score. The calculated assessment score for each knowledge management practice is given in Table 9.

Further the scores were plotted on a graph and is presented in Figure 2. The graph thus plotted gives the relative strengths and weaknesses of the firms with regard to five practices of knowledge management. Figure 2 shows that among the five practices, knowledge sharing scored the highest

(75.03%) indicating a strong presence of sharing of knowledge among the employees in the pump manufacturing cluster. Knowledge creation and knowledge utilization scored similar percentages (74.49% and 74.8% respectively) again revealing a strong presence. But external knowledge acquisition scored low with 69.1% and also the assessment score for knowledge storage practice is the lowest with 67.7% compared to other practices. This shows that organizations do not emphasize on storing the knowledge that is created and shared.

The sub construct score for each knowledge practice is calculated and plotted on a graph, presented in Figure 3. Figure 3 shows that among the four ba's of knowledge creation, originating ba scored the lowest with 73.1% but the difference when compared with other knowledge creating ba's is not so wide. Combination mode of knowledge acquisition scores the lowest (65.35%) among the four modes indicating that explicit knowledge acquisition from external agents like customers, suppliers and partners is low. This shows that organizations do not have inter-organizational system to management relationship with external stakeholders and acquire explicit knowledge from them. Knowledge sharing factors scored fairly high

with organizational factors 74.2%, employee focused factors 76% and technical factors at 75.5%. Knowledge storage mechanisms are considerably very low among the firms in pump manufacturing cluster. The whole cluster lacks in the storage technology of knowledge 64.6%. This is of serious concern because there exists a huge gap in utilization of Information Technology (IT) tools for knowledge storage. Knowledge utilization practices like internal and external knowledge use and technology to access the knowledge in organizations are 72.7%, 79% and 73.8% respectively. Leveraging knowledge from external agents is of primary importance for manufacturing firms and they practice it at a satisfactory level.

Discussion and Implications

The KM Assessment Score Chart thoroughly portrayed the existing KM practices among manufacturing firms. To move to the next phase of KM Audit and to identify the reasons for low practices, the KM Assessment Score Chart was presented to a team comprising of fifteen practicing managers from manufacturing cluster and brain storming session was conducted to diagnose the reasons and develop strategies. The strategies are summarized below,

- Though this study supports the findings of Nonaka and Takeuchi (1995), the

industry practitioners argued that face-to-face interactions are not largely used in manufacturing organizations as means for creating knowledge. Hence they suggested that manufacturing organizations should motivate individuals to discuss about internal and external best practices and lessons learned, thereby creating situations for face-to-face interactions through which employees share tacit knowledge and create new knowledge.

- Organizations often make mistakes repeatedly because of insufficient or lack of knowledge about the environment, market trends, customers and partners. If the firms understand and acquire knowledge from the external environment and apply them in their work practices, these mistakes can be avoided. Firms acquiring knowledge from business partners should use it in combination with its own existing knowledge base for improved performance.
- Storing of knowledge in organizational memory enables easy dissemination and re-use of knowledge that is created or acquired (Olivera, 2000). It is suggested for organizations to adopt the use of knowledge catalogues and repositories

and train the employees to capture and store the knowledge. The preservation of knowledge seems to be a major building block in implementing KM so as to re-use and create knowledge.

- Extensive use of IT tools that are integrated and configured for Knowledge Management will work as a major catalyst. There is no doubt that information systems are needed but creating one without understanding what users need often results in a knowledge junkyard. Having systematic business processes in place and using IT to provide static repositories of best practices, provide platform for employees to collaborate and develop new capabilities

Conclusion

This study conducted among firms in pump manufacturing cluster brings out many interesting results. According to this research, KM practices are prevalent in small and medium enterprises, but the extensiveness and capacity can be built with the support from top management. Knowledge creation through originating ba has to be enhanced by allowing the employees to interact and collaborate in their work practices. The firms acquired knowledge using socialization mode but other modes of knowledge acquisition like

internalization, externalization and combination needed development. Among all the KM practices, knowledge sharing capacity was predominant followed by knowledge utilization. Knowledge storage practices were the least which has to be addressed immediately by the pump manufacturing firms. This diagnostic tool helped organizations obtain useful data on their KM practices, identify important factors that aid or impede their achievement

of results and situate themselves with respect to competitors. As the pump manufacturing firms operate as a cluster, this exercise can be conducted periodically, atleast once a year and the outcome of the assessment can be used as reference for comparative analysis among the firms in the cluster. This exercise being conducted with the consensus of the employees will ensure participation by them and make the whole cluster self-sufficient.

References

1. Al-Alawi, A.I., Al-Marzooqi, N.Y. and Mohammed, Y.F. (2007) 'Organizational culture and knowledge sharing: critical success factors', *Journal of Knowledge Management*, Vol.11, No.2, pp.22-42.
2. Alavi, M. (1999), 'Knowledge Management Systems : Issues, Challenges and Benefits', *Journal of Knowledge Management*, Vol.1, Article 7
3. Alavi, M., Kayworth, T. R., and Leinder, D. E. (2005), 'An empirical examination of the influence of Organizational Culture on Knowledge Management Practices', *Journal of Management Information Systems*, vol.22, no.3, pp.191-224
4. Anantatmula, V. S. (2007) 'Linking KM effectiveness attributes to organizational performance', *VINE*, Vol. 37 Issue 2, pp.133 – 149
5. Ardichvili, A., Maurer, M, Wentling, W. T. and Stuedemann, R. (2006), 'Cultural influences on knowledge sharing through online communities of practice', *Journal of knowledge management*, vol.10, no.1, pp.94-107
6. Bennett, R. (2001). "Ba" as a determinant of salesforce effectiveness: an empirical assessment of the applicability of the Nonaka-Takeuchi model to the management of the selling function. *Marketing Intelligence & Planning*, vol.19 no.3, pp.188-199

7. Carlile, P. R. and Reberntisch, E. S. (2003), 'Into the Black Box: The Knowledge Transformation Cycle', *Management Science*, Vol. 49, No. 9, pp. 1180-1195
8. Carlucci, D. and Schiumma, G. (2006) 'Knowledge Asset Value Spiral : Linking Knowledge Assets to Company's Performance', *Wiley Interscience*, Vol.13, No.1, pp.35-46
9. Chatzoglou, P. D. and Vraimaki, E. (2009), 'Knowledge sharing behavior of bank employees in Greece' *Business Process Management Journal*, vol.15, vo.2, pp.245-266
10. Cheung, C. F., Li, M. L., Shek, W. Y., Lee, W. B. and Tsang, T. S, (2007), "A systematic approach for knowledge auditing: a case study in transportation sector," *Journal of Knowledge Management*, vol. 11, no. 4, pp. 140–158
11. Davenport, H., DeLong, W and Beers, C. (1998), 'Successful Knowledge Management Projects', *Sloan Management Review*, vol.39, no.2, pp.43-57.
12. Davenport, H., DeLong, W. and Beers, C. (1998), 'Successful Knowledge Management Projects', *Sloan Management Review*, Vol.39, No.2, pp.43-57.
13. Duffy, J. (2000), 'Something funny is happening on the way of Knowledge Management', *Information Management Journal*, vol.34, no.4, pp.64-68.
14. Fong, P. S. W. and Lee, H. F. (2009), 'Acquisition, reuse and sharing of knowledge in Property management firms', *Facilities*, vol.27, no.7/8, pp.291-314
15. Gold, A., Malhotra, A. and Segars, A (2001), 'Knowledge management: an organizational capabilities perspective', *Journal of Management Information Systems*, vol. 18, no. 1, pp. 185-214.
16. Han, B. M. and Anantatmula, V. S. (2007), 'Knowledge sharing in large IT organizations : a case study', *VINE : The Journal of information and knowledge management systems*, Vol.37, No.4, pp.421-439
17. Handzic, M., Lagumdžija, A. and Celjo, A., (2008), "Auditing knowledge management practices: model and application," *Knowledge Management Research & Practice*, vol. 6, no. 1, pp. 90–99

18. Hlupic, V., Pouloudi, A. and Rzevski G. (2002), 'Towards an Integrated Approach to Knowledge Management : 'Hard', 'Soft' and 'Abstract' Issues', Journal of Knowledge and Process Management, Vol.9, No.2, pp.90-102
19. Hoe, S. L. and Mcshane, S. (2010), 'Structural and informal knowledge acquisition and dissemination in organizational learning : An exploratory analysis', The learning organization, vol.17, no.4, pp.364-386
20. Holsapple, C. W. and Joshi, K. D. (2002), 'Knowledge Management: A Threefold Framework', The Information Society, 18:47–64
21. Jashapara, A., (2004) Knowledge Management : An integrated Approach, New Delhi : Pearson Education
22. Jimmy, J.M. and Li, K.X. (2003), 'Implications for Knowledge Management in Globalization', Journal of Information & Computer Security, pp.167-174
23. Jiuling, X. and Jiankang, W., (2010) "Enterprise Knowledge Management Audit based on Processes : Toward an Integrated Conceptual Framework," no. 2007, pp. 940–945
24. Kanya, M. T., Ntayi, J. M. and Ahiauzu, A. (2010) 'Knowledge management and competitive advantage: the interaction effect of market orientation', African Journal of Business Management, Vol. 4(14), pp. 2971-2980
25. Kim, S. and Lee, H. (2010), 'Factors affecting employee knowledge acquisition and application capabilities', Asia-Pacific Journal of Business Administration, vol.2, no.2, pp.133-152
26. King , W. R. (2009), 'Knowledge Management and Organizational Learning', Annals of Information Systems, Vol.4, pp. 3-13
27. Kwiatkowski, R. E., Tikhonov, C., Peace, D. M. and Bourassa, C. (2009) "Canadian Indigenous engagement and capacity building in health impact assessment", Impact Assessment and Project Appraisal, 27(1), March 2009, pages 57–67
28. Lee, S. M. and Hong, S. (2002), 'An enterprise-wide knowledge management system infrastructure', Industrial Management & Data Systems, Vol. 102 Iss: 1 pp. 17 – 25

29. Liebowitz, J., Bonnie, R., Doug, M., Judah, B., Chuck, B. and Butler, N, (2000), ‘The knowledge audit’, *Knowledge and Process Management*; vol.7, no.1 pp.3-10
30. Lin H. (2007) ‘Knowledge sharing and firm innovation capability: an empirical study’, *International Journal of Manpower*, Vol. 28 No. 3/4, pp. 315-332
31. Lin, C. and Tseng, S., (2005), ‘The implementation gaps for the knowledge management system’ *Industrial Management + Data Systems*; Vol.105, No.2, pp.208-222
32. Lindblom, A. and Tikkanen, H. (2010), ‘Knowledge Creation and business format franchising’, *Management Decision*, vol.48, no.2, pp.179-188
33. Mills, A. M. and Smith, T. A. (2010), ‘Knowledge management and organizational performance : a decomposed view’, *Journal of Knowledge Management*, vol.15, no.1, pp.156-171
34. Monavvarian, A. and Kasaei, M. (2007), ‘A KM model for public administration: the case of Labour Ministry’, *VINE : The Journal of Information and Knowledge Management Systems*, Vol. 37 Iss: 3 pp. 348 - 367
35. Nemati, H. (2002), ‘Global Knowledge Management: Exploring a Framework for Research’, *Journal of Global Information Technology Management*, vol. 5, no.3, pp. 1-11
36. Nonaka, I. and Nishiguchi, T. (2001) ‘Knowledge Emergence : Social, Technical, and Evolutionary Dimensions of Knowledge Creation’, *Oxford University Press*, New York
37. Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York
38. Nonaka, I. and Toyama, R. (2002), ‘The knowledge-creating theory revisited: knowledge creation as a synthesizing process’ *Knowledge Management Research and Practice*, vol. 1, no 1, pp. 2-10
39. Nunnally, J. (1978). *Psychometric Theory* New York: McGraw-Hill.
40. Olivera F. (2000), “Memory Systems in organizations : an empirical investigation of mechanisms for knowledge collection, storage and access”, *Journal of management studies*, Vol.37, No.6, pp.811-32

41. Pa, N.C., Taheri, L. and Abdullah, R., (2012), 'A Survey on Approaches in Knowledge Audit in Organizations', Asian Transactions on Computers, Vol. 02, Issue 05
42. Paramasivan, T. (2003), "Knowledge audit", The Chartered Accountant, Vol. 5, pp. 498-506.
43. Perez-Soltero, A., Alvarez-Quijada, R., Barcelo-Valenzuela, M. and Diaz-Valladares, A, (2013), 'A Methodology for Documenting Key Knowledge Through the Application of Knowledge Audit Techniques:The Case of a Mexican Pulp Company' The IUP Journal of Knowledge Management, Vol. XI, No. 3, 2013, pp.7-28
44. Ray, L. (2008), 'Requirement for Knowledge Management business driving Information Technology', Journal of Knowledge Management, vol.12, no.3, pp.156-168
45. Robinson, S., Carrillo, M., Anumba, J. and Al-Ghassani, M. (2001), 'Perceptions and Barriers in Implementing Knowledge Management strategies in large construction organizations', Proceedings of Cutting Edge and Roots Conference, Caledonian University
46. Sa'enz, J., Aramburu, N. and Rivera, O. (2009) 'Knowledge sharing and innovation performance - A comparison between high-tech and low-tech Companies', Journal of Intellectual Capital, Vol. 10 No. 1, 2009, pp. 22-36
47. Sigala, M. and Chalkiti, K. (2007) 'Improving performance through tacit knowledge externalization and utilisation: Preliminary findings from Greek hotels', International Journal of Productivity and Performance Management, Vol. 56 Iss: 5 pp. 456 – 483
48. Sohail, M. S. and Daud, S. (2009), 'Knowledge sharing higher education institutions : Perspectives from Malaysia', VINE : The Journal of Information and Knowledge Management Systems, vol.39, no.2, pp.125-142
49. Sondergaard, S., Kerr, M. and Clegg C. (2007), 'Sharing knowledge : Contextualizing socio-technical thinking and practice', The Learning Organization, vol.14, no.5, pp.423-435
50. Spraggon, M. and Bodolica, V. (2008), 'Knowledge creation processes in small innovative hi-tech firms', Management Research News, vol.31, no.11, pp.879-894

51. Suo, B., Wang, J. and Zhang, H., (2009) “Primarily Research on Knowledge Audit for Evaluating Enterprise Knowledge Management Capability,” 2009 International Conference on Management and Service Science, pp. 1–5,
52. Suppiah, V. and Sandhu, M. S. (2011), ‘Organizational culture’s influence on tacit knowledge sharing behavior’, Journal of Knowledge Management, vol.15, no.3, pp.462-477
53. Wang, C. L. and Ahmed, P. K. (2005), ‘The knowledge value chain in knowledge management implementation’ in P Coate (ed), Handbook of Business Strategy’, MCB, pp.321-326
54. Wang, J. and Xiao, J., (2009), ‘Knowledge management audit framework and methodology based on processes’, Journal of Technology Management in China, Vol. 4 No. 3, pp. 239-249
55. Yang, J. (2007) ‘The impact of knowledge sharing on organizational learning and effectiveness’, Journal of Knowledge Management, Vol. 11 Iss: 2, pp.83 – 90
56. Zahra, S. A. and George, G. (2002), ‘Absorptive Capacity : A Review, Reconceptualization and Extension’, Academy of Management Review, vol.27, no.2, pp.185-203
57. Zaim, H. (2006), ‘Knowledge management implementation in IZGAZ’, Journal of Economic and Social Research, vol.8, pp.1-25

Figure 1 : Knowledge Management Audit Methodology

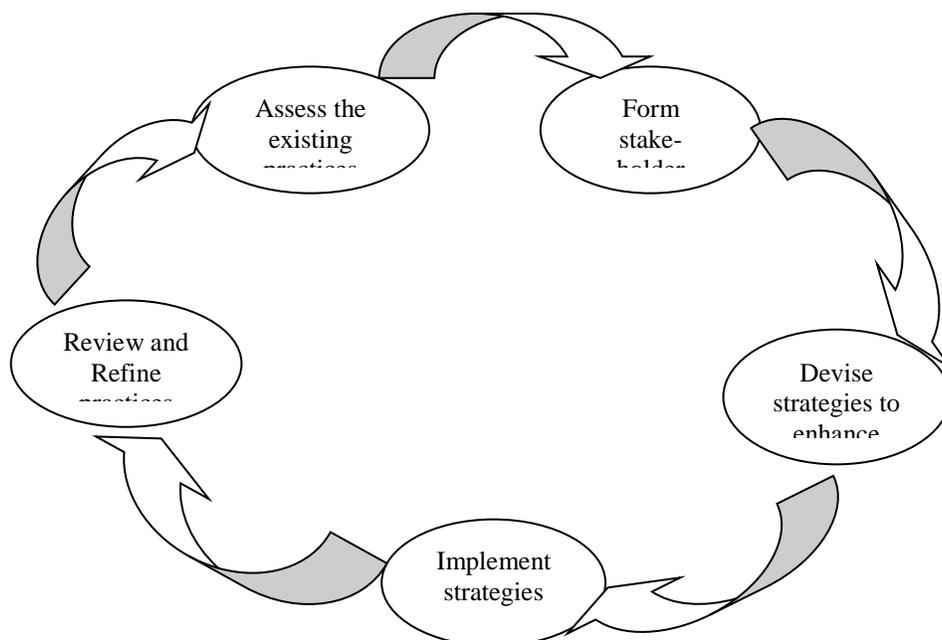


Figure 2 : Assessment Score of KM Practices

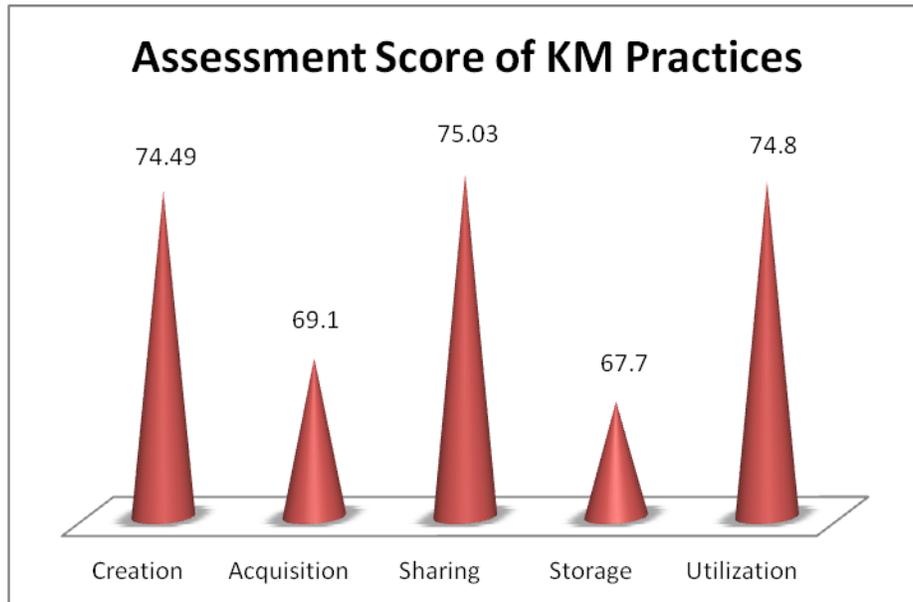


Figure 3 : Assessment Score of Sub Constructs of KM Practices

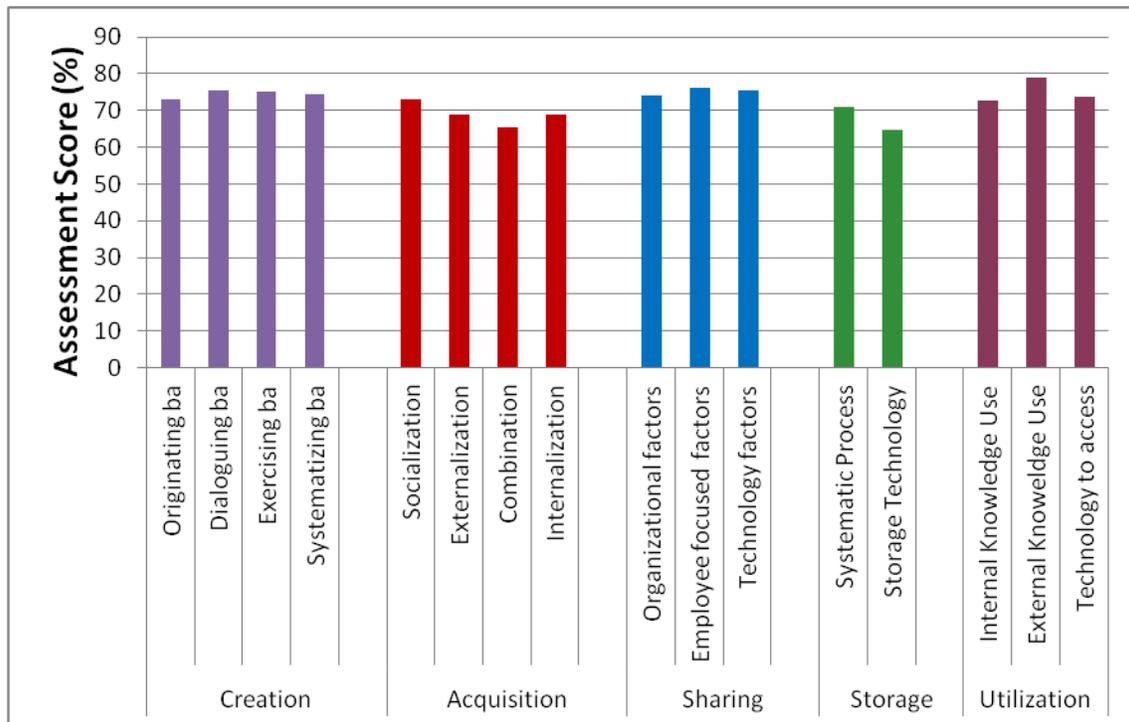


Table 1: Knowledge Creating Ba

KM Practices		References
Knowledge Creation	Originating ba	Nonaka and Nishiguchi (2001); Bennett (2001); Nonaka and Toyama (2002); Spraggon and Bodolica (2008); Lindblom and Tikanen (2010);
	Dialoguing ba	
	Exercising ba	
	Systematizing ba	

Table 2 : Knowledge Acquisition Process

KM Practices		References
Knowledge Acquisition	Socialization	Nonaka and Nishiguchi (2001); Gold et al (2001); Fong and Lee (2009); Kim and Lee (2010); Hoe and Mcshane (2010); Mills and Smith (2011)
	Externalization	
	Combination	
	Internalization	

Table 3 : Factors Facilitating Knowledge Sharing in Organizations

Factors facilitating knowledge sharing in organizations		References
Organizational Factors	Participative decision making Ease of information flow Cross functional teams Organizational climate Opportunities to share Top management support Organizational rewards	Lin, (2007); Ardichvili et al (2006); Al-Alawi et al (2007); Han and Anantatmula (2007); Sondergaard et al (2007); Chatzoglou and Vraimaki (2009); Sohail and Daud (2009); Suppiah and Sandhu (2011);
Employee Focused Factors	Trust Attitude Mentoring	
Technology Factors	Existence of information technology Effectiveness of information technology Comfort level of using information technology	

Table 4 : Knowledge Storage Practices

KM Practices		References
Knowledge Storage	Systematic process	Davenport et al (1998); Duffy (2000); Olivera (2000); Nemati (2002); Alavi et al 2005;

	Storage technology	Wang and Ahmed (2005); Zaim (2006); Ray (2008)
--	--------------------	--

Table 5 : Knowledge Utilization

KM Practices		References
Knowledge Utilization	Internal knowledge use	Holsapple and Joshi (2002); Zahra and George (2002); Hoe and Mcshane (2010)
	External knowledge use	
	Technology to access	

Table 6 : Composite Reliability, AVE and Cronbach Alpha values of Constructs

Construct	Composite Reliability	AVE	Cronbach Alpha
Knowledge Creation	0.865	0.618	0.7718
Knowledge Acquisition	0.860	0.607	0.7846
Knowledge Sharing	0.923	0.799	0.8746
Knowledge Storage	0.882	0.653	0.8216
Knowledge Utilisation	0.905	0.705	0.8602

Table 9 : KM Practices Assessment Score

KM Practices		Assessment Score (%)	Overall Score (%)
Knowledge Creation	Originating ba	73.1	74.49
	Dialoguing ba	75.3	
	Exercising ba	75	
	Systematizing ba	74.4	
Knowledge Acquisition	Socialization	73.1	69.1
	Externalization	69	
	Combination	65.3	
	Internalization	69	
Knowledge Sharing	Organizational factors	74.2	75.03
	Employee focused factors	76	
	Technology factors	75.5	
Knowledge Storage	Systematic Process	70.8	67.7
	Storage Technology	64.6	
Knowledge Utilization	Internal Knowledge Use	72.7	74.8
	External Knowledge Use	79	
	Technology to access	73.8	