A STUDY ON INFRASTRUCTURE AND ORGANIZATIONAL LEARNING: RETHINKING KNOWLEDGE PERFORMANCE PERSPECTIVE

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Abstract

This paper aims to present an integrated outlook of knowledge performance by reviewing the linkage between knowledge management (KM) infrastructure and organizational learning dimensions. The study endorses infrastructure capabilities i.e. culture, structure, technology and human resource to influence learning which subsequently leads to enhance knowledge performance within organizational context. A systematic review has been applied to assess KM literature including prior conceptual and research studies that help to substantiate the linkages among KM infrastructure, organizational learning and knowledge performance. The proposed conceptual model provides insights for managers and strategists to analyze the role of KM infrastructure in improving learning practices and knowledge performance. Furthermore, this study emphasizes on enabling learning processes and knowledge infrastructure dimensions, particularly mentioned by Lee and Choi (2003). In spite of various researches in KM there is still a need to review the linkages among the key elements which may affect knowledge

performance. This paper contributes to the KM literature by adjoining KM infrastructure to organizational learning and visualizes the integrative effect that may enhance knowledge performance. Study limitations and future scope of the study has also been discussed in the later section.

1. Introduction

In the present business environment, acquiring and retaining a sustainable competitive edge is considered as a critical task for organizations due to changing trends, admittance of new technology and continuous up-gradation in business processes. While managing knowledge is a requisite condition for co-ordinating and assimilating knowledge activities in to organizational context. Role of knowledge as an intellectual asset seems to be prominent in creating roadmap toward optimum utilization of the resources, formulating strategies and their effective implementation. Wiig (1997) asserts that major objective of managing knowledge is to create best value of organizational knowledge resources and to achieve organizational objective through effective use of KM capabilities.

KM can be defined as the process of managing information, knowledge and expertise available in the organization. It facilitates activities such as creation, capture, storage, utilization and attempts to extend the knowledge horizon (Mayo, 1998). It can be viewed as a set of knowledge capabilities (knowledge creation, acquisition, sharing, transfer, application) that strengthen and enhances KM processes (Lee & Choi, 2003; Gold et al, 2001). Further, Lee (2012) provides a holistic view of KM infrastructure, KM enablers, organizational learning and further remarked significance of KM infrastructure as an enabler to strengthen organizational learning practices.

KM capabilities can be viewed as the ability to create and apply knowledge through integration of various knowledge resources and activities that affect competitiveness and organizational effectiveness significantly (Gold et al., 2001; Chuang, 2004). Similarly, Soh and Soh (2016) acclaimed that organizations' must possess knowledge creating, managing and utilization capability in order to compete in a volatile and dynamic environment. Further, Porter (1979) framework sheds light into major five forces that causes risk to organizations'

competitiveness and stability. The major forces elaborated by Porter (1979) include threat of new market player, supplier's bargaining power, customer's bargaining power, threat of substitute products and competitive rivalry within industry. These factors visualize major obstacle often faced by firms and help to sustain business activities by observing the missing link and provide insights in to the factors that causes problem to firm's competitive intensity and attractiveness. The factor "competitive rivalry within the industry" causes the emergence of competition over others. According to Malarvizhi et al. (2016), the concept of knowledge process capability has been propounded based on knowledge system model which views organizations as "knowledge systems", consisting of a series of socially interactive "knowledge processes". Hoffman et al. (2005) depicts knowledge process capabilities as a set of knowledge acquisition, conversion, application, and protection. Integration of these capabilities helps to implement KM system successfully. Assessing knowledge outcomes and its progression require continue performance monitoring of knowledge initiatives. On the other hand, organizational learning becomes a basic strategic factor according to the resource-based and knowledge-based view approach (Real et al, 2014) which needs to be emphasized for overall organizational development.

Past researchers have highly focused on examining knowledge dimensions and activities with organizational outcomes, organizational performance and effectiveness. There are numerous studies which attempted to evaluate the impact of these dimensions on knowledge performance. Mills and Smith (2011) examined linkage between KM capabilities and organizational performance and suggested to study other outcomes such as perceived benefit, customers' satisfaction etc. Andreeva and Kianto (2012) examined the linkages among KM practices, competitiveness and economic performance but learning practices are ignored in the study. However, which is later suggested as a scope for further research. Following same lines, Pandey and Dutta (2013) recommended exploring the relationship of KM infrastructure and other KM outcomes.

This review provides insights to KM related issues and arises some questions such as, how KM infrastructure facilitates organizational learning implementation. What is the major affect of enablement process and how enabling of learning practices affects knowledge performance? This interrogative outlook toward knowledge performance allows following linkages to be explored. Hence, the key objectives of the study were as follows.

- To study the linkage between KM infrastructure and organizational learning
- To identify factors that enables organizational learning through KM Infrastructure

- To study the linkage between organizational learning and knowledge performance

This paper presents an overview of KM and describes contribution of previous researchers along with future possibilities to be explored in the relevant area. An extensive literature review is carried out to elaborate KM infrastructure, organizational learning and knowledge performance. Based on the previous literature a conceptual framework has been proposed which represents the enablement of organizational learning through KM infrastructure and subsequently leads to knowledge performance. Finally, the paper discusses research findings and future suggestions.

2. Knowledge Management Infrastructure

KM infrastructure is comprised of culture, structure, technology and human resource which facilitates proper ambience to sustain competitive advantage in organizations. Lattemann et al. (2007) says that KM infrastructure is necessary to manage actual and useful explicit and implicit knowledge network for transferring knowledge. It can be viewed as a combination of the dimensions that incorporates culture, people, organizational hierarchy, structure, and IT (Gray & Durcikova, 2005). According to Lee and Choi (2003), KM infrastructure enables knowledge creation and major dimensions, i.e. culture, structure, people and IT which acts as KM process enablers. KM infrastructure incorporates collaboration, trust and learning as sub dimensions of culture. Another dimension, structure includes centralization and formalization as its elements. IT support is depicted as a sub-dimension of information technology and human resource consists of T-shaped skills (Lee & Choi, 2003).

Organizational culture as KM infrastructure dimension is an important factor to manage knowledge effectively. It has been assumed that individualistic culture supports knowledge hoarding, while cooperative culture supports sharing of knowledge (Leidner, 1999). Major indicators for culture include a visionary approach, expertise recognition, cohesiveness, and innovation (Peachey, 2006; Gold et al., 2001). Major three sub-dimensions of culture are collaboration, trust and learning. Collaboration refers to sense of helping colleagues specifically during the task and developing a cohesive environment to share ideas freely among organizational member. Hurley and Hult, (1998) defines collaboration as, the degree to which employees in a group actively collaborate with their colleagues. Organizations nowadays are highly emphasizing on interactive and collaborative culture which helps to develop mutual sharing and enhances communication among organizational members so that sharing of ideas and expertise can be simplified. O'Dell and Grayson (1999) describe collaboration as a key

determinant for creating and transferring knowledge. Collaborative culture affects knowledge creation through formal and informal system and helps to accelerate knowledge flow within (formal and informal) network and enhances knowledge exchange practices. Sveiby and Simons (2002) presented collaborative culture as an effective indicator for knowledge diffusion. Gold et al., (2001) mentioned that presence of collaborative culture is requisite condition to manage knowledge effectively. Sharing of ideas and expertise is required for proper execution of activities and most of the people hesitate to share their skills and expertise with other due to lack of trust. Lee (2001) asserts that without trust there will be no knowledge sharing. High level of mutual trust may lessen the risk of losing uniqueness and develop knowledge sharing (Roberts, 2000).

Organizational structure refers to functional hierarchy of the organizations. It includes incentive system, work design, managerial policy of the administrators, regulations and practices (Yang & Chen, 2007) which impacts learning and leadership (Collison & Parcell, 2004). Centralization and formalization are classified as sub-dimensions of organizational structure. Centralization refers to the degree to which the decision making ability is concerted (Caruana et al, 1998). Past researchers emphasize to enhance knowledge sharing by lessening centralized control structure. Flexibility in organizational structure allows knowledge sharing to be happen at different functional levels and it may also facilitate exchange of knowledge in a collaborative manner. Formalization refers to the degree to which decisions and work contexts are initiated by formal rules and standard policies (Lee & Choi, 2003). Managing and executing activities through existing guidelines and formal rules will definitely help to simplify the KM implementation process and it also proves to be helpful for enhancing team spirit and lessening disputes through proper code of conduct and organizing activities through formal set of standards.

KM infrastructure consist human resource dimension, which is remarked as the most valuable resource among all tangible and intangible assets. Essence of people within organization can be assumed as an axis around which all the activities move on. Personnel are supposed to be always familiar with organizational culture, problems and context; therefore they employ their capability in accordance with these factors. It constitutes T-shaped skill as a sub dimension which represents both deep and broad knowledge in a particular domain possessed by individuals help organizations to sustain its competitiveness by embedding knowledge into organizational practices. Human resource is considered to be the main drivers of KM (Yahya & Goh, 2002). Employees should be enthusiastic toward locating new resources and their maximum utilization where human capital plays a pivotal role to cope up with the

crisis if control mechanism is not very effective (Kumar, 2017). Knowledge resides within individual in the form of stored or expressed neural patterns that may be selected, activated, combined and represented through thoughts (Bennet & Bennet, 2008; Asoh et al., 2002). Poole (2000) noted that KM has shifted its emphasis from technology to human resource. In fact, knowledge system enhances the work performance of individuals and individual help to generate and embed knowledge in the organization (Carneiro, 2001). Individual and organizational knowledge asset are identified in numerous studies in the past and researchers consider it a most crucial competencies in today's competitive and ambiguous environment (Song et al, 1997; Hitt et al., 2000; Rogers et al, 2001).

Technology refers to fundamental information, technological structure and composed of hardware, software, database and network system, within and beyond organizations (Yang & Chen, 2007), which organizes the proper use of information. Technology is always human action oriented and ultimately depends on people for its existence (Sveiby, 2001). Information technology (IT) is highly connected to KM because it helps in disseminating structural knowledge, both vertically and horizontally. It also facilitates convenient access and utilization of the information. As a result, organizations always strive to implement KM with IT for achieving significant outcomes (Skyrme & Amindon, 1997; Alavi & Leidner, 1999, 2001; McDermott, 1999; Zack, 1999). Technology infrastructure includes IT support as its sub dimension as mentioned by (Lee & choi, 2003). Schroeder and Pauleen (2007) describes that practices generally, used to manage knowledge resources extends from core knowledge applications to IT mechanism. These practices might help to find solution to the problem and manage intellectual capital effectively. Application of advanced technological equipments accelerates KM capabilities which, gradually leads to high level performance (Tanriverdi, 2005). Previous researchers referred IT as a crucial factor in creating and transferring knowledge (Gupta & Govindarajan, 2000). Knowledge mapping can be adopted as a major trend in KM which refers to the process of capturing knowledge initially, acquired by individual and shared throughout the organization through IT applications (Gupta et al, 2000).

3. Organizational Learning

Organizational learning is collaborative in nature because knowledge is recognized to be fuzzy and messy (Allee, 1997). Past researchers have explored the linkages of learning and knowledge dimensions which are also known as KM process capabilities. Allameh et al. (2011) viewed knowledge literature from the viewpoint of creating, capturing, organizing and implementing knowledge. Nonaka and Takeuchi (1995) explored the process of knowledge

flow by stating that knowledge shifts from individual to group level and ultimately moves toward organizational level. Managerial support is considered as significant predictor for organizational learning practices. Learning facilitates avenues to acquire new knowledge and develop skills in order to cope up with changing requirements and increased employer's expectation. Ghavifekr and Kantathulla (2016) elicit education and learning is the key predictor in human capital, social, economic, technological, and political development of society.

Organizational learning constructs elaborated by Huber (1991) preferably knowledge acquisition, information distribution; information interpretation and organizational memory are discussed in this study. In fact, knowledge processes makes knowledge available in the form which can be easily assimilated and it also facilitates leveraging the individual's knowledge. Creation of new knowledge by firms is a prioritized issue these days. Knowledge creation is a process of integrating accumulated knowledge with existing one and developing new concepts, and dimensions through this integration. New knowledge may be shared from external sources in the form of newcomers (Matusik & Hill, 1998) and through different methods like acquisition and networks among firms (Hamel, 1991; Powell et al., 1996). Nonaka (1994) conceptualized a knowledge creation model that indicates acquisition as a process of transforming tacit knowledge to explicit knowledge.
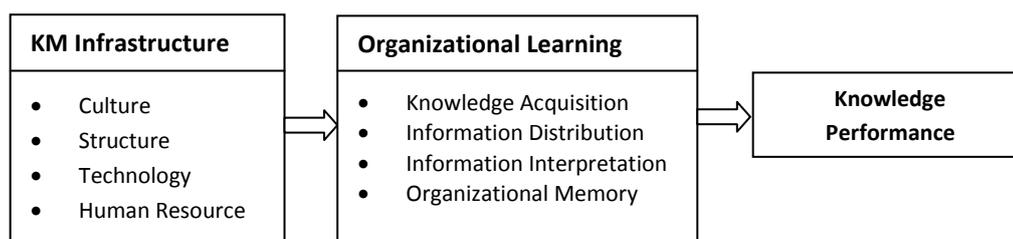
According to Albino et al. (2004) organizations with the help of both culture and technology improves information distribution, but role and significance of technology in information distribution depends on how it fits factors such as; the cognitive processes involved; the cultural environment place where knowledge is being transferred and ultimately the purpose of transfer. Previous researchers explored that culture is predictor of organizational performance (Denison, 1990; Gordon & DiTomaso, 1992). Knowledge is stored in databases, knowledge repositories, manuals and hardware devices. Information and communication technology facilitates storing and developing knowledge. According to Kuhn and Abecker (1997) knowledge can be stored, retrieved, and shared through database. Information interpretation and reuse is possible only when it is stored. Gammelgaard and Ritter (2005) recommended method to retrieve knowledge through knowledge retrieval means matrix. Organizational memory refers to retrieve knowledge through repositories, databases, documents, embodied knowledge and applies it for making decision, solving the problems, system automation and to fulfill organizational objective. Goll et al (2007) highlight the significance of establishing and maintaining a knowledge repository so that existing knowledge capabilities can be utilized as an internal source of innovation and strategic change in the organization. Deployment of knowledge solutions enhances the contribution of human capital

and it can be done by leveraging the learning practices from existing knowledge application (Ho, 2009).

4. Enabling Learning Practices through KM Infrastructure

According to Heisig (2009), major aim of KM is to handle existing and potential knowledge systematically and KM should emphasize on culture, trust, cooperation, and reward to promote knowledge sharing (Di Tienne et al, 2004). Key enablers of organizational learning are culture, infrastructure, organizational structure, leadership and commitment and these enablers are often considered to be critical success factors of KM that facilitates and strengthen these processes to managed properly (Chong, 2006). These enablers are indicated as pre-requisite elements for managing knowledge (Alavi & Leidner, 2001; Davenport et al., 1998). Pinho et al. (2012) describes facilitators as individual, socio-organizational, or technological factors that enhances knowledge flow to facilitate processes like acquisition, creation, sharing, and transfer of knowledge throughout the organizations. Skyrme (1999), elicit requirement of some contextual factors to manage knowledge successfully. These contextual factors refer to dimensions that enables and support in implementing knowledge activities and affect other knowledge activities in the organization.

As discussed earlier, probable indicators of KM and technical capabilities can affect KM effectiveness through two ways. First, use of appropriate technology for KM effectiveness and second; enabling technology to facilitate flexible organizational structure (Peachey, 2006; Orlikowski, 2000). This proposed framework shows linkages among KM infrastructure dimensions that enables organizational learning and leads to enhance knowledge performance.

KM Infrastructure	Organizational Learning	Knowledge Performance
• Culture • Structure • Technology • Human Resource	• Knowledge Acquisition • Information Distribution • Information Interpretation • Organizational Memory	

Figure 1: Research Framework

Source: Prepared by Authors

5. Knowledge Performance

Knowledge performance refers to process that enhances effectiveness in knowledge activities such as creating knowledge driven culture, developing employee skills, enhancing intellectual capital, integrating knowledge, skills and abilities (KSA) to improve product quality and delivering value to stakeholders. While organization facilitates training and development programs to employees, the prominence of value from a knowledge source and

knowledge content is somewhat distinct between experts and novice people in a particular knowledge domain due to differences in their existing knowledge level (Desouza et al., 2006). Lee and Lee (2007) found that people and socio-organizational factors (i.e. organizational structure, culture), and information technology represents significant KM capabilities that affect knowledge performance through several organizational learning practices like acquiring, transferring, and storing knowledge. While selecting KM performance indicator, it is important to consider the infrastructure that promotes KM performance. KM enabler does not only develop organizational member's knowledge, meanwhile, it also encourages them to share knowledge and experiences, which enacts the consistent and systematic development of organizational knowledge (Ho, 2009).

Zaim et al. (2007) explored that IT enhances KM performance it can also be measured by the level of improvement in organizational efficiency (Detert & Schroeder, 2000; Ostroff & Schmitt, 1993). Yu et al (2007) discussed predictors of KM performance like knowledge quality, level of knowledge sharing with KM implementation as a direct measure to assess KM performance. Organization's success depends largely on how effectively and efficiently organizational learning can be implemented. Moreover, knowledge capabilities are also considered as prevalent factors to implement knowledge processes effectively. Davenport et al. (1998) recommends that organizational KM that incorporates a standardized system and flexible structure leads to the implementation of knowledge development projects. KM contribution is significantly required as a prime indicator to monitor knowledge performance (Chamorro et al, 2003).

6. Discussion and Suggestions

This review has shown that dimensions of KM infrastructure enables organizational learning which further leads to enhance knowledge performance in the form of improving product quality, enhancing employee skill and capabilities, maintaining intellectual asset and adding value through effectiveness in knowledge utilization. Specifically, collaboration, trust, learning culture, formalization, flexible centralization, IT support and in depth knowledge of human resource facilitates knowledge process enablement. Consequently, these dimensions require a significant attention of practitioners. Organization should strengthen culture, structure, technology, people and infrastructure in order to achieve improved knowledge performance. Knowledge creation, sharing, transfer and application help to increase knowledge effectiveness. This study is limited to exploration of Lee and Choi (2003) KM infrastructure

dimensions. Future research should emphasize on other KM infrastructure dimensions and effect of other KM enablers can be explored.

7. Conclusion

KM infrastructure as an enabler provides significant contribution to enhance knowledge performance as end result. However, facilitating proper infrastructure in an organization is imperative for improving knowledge performance. This study contributes to the KM literature by exploring the linkages among KM infrastructure, organizational learning and knowledge performance. Therefore, one of the major conclusion of our research is, KM infrastructure enables organizational learning through collaboration, trust, learning culture, centralization, formalization, IT support and T-shaped skills. This study suggests managers to facilitate proper infrastructure to promote knowledge activities, effectiveness and knowledge performance.

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