KNOWLEDGE MANAGEMENT RESOURCES, INNOVATION AND ORGANIZATIONAL PERFORMANCE: A GAP STUDY

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ABSTRACT

The purpose of this paper is to review the literature on Knowledge Management Resources, innovation and Organizational performance to find out the gaps in the existing knowledge, which justify future research directions. Researcher has taken research papers from different industries and countries for study. Research articles published on Emerald as well as some other academic databases were collected. The search was conducted using such keywords as "knowledge management" "knowledge management and innovation" "knowledge management and organizational performance" "knowledge management and firm performance". The areas of knowledge process capability (acquisition, codification, storing, sharing, and application) and innovation are relatively well researched topics; whereas the impact of knowledge resources (knowledge management infrastructures and knowledge process capability) on innovation and organizational performance are poorly understood. By only using the secondary database, this study may not have allowed a complete coverage in the field of knowledge management. Yet, it is believed that the conclusion provide a precious understanding of the current situation in this research field. The study recommends a number of future research directions, which may motivate for more rigorous research in this field.

Keywords: *Knowledge management, innovation, organizational performance, knowledge process capabilities, knowledge infrastructure.*

Introduction:

Knowledge is very important in everywhere, whether that is a corporate level or personal level because knowledge gives light to the human mind, shape up the behavior, thinking and mold the attitude of the human *(Akram, Siddiqui and Ghuri 2011)*. The concept of knowledge management and its relation with innovation and business performance have been recognized by numerous authors *(Darroch, 2005; Ruiz-Jiménez, & Fuentes-Fuentes, 2013)*. Knowledge provides sustainable competitive advantage. Knowledge is itself an intangible resource; the effective management of knowledge enhances organization innovative performance and competitiveness. In the 20th century, capital, land, raw material and labor have been considered valuable asset than creating and applying knowledge but in 21st-century knowledge has become an intangible asset of any organization. Researcher adopted the following definition of knowledge, based on the work of Nonaka (1994) and Huber (1991). *"Knowledge is a justified personal belief that increases an individual's capacity to take effective action".* According to Nonaka and Takeuchi (1995), knowledge and innovation are crucial sources for organizational performance and competitive advantage.

Knowledge Management:

There are numerous definitions of knowledge management being presented in the literature. Nonaka

(1995) defined knowledge as a "dynamic human process of justifying personal belief towards truth. According to Japanese approach the nature of knowledge is "justified belief" on the other hand western philosophers argue that knowledge is "justified true belief". Devenport and Prusak (1998) stated that knowledge is neither data nor information but it is related to both, we are able to understand knowledge in the best way with the reference of data and information. Data, information, and knowledge are not interchangeable concepts. Further, they explained that data says nothing about how, why and its own importance. Data is important raw material for the creation of information. Researcher describes information as a 'message' and it can be in the form of a document, an audible and visible communication. Knowledge is a fluid mix of experience, values, beliefs and contextual information. In the word of polyani (1962), "we can know more than we can tell." Smith (2001) p.312 "Knowledge is a human, highly personal asset and represents the pooled expertise and efforts of networks and alliances". Devenport and Prusak (1998) give statement "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower's. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms".

Firstly polyani (1962) defined two type of knowledge
1) Tacit Knowledge
2) Explicit Knowledge.

Tacit and Explicit Knowledge:

Polyani (1962) defined tacit knowledge as a conceptual thinking. Tacit knowledge is that knowledge which we do not know we know and it's difficult to articulate, generally expressible only through action. Smith (2001) "tacit knowledge based on common sense and explicit knowledge is based on academic accomplishment. Smith (2001) stated that for tacit knowledge we do not need words. Explicit knowledge can be shared in the form of procedures, hard data, and standardized principles. Nonaka and Takeachi (1995) defined explicit knowledge as "knowledge of rationality". Polyani (1962) defined explicit knowledge is that knowledge we know we know, can be articulated, codified, stored, transferred through documents. (Carnerio, 2000) stated that in the 20th century, the return on investment came from physical assets to land, capital, machinery, labor etc. Today knowledge has become intellectual assets of any organization. Smit (2001) stated that explicit knowledge is 'know-what' and tacit knowledge is 'know -how'. Further, he explained that tacit knowledge is based on common sense and explicit

knowledge based on academic learning. People must use and share their tacit knowledge for knowledge revolution.

Knowledge Management definition given by numerous Authors:

Dalkir (2005) has given long definition but probably most complete, explanation of knowledge management "Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning." According to (Wiig and Grey1996) "knowledge has always been managed, at least implicitly. However, effective and active knowledge management requires new perspectives and techniques and touches on almost all facets of an organization. We need to develop a new discipline and prepare a cadre of knowledge professionals with a blend of expertise that we have not previously seen. This is our challenge!" (Grey, 1996) stated that "Knowledge management is a collaborative and integrated approach to the creation, capture, organization, access and use of an enterprise's intellectual assets." Knowledge Management is the strategy of getting the right knowledge from the right people at the right time and helping people share and put information into action in ways that help to improve organizational performance (O'Dell & Grayson, 1998). Gorelick &tantawy-Monsou (2005) defined knowledge management "A framework for applying structures and processes at the individual, group, team, and organizational levels so that the organization can learn from what it knows (and acquire new knowledge if required) to create value for its customers and communities. This Knowledge Management framework integrates people, processes, and technology to ensure performance and learning for sustainable growth". p126

Knowledge Management Infrastructure:

Numerous studies have suggested that knowledge infrastructure includes IT, people, structure, culture, organizational hierarchy *(Lee and Choi, 2003; Gray and Durcikova, 2005; lee and kim, 2012). Lee and Choi, 2003)* recommended that culture, structure, people, and IT are related enablers for KM, these four groups were chosen for study because each is treated as a significant facet for KM processes capability, i.e. knowledge acquisition, creation, sharing and knowledge transfer. Gold et al. (2001) proposed a modal to examine relationship between knowledge

process capability – acquiring, converting, application and protecting and knowledge infrastructure capability – social capital, culture, structure and technology. Lee and Choi (2003) developed a model to examine the relationship between KM enablers – structure, culture and technology – and KM process capability – acquiring, converting, application and protecting – and KM performance – KM satisfaction and effectiveness. The study found that (a) technology was a significant positive explanatory variable of knowledge acquisition, knowledge conversion, and protection, (b) organizational culture was a significant positive explanatory variable of knowledge management performance, and knowledge application, (c) structure was a significant positive explanatory variable of knowledge management performance, knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection, and (d) knowledge acquisition, knowledge application, and knowledge protection were significant positive explanatory variables of knowledge management performance. Lee, Kim & Kim (2012) have conducted research in Korea to examine the relationship between KM infrastructures, which include (cultural, structural, top management support, and technology) knowledge process capabilities (Acquisition, Conversion, Application and Protection) creative organizational learning, and organizational performance. They found that collaboration, learning culture, top management support, and IT support affect the knowledge process capabilities. Organizational learning play role, as a mediator in the relationship between KM infrastructure and organizational performance, which show the importance of KM infrastructure for organizational performance.

Knowledge Management Process capability:

Information and Knowledge need to be managed to get it from the right people to the right people. Information and knowledge have a little difference; the first stage of knowledge is often information. The Models of Knowledge management cycle explains how knowledge is captured, codified, processed, distributed, shared, applied and reuse in order to transfer knowledge into a valuable organizational asset. There are numerous models of KM process cycle presented in literature.
Meyer and KM Zack KM Cycle (1996) developed a modal**.** In Zack model, the network between each stage is designed to be logical and standardized. These stages are:
1. Acquisition,
2. Refinement,
3. Storage/retrieval,
4. Distribution,
5. Presentation/use.

Acquisition of Data or Information:

Acquisition deals with issues regarding sources of data or information such as scope, breadth, depth, credibility, accuracy, timeliness, relevance, Quality, cost, control, and exclusivity. The main focus on acquisition is to gain high-quality data.

Refinement:

Refinement results in added value to the existing information. Refinement may be physical (e.g. migrating from one medium to another) or logical (like restructuring, relabeling, indexing, and integrating) or cleaning up (like 'sanitizing' content so as to ensure complete anonymity…) or standardizing (e.g. conforming to templates of a best practice…)" (Dalkir, 2005 p. 30)

Storage / Retrieval:

Storage or Retrieval forms a bridge between acquisition, refinement and product generation. Storage can be physical in the form of paper record as well as in the form of digital (database, knowledge management software).

Distribution:

Distribution defines how to deliver product to end user end user (like fax, print, email) and   encloses not only the medium of delivery but also its timing, frequency, form, language, etc.

Presentation/Use/Application:

Context plays an important role in Presentation/use or Application stage. The performance of each step is evaluated here – for example, does the user have enough contexts to make use of this content? If not, the KM cycle has failed to deliver value to the individual and ultimately to the company. The Meyer and Zack model is one of the most complete pictures of the key elements engaged in the knowledge management model. Refinement is a crucial stage in the KM model and one that is often neglected.

The Bukowitz & Williams KM Cycle:

Bukowitz and Williams (2003) represent a knowledge management process framework that outlines how organizations generate, maintain, organize and expand a strategically correct stock of knowledge to create value.
Get Stage - it consists of seeking out information in order to make decisions, deal with massive info, match information need, solve the problem, know the resources.
Use Stage – it deals with how to combine information to innovate, decision-making and problem-solving. The focus is primarily on individuals and then on groups.
Learn Stage - points to the formal process of learning from experiences to create competitive advantage,

Learning in the enterprise is essential because it serves the transition step between the application of ideas and the generation of new ones.

Contribute Stage- it deals with encouraging the employee to post what they have learned to the public knowledge.

Assess Stage – it evaluates and map intellectual capital, defines the mission critical knowledge and compare with the future need.

Build/sustain Stage – it includes developing intellectual capital to keep organization viable and competitive

Divest Stage – In this stage organization removes knowledge assets which are not creating value.

The McElroy KM Cycle:

McElroy (1999) presented a Knowledge life cycle that consists of the processes of knowledge production and knowledge integration, it provides a clear picture of how knowledge is evaluated and show cognizant decision as to whether knowledge will be integrated into organizational memory. It has a main focus to identify the knowledge content that creates value to organization and employee.

Knowledge production- The primary processes are individual and group learning. Knowledge claim formulation, information acquisition; codified knowledge claim and knowledge claim evaluation

Knowledge Integration: Process by which organization introduce new knowledge claim to its operating environment and retire the old one. Conducted through teaching, knowledge sharing, training and others social activities, which communicate the understanding of new knowledge to the worker (replace or integrate with the old knowledge).**this cycle provides** the clear description of how knowledge is examined and a conscious decision is made as to whether or not it will be included in the organizational memory. One of the advantages of the McElroy cycle is that it provides a clear description of knowledge, how it is examined and a conscious decision is made as to whether or not it will be included in the organizational memory.

Wiig Model:

Wiig (1993) proposed a model which focuses on four conditions that need to be present for an organization to conduct its business successfully:

- **Building knowledge** – it obtains analyze, codify, reconstruct, and organize knowledge from external and internal knowledge sources
- **Holding knowledge** − Storing the information in tangible or intangible source.
- **Pooling knowledge** − Through intranets and knowledge management portals
- **Applying knowledge** − embedded in work process

### Integrated KM Cycle by Dalkir (2005):
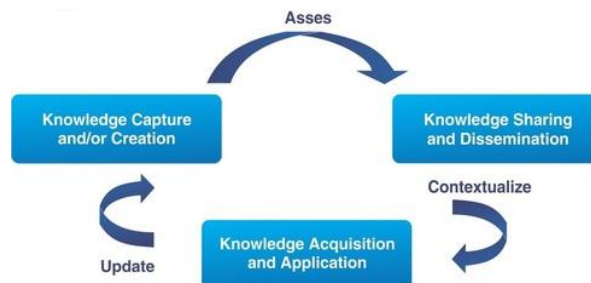
(**Source:** Dalkir, K., (2005). Knowledge Management in Theory and Practice. Burlington; Oxford: Elsevier/Butterworth Heinemann)

Dalkir has presented **Integrated KM Cycle,** has distinguished three major stages:

- Knowledge capture and/or creation.
- Knowledge sharing and dissemination.
- Knowledge acquisition and application.

Nonaka and Takeuchi (1998) introduce a model of knowledge creation as a self-transcendental process. In this model, they stated that "knowledge creation is a spiraling process of interactions between explicit and tacit knowledge" researcher further explain that the interactions between tacit and explicit knowledge lead to the creation of new knowledge.

FIGURE 1. Spiral Evolution of Knowledge Conversion and Self-transcending Process
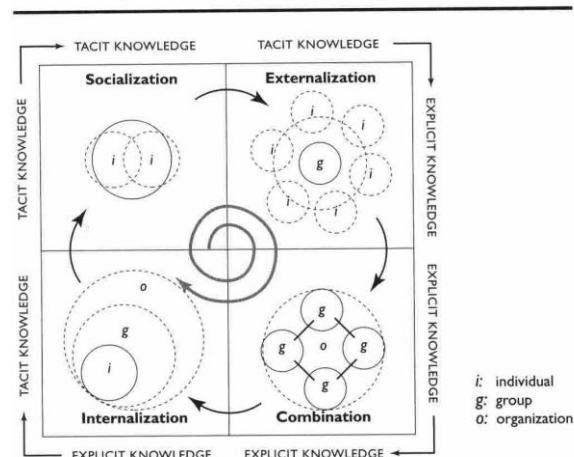
(**Source:** Nonaka, I., & Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. Colifornia Management Review)

Modes of knowledge creation and transformation as by Nonaka and Konno (1998)

1. Socialization (Tacit to Tacit):- socialization is one of the most powerful tools for human learning capacities, by observing and copying other behavior and belief.
2. Externalization (Tacit to Explicit):-It is difficult and important conversation mechanism. In externalization tacit knowledge is codified into explicit knowledge so that it can be easily understood by other.

3. Combination (Explicit to Explicit):- In combination we take explicit knowledge and make combination with other explicit knowledge and develop new knowledge

4. Internalization (Explicit to Tacit):- when explicit knowledge becomes our habit, it converts into tacit knowledge.

Davenport and Prusak (1998) defined four knowledge processes: knowledge generation (creation and knowledge acquisition), knowledge codification (storing), knowledge transfer (sharing), and knowledge application.

Alavi and Marwick (1997) define six KM activities:

1. Acquisition.
2. Indexing.
3. Filtering.
4. Classification, cataloguing, and integrating.
5. Distributing.
6. Application or knowledge usage.

Holsapple and Whinston (1987) identify more comprehensive KM processes, composed of the subsequent activities: procure; organize; store; maintain; analyze; create; present; Distribute and apply. From this we can conclude that organization must be aware of the complete process of knowledge flow. It can be within the organization or outside the organization. Numerous researcher define knowledge process capabilities (Alavi and Marwick (1997); Bukowitz and Williams (2003); Dalkir (2005); Davenport and Prusak (1998); Holsapple and Whinston (1987); Meyer and KM Zack KM Cycle (1996); McElroy (1999); Nonaka and Takeuchi (1998); Wiig (1993). Most of models are uttered in four phases begin with identify, create, generate or acquisition phase. Second phase include organization, bundling, assembling and mapping, Davenport and Prusak neglect this organization phase from their model. Phase three includes storage and forth phase addresses the ability to share or distribute the knowledge. Most of the models have four phases but in some model researchers include fifth phase also namely; application, use, exploitation, reuse of knowledge for organizational decision.

Innovation:

The basic objective of innovation is to create something new and different products, services and process which are easy to use, time saving, comfortable and more productive than earlier products. In recent years, innovation becomes the soul of business because through innovation organization produces best products and services. Innovation is also essential because of the drastic change in the test and preferences of the customers, that's why innovative products and services are the strongest weapons in the competitive market. In this competitive era, companies are compelled to innovate with new products and services in order to be successful.

According to (Carneiro, 2000) "The innovative efforts include the discovery, experimentation, development of new technologies, new products and/or services, new production processes, and new organizational structures" all these comes in innovative efforts. (Plesis 2007) defined that innovation includes the creation of new knowledge and idea to improve business performance. Innovation has a main focus to improve internal business processes and structures to create market-oriented products and services. Darroch, & McNaughton (2002) stated that all type of innovation required flexible and opportunistic organizations. Further they explained that incremental innovation required more flexible and opportunistic organizations. Akram, Siddiqui, Atif and Gauri (2011) stated that innovation is an activity and process of creation and implementation of new knowledge which helps to produce different products, services and process to fulfill the customer needs as well as innovation make process, structure and technology more sophisticated that can bring prosperity into the entire society.

Organizational Performance:

The relationship between knowledge management resource, innovation and organization performance has awakened interest among academics. Researchers have found a positive association between knowledge resource and organizational performance. According to Rubera and Kirca (2012) innovation affects the organization performance indirectly through its effects on the organizations market and financial position. Knowledge combination capability helps the firms to design efficient processes and fulfill the objectives for which they were created (Ruiz-Jiménez & Fuentes-Fuentes 2013). The impact of knowledge combination capability for organizations performance is indubitable; numerous studies stated that KM has positive impact on innovations and firm performance. Mills & Smith (2011) has conducted study in multi sector (manufacturing and service) and SEM has been used to find out the impact of knowledge resource on organizational performance. Knowledge resource includes knowledge enablers (organizational culture, organization structure and technology) and knowledge process capabilities (acquisition, conversion, application and protection). They stated that some "knowledge resources (e.g. organizational structure, knowledge application) are directly related to organizational performance , while others (e.g. technology, knowledge conversion), though important preconditions for knowledge management, are not directly related to organizational performance". p.156

Conclusion of the Study:

Knowledge management system provides a way to capture and store an organization data which is

developed or acquired by individuals and teams. In this era, Organizations in every field are compelled to innovative new & different products, best processes, methods to be a part of market. On the basic of review we can say knowledge process capabilities are effected from knowledge management infrastructures (cultural, structural, top management support, and technology) as stated by (Lee, Kim & Kim (2012) and innovation is also effected by knowledge management infrastructure and knowledge process capability. Organizational performances have direct relation with innovation but it has indirect relation with knowledge management resources.

On the basic of review, researcher has noticed that there are very few researches which have done on knowledge management resources, innovation and organizational performances. Knowledge management resource is the combination of knowledge management infrastructures (cultural, structural, top management support, and technology) and knowledge process capabilities.

As per review, Most of the research has done in there is a scope for research in underdeveloped countries.

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