

The Effects of Knowledge Management on the Process of Employee Innovation within Organizations

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Abstract - The need for organizations to innovate is highlighted throughout the management literature on innovation. Knowledge is considered as a potential key competitive advantage by helping to facilitate innovation within the organization. This paper focuses on the role of knowledge management in enhancing employee innovation in organizations. In particular, this paper attempts to review the innovation and knowledge management literature in a systematic way. From the literature review, this paper paves the way for future studies to further examine and develop the possible model which incorporates employee innovation and knowledge management. Further research is needed to consider investigating the effects of knowledge management on employee innovation.

Index Terms - employee innovation, knowledge management, innovation process

1. Innovation and Its Importance

Innovation is the introduction of new and improved ways of doing things at work. According to McAdam & Keogh[1], innovation is essential for organizational competitiveness and success. Yuan and Woodman[2] also claimed that innovation has been widely recognized as an important source of competitive advantage for organizations that want to prosper and grow. Therefore, it is not surprising that a significant amount of literature has been generated on the subject of innovation, which has become a broad concept that can be defined in many ways.

The literature on innovation is diverse and complex, and it covers many subject and research fields such as organizational behaviour, education and sociology. Meanwhile, Damanpour [3], Damanpour, Szabat and Evan[4] suggested, the theories discussed hold true in different circumstances relating to the types and stages of innovation.

To clarify the interpretation and usage of the construct of innovation, it is necessary to define the term “innovation” and what it is concerned with here. As King and Anderson[5] and West and Farr[6] suggested, the common features that underlie innovation include the concepts of novelty, potential usefulness to the organization, and implementation. According to the extant work including Pitt[7], Davenport, Jarvenpaa and Beers[8], Demerest[9], there are three broad categories of innovation identified in the literature:

- Strategic innovative management to assist the organization in the challenges faced by its environment;
- Management of innovative change initiatives;
- Innovation through knowledge creation and application.

Following Tushman, Anderson and O'Reilly[10], within each category, innovation can be ranked from incremental to breakthrough. While the first two categories have been widely addressed, few studies have examined innovation through knowledge creation and application. Therefore, given the importance of knowledge to innovation, this paper exclusively focuses on this area here: how innovation related to knowledge.

2. Employee Innovation within Organization

Innovative behavior by employees is at the root of every innovation. The previous studies including Lu and Li [11] suggested that employee innovation is important for organizations. To meet the needs of global competition and the uncertain environment, as Axtell ET al. [12] suggested, organizations need their employees to undertake not only basic duties, but also make extra efforts to act beyond the routine performance of their duties in order to engage in innovative behavior in work processes. This illustrates that the innovative behavior of employees deserves research attention.

The literature revealed the importance of organization's influences on employee innovation. Scott and Bruce[13], Hunter, Bedell and Mumford[14] highlighted that the generation of new ideas and the translation of these ideas into useful practices are functions of interactions between employees and situations. According to Anderson[15], a supportive work context plays an important role in supporting and encouraging employees' innovative efforts. It also suggests that management should consider their organizations' effects on employees if they are interested in maximizing their employees' innovative behavior in the workplace.

Specifically, Shalley and Gilson[16] suggested that for innovation to occur in organizations, management needs to support and promote it, as they have considerable influence over the context within which idea generation can occur. In this way, as Amabile[17] stated, the context in which an employee performs a task influences his or her intrinsic motivation, which in turn affects innovative achievement. Seibert, Kraimer and Crant [18] suggested that employees are most likely to engage in activities that promote their ideas when both a supportive work context is present and they have a proactive personality.

The present study addresses the research need by extending research on the influence of organization on employee innovation—in particular, understanding employee innovation from knowledge management's perspective. This

study is expected to advance the understanding of the process of employee innovation within organization from the perspective of knowledge management and pave the way for future studies in this field.

3. The Process of Innovation from Knowledge Perspective

Innovation could be viewed as a complex process that involves a set of investment possibilities. In this investment perspective, as Carneiro [19] suggested, knowledge must be considered a sort of capital. Prior work such as Harari[20], Nonaka [21], suggested that organizations that are able to stimulate and improve the knowledge of their human capital are more prepared to face today's rapid changes and to innovate in the domain where they decide to invest and compete. This indicates the importance of knowledge management for organizations to encourage their employees to innovate in the workplace.

Following Demerest[9], knowledge management includes new knowledge construction, knowledge embodiment, knowledge dissemination and knowledge use/benefit. This implies that knowledge management has the potential to be a catalyst for innovation within organization. In this way, as McAdam and McCreedy[22] found, effective systematic knowledge management can incorporate innovation drivers in key areas which will lead to increased business and employee benefits.

Within organizations, the emergence of innovation in the workplace depends on both employee innovation and team innovation. However, few studies have focused on the interaction between these two levels. From a process perspective and a knowledge perspective, this paper considers the process of innovation as an interactive process of transformation between the individual and team knowledge.

A. Classification of knowledge

For the purpose of this paper, the researchers suggest that there are three broad categories of knowledge identified in the literature: fragmented knowledge, internalised knowledge, and explicit knowledge.

Fragmented knowledge refers to the implicit knowledge gaining from outside based on learning and memory without any processing, as well as something found in the workplace including the observations of exceptive phenomenon or inspiration. Internalised knowledge is about new implicit knowledge generated by the innovator from the in-depth thinking and integration of the fragmented knowledge, as well as the long-term working experiences. When such internalised knowledge is recorded by tangible carriers such as document, audio, video, it is transformed to explicit knowledge which can be diffused between different parties. It is worth noting that the essence of fragmented knowledge and internalised knowledge is one of implicit knowledge.

The emergence of innovation through knowledge creation and application usually happens within the team. According to Jackson[23], teams become the common work unit for managing changes. The researchers classified the knowledge for innovation into six groups (see Table 1). Essentially, the

process of employee innovation can be understood as the interactive process of innovation through the transformations between these six categories of knowledge. This knowledge transformation process will be elaborated in the following section.

TABLE I Classification of Knowledge

	Explicit knowledge	Fragmented knowledge	Internalized knowledge
Employee level	employee's explicit knowledge	Employee's fragmented knowledge	Employee's internalized knowledge
Team level	Team's explicit knowledge	Team's fragmented knowledge	Team's internalized knowledge

B. The process of employee innovation from knowledge management perspective

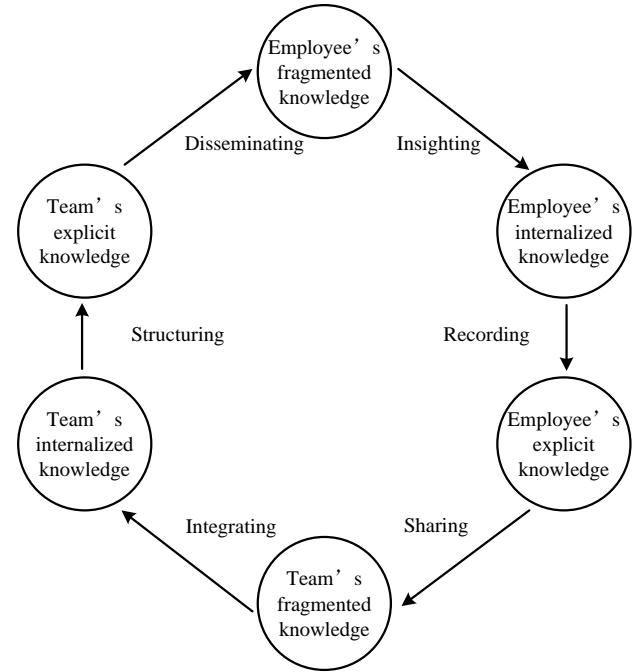


Fig. 1 The process of employee innovation

1) Employee's fragmented knowledge–employee's internalized knowledge

There are different sources of employee's fragmented knowledge. It can be sourced from information collected from Internet search engine and database, newspaper or magazines, or valuable information collected from formal or informal communications. After an intuitive grasp and a preliminary selection, those information and knowledge will become employee's fragmented knowledge which is only a temporary. When the employee receives an assignment, the assignment will be broken into several sub problems. At the same time, the employee will search for the potential useful fragmented knowledge gained before.

During employee fragmented knowledge–internalized knowledge transformation process, the employee will search for fragmented knowledge which can be used to solve the problem from the knowledge base in the head, and also absorb new information and stimulate inspirations from daily work. By integrating above elements, the employee will arrive at a solution–employee’s internalized knowledge via in-depth understanding and thinking.

2) *Employee’s internalized knowledge – Employee’s explicit knowledge*

Since the internalized knowledge generated via in–depth understanding and systematic thinking cannot remain forever on an employee’s memory, it will be recorded in different forms such as audios, videos, tables, figures, documents.

It means employee’s explicit knowledge needs tangible mediums as carriers. When employees talk and share their thoughts together, such knowledge generated from oral conversations cannot be seen as the transformation from employee’s internalized knowledge towards employee’s explicit knowledge unless they are recorded via tangible mediums.

3) *Employee’s explicit knowledge – Team’s fragmented knowledge*

As the extant work including Nonaka and Takeuchi [24] suggested, employee’s explicit knowledge is turning into team’s fragmented knowledge when employees pass their explicit knowledge onto others. Such sharing knowledge process usually takes the forms of group discussion, meetings or brain storms activities. During this process, explicit knowledge from different employees will be shared together without any group thinking. Those information and knowledge will be turned into fragmented knowledge at team level which is only a temporary.

4) *Team’s fragmented knowledge – team internalized knowledge*

Based on sharing knowledge and information with each other within team, employees will integrate the fragmented knowledge together to reach a solution. Such a process as telling stories about experiences is shared by all the employees within that team together, and it is about an interactive process of transformation between fragmented knowledge and internalized knowledge within team. It is worth noting that some knowledge will be stored in the team’s knowledge base for future use.

5) *Team’s internalized knowledge – team’s explicit knowledge*

Based on the group discussions, employees will reach an agreement about the solution and the relevant details. Such solution and agreements are teams’ internalized knowledge, which is an outcome of team innovation. The diffusion of such innovation can improve team efficiency.

It is noted that team’s explicit knowledge also needs tangible mediums as carriers. It is believed that diffusing and

sharing team’s explicit knowledge can facilitate the leaning and communication between employees.

6) *Team’s explicit knowledge – Employee’s fragmented knowledge*

Some team’s explicit knowledge will be turned into standard procedures and rules for learning and promotion following a top – down style within organization in order to improve efficiency. Other knowledge will be stored in knowledge base for future use. Based on such learning and absorbing process of employees, explicit knowledge at team level will be turned into employee’s fragmented knowledge for problem solutions.

Overall, previous studies such as Wetlaufer [25] pointed out that the knowledge transformation process for innovation which involves small – group discussions between employees within organization requires an open and conductive environment. This implies the importance of a supporting environment for encouraging knowledge sharing and employee innovative behaviour in the workplace.

4. Conclusions and Recommendations

The relevant literature suggested that innovation can be closely related to knowledge, and effective systematic knowledge management can enhance employee innovation in the workplace. Based on the literature review, this paper emphasized that the essence of innovation process can be viewed as a knowledge transformation process among employees within organization. Investigating the innovation process from the perspective of different knowledge transformation could be one possible direction for future studies.

From a practical perspective, there are some recommendations for business who are interested in facilitating employee innovation within organizations.

First, business managers could provide organizational support such as maintaining good management of the organization’s database, and providing training opportunities for their employees. By doing so, it might help to maximise employee innovative behaviour by providing them various sources of fragmented knowledge.

Second, investing in tangible reward and intangible recognition might encourage employees’ knowledge sharing activities and their enthusiasm in the workplace.

Third, given the importance of the environment’s effects on employee innovation, this paper recommends developing a good environment which encourages employees to share and communicate. A good environment might help to maximize employees’ potential to innovate and to foster the diffusion of new ideas at work. Additionally, managing knowledge base in an efficient way, and tracking employees’ learning process might also help to turn employee’s knowledge into team/organization’s knowledge.

Future research could consider synthetic interactions of different-level factors, including employee, team and organization levels on employee innovation, rather than investigate their influences separately. In particular, it is

recommended that future research examine the combined effects of such personal and contextual conditions on employee innovation through knowledge creation and application in the workplace.

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