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Knowledge Management Practices in Product Innovation: Case of Dairy Food Processing Sector in Colombo and Kurunegala Districts

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ABSTRACT

Growth rate of the dairy food processing sector has been increased day by day in Sri Lanka. As a mode of reaping superior dairy firm performances Knowledge Management (KM) practices and Product Innovation (PI) are the major strategies need to be improved. The purpose of this study is to identify the KM practices in product innovations within the dairy food processing sector in Sri Lanka. Data were collected from top level management in forty one dairy food processing firms in Colombo and Kurunegala districts in Sri Lanka by using a pre tested questionnaire. It was included forty questions which were mainly related to KM practices, product innovations and firm performances. KM was assessed on five major dimensions; knowledge generation, knowledge application, knowledge improvement, knowledge storage and knowledge share. Innovations were assessed on "New to the market","New to the firm" and "Improve or revise existing product" during the period from year 2009 to 2013. Pearson correlation was developed to identify the correlation. Results show that KM practices, knowledge generation, knowledge application, knowledge improvement, knowledge storage and knowledge share strongly and positively relates to innovations and innovations positively relate to firms performances. The study strongly suggests that KM practices should be increased to improve innovations in dairy food processing sector to reach sustainable superior firm performances in future.

KEYWORDS: Firm performances, Innovation, Knowledge management

INTRODUCTION

Sri Lanka's dairy food processing sector and their market linkages have developed in response to domestic demand for milk and dairy products. To gain competitive advantages from dairy food processing sector, firm must be flexible and effective. Business requirements always drive technological solutions such new technological instruments, new communication medias. In response to increasing customer demand and dynamic competition, companies are under high pressure to shorten time-to-market by providing dairy products to the customer for the economy of scope, to reduce time-to-volume via mass production for the economy of scale, and to decrease time-to-profit by increasing the efficiency of the entire life cycle for the economy of service.

Firms' sustainable competitive advantages require that the firms continuously differentiate their products and services from competitors (Chen *et al.*, 2009). However, it is no longer sufficient for firm to slowly improve their business operations and reduce their cost (Cong *et al.*, 2007). In an organizational environment innovation is often expressed through behaviors or activities that which are ultimately linked to the tangible action or outcome (Hult and Tomas, 2003).

As a result, knowledge is currently seen as factor of production along with land, labor, and capital (Numair and Baradei, 2012). It seems to be a most critical resource that any organization has. According to Hult and Tomas (2003) knowledge is "organized and systematic process of generating and disseminating information and selecting, distilling and deploying explicit and tactical to create an unique value that can be use to achieve a competitive advantage in the organization".

That sometimes allows the explanation, prediction, and control of physical phenomena. This is a very broad definition and includes factors such as skills, intuition, organizational culture, reputation. It is kind of "flow" concept; knowledge is able to be exchanged between the knowledge providers and demanders (Liu and Tsai, 2010). But most of the organizations do not know how they use knowledge. Thus, knowledge is the main item that could and should manage correctly to identifying and leveraging the collective knowledge in an organization to help innovations (Hall and Andriani, 2003)

KM is the set of structure, culture; technology and human recourse organize to deliver useful knowledge throughout organization. It is an information collection to

the right people at right time (Liu and Tsai, 2010).

Knowledge management involves effectively create, apply, improve, storage and share knowledge (Gold *et al.*, 2001) which shows there is an integration between knowledge management and innovation.

Knowledge creation refers to the degree to which the firm develops or creates knowledge recourses across functional boundaries (Liao *et al.*, 2010). The creation of knowledge recourses does not occur in abstraction from the current knowledge and capability of the firm (Alavi and Leidner, 2001). Creation of the knowledge across functional boundaries requires the capability to generate application from existing knowledge and to exploit the unexplored potential of new skills.

Application of knowledge is mainly concern degrees to apply knowledge recourses that are shared across boundaries (Liao *et al.*, 2010).

Lee and Choi (2010) believed that knowledge sharing is the activity of transferring or spreading knowledge to others from individuals, group and organizations. The sharing of knowledge recourses not only facilitate cross functional interaction but also allows the sharing of knowledge repositories among process participants. There by allowing greater collaboration and understanding of the entire process rather than having fragmented parts of the process (Liao *et al.*, 2010).

These KM activities collectively enable the firm to create new knowledge to share and distribute existing knowledge across functional boundaries and to utilize the shared knowledge for improving innovations. Therefore, it is important to identify knowledge management practices in product innovations to achieve firms' competitive advantages which are use in dairy food processing sector.

With this background, the specific objective of this study was to determine the relationship between knowledge management practices and product innovations in dairy food processing sector and thereby to evaluate the impact of knowledge management practices on firm performances.

METHODOLOGY

Theoretical Framework

KM practices can be measured in five scales: knowledge generation, knowledge application, knowledge improvement, knowledge storage and knowledge share. Here need to categorize how these factors affecting with product innovations. Innovations are mainly categorized as new product to world, new to the firm and modified product. This paper uses comparative and reflective methods to measures firm performances.

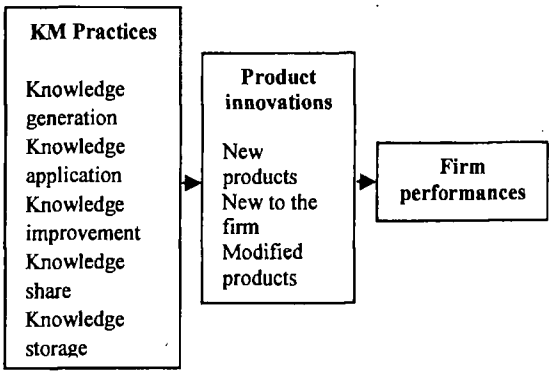

Figure 1. Theoretical frame work

There are two main hypothesis of the study.

H_1: KM practices have positive relationship to affect product innovations.

H_2: KM practices have positive relationship in firm's performances.

Data Collection

The study was basically dependent on psychometric values and beliefs. They are already hidden in the organization and cannot measure them directly. Therefore, a scale item was generated and for each psychometric characteristic.

Focus group discussions were initially carried out with managers, assistant managers prior to preparing the questionnaire. Prior to the real survey, a pilot survey was carried out, using a sample of five dairy firms in Colombo District and five dairy firms in Kurunegala District to validate the questionnaire.

Data were collected by face-to-face interviews with top level management in forty one selected dairy food processing firms in Colombo and Kurunegala Districts using random sampling technique. The questionnaire was included questions which were mainly related to KM practices, product innovations and firm performances.

The data sources modified in to five point Likert scale within strongly agreed to strongly disagreed levels. Each respondent was scored with the range from 1 to 5 based on the underlying meaning of the statement. The statements were categorized based on several values in KM, innovations and firm performances.

Data Analysis

The data were analyzed by Minitab 15.0 statistical package. Research hypothesis used to answer the research questions.

To test H_1 hypothesis average score for sub dimensions of knowledge practices were calculated for each firms. Mean scores were compared to see KM positively affect product innovations. Correlation table was developed to see what extent KM practices and product innovations are correlated.

H_2 hypothesis was tested by generating average scores of innovation data. Mean scores were calculated to gain positive application of KM in firms' performances. Correlation table was presented to see what extent product innovations and business functions correlated.

RESULTS AND DISCUSSION

Descriptive Statistics

The geographical levels of the data sample are shown in Figure 2. This shows that thirty nine percent firms got five million to ten million highest annual revenue. Ten percent firms got least average revenue with less than 2.5 million rupees.

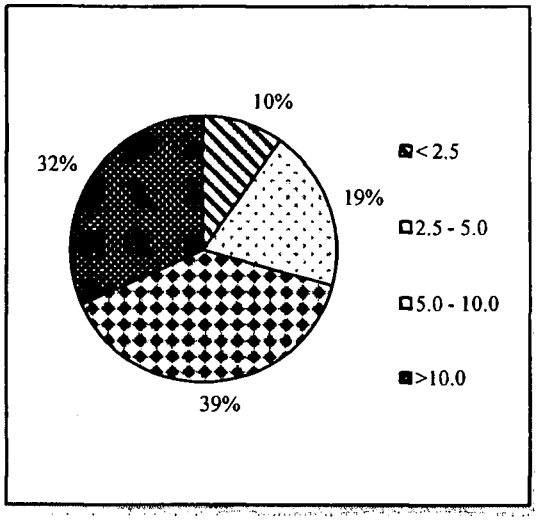

Figure 2. Average revenue of the firms

Most of the firms sell their dairy products in national level. That goes seventy six percent throughout the sample. Only seven percent sell their products to other countries. Seventeen present dairy firms sell their products within their geographical region. This mean most of the firms got their average revenue by selling dairy products within the country. It is clearly illustrate in Figure 3.

Product Innovations by Firms

Thirty four percent of the firms were developed innovations for their firms. According to the sample, sixty six percent of the firms were not considering about innovations. But improving existing products were done by all firms in the sample.

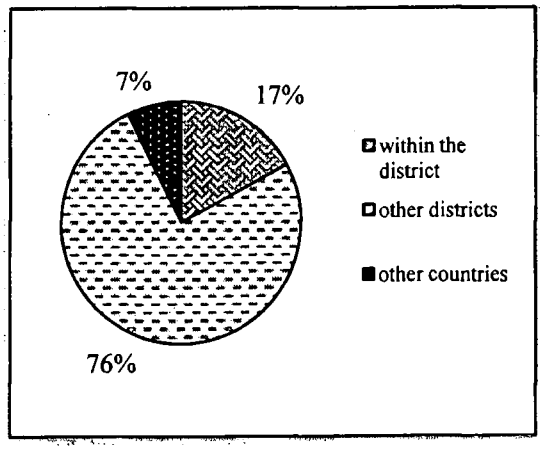

Figure 3. Product destinations

This figure 3 represents that majority of the firms sell their dairy products within the country. The competition of the competitors, consumer preferences were the major challenges faced by majority of firms. Developing a new product means it goes time to attract and stable in the market. It is an additional cost to the firms. The above details suggested that a firm with a capability in KM is less like to develop a new product for which it lacks the business revenue in high amount. Thus, ninety eight percent of the dairy firms try to modify the existing products than developing new product to market or to their firms. The firms' main target is to get high revenue. It can be achieved by modifying existing products to the market.

Mean Values of the Sample

The mean values of the data are given Table 1.

Table 1. Mean values of the sample.

Variable	Mean rank
K. generation	2.46
K. application	2.20
K. improvement	2.46
K. share	2.45
K. storage	2.53

This shows how firms show their perceptions on importance of KM and its dimensions. This results that the knowledge generation, knowledge application, knowledge improvement, knowledge share and knowledge storage are highly importance for the dairy firms' survival in the market.

Outcome of Pearson Correlation Analysis

Table 2 shows that how KM sub dimensions affect with the innovations. Their knowledge application and knowledge sharing are significant at 0.01 levels. Other sub dimensions are not significantly correlated. The main reason for these results can be understood by considering KM practices, knowledge application and knowledge sharing are the most significant factors that need to be maintained.

Knowledge application means the actual use of knowledge in product innovations. Generally firms create knowledge, but once it is created need to apply effectively. These results shows that the firms believe that knowledge application could and should be effectively apply. That's why knowledge application is significantly correlated.

Knowledge sharing refers to the degree to which the firm shares knowledge recourses across functional boundaries. When developing an innovative product not only top management but also other work groups in the firms allow sharing the knowledge. When considering the data thirty five present of firms use sharing knowledge within the employees in the firm. That's why knowledge sharing sub dimension is significantly correlated.

Table 2. Correlation between KM sub dimensions and innovations

Dimension	Person Correlation	P value
Innovations	1.00	
Generation	0.18	0.27
Application	0.54**	0.00
Improvement	0.24	0.13
Sharing	0.50**	0.00
Storage	0.29*	0.07

** *Correlation significant at 0.01 levels*
* *Correlation significant at 0.05 levels*

KM can be described as one of the foremost significant factor for improving firms' performances. When a firm can maintain best KM practices it will help the firm to develop innovations. Developing innovations are one of the best methods to increase firms' performances. Not only that but also spreading the KM within the firm increase the affectivity of the employees and it mainly affect the firm development. This was proved by the correlation between KM and firms' performances. Correlation is positively significant in 0.54 in 0.01 levels and got 0.03 p value.

CONCLUSIONS

The analysis mainly discovered the KM practices in product innovations in dairy food processing sector to gain firms' superior performances.

Innovations can be introduced as the key factor of increasing firm performances. For increasing the innovations in firms' new ideas, new methods need to be expanding. For that KM plays a significant role. The knowledge generation, knowledge application, knowledge improvement, knowledge storage and knowledge share; five KM practices need to be improving to manage knowledge within the firm. In this study the results shows that only knowledge application and knowledge sharing plays the significant role in Km practices. For that forty percent of firms, gather knowledge from top management. The firms afraid to gather knowledge through whole employee as they do not like to trust their employees. But, it is true that if the firms can gather knowledge through whole levels in the firm the innovative results should be increase than present.

However there was limited support for the view that a firm has to develop products new to the world. Firms are willing to increase their performances through modifying products but if firms can introduce new products to the world it will increase the consumer preference, discourage competitors and expand the geographical level of the firm. All these are some of the best performances of a dairy firm.

KM can be used to modify the existing firm routine. Expanding the products KM can be applied. As an example to modify existing dairy product the geographical level of the area, consumer wealth, can be measured by using KM.

As termination, this research found that dairy firms are effectively managing knowledge mainly, by using knowledge application and knowledge sharing more innovatively and consequently performed better. However, performances can further increased by improving knowledge generation, knowledge improvement and knowledge storage methods to have good innovative efforts.

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