# KNOWLEDGE MANAGEMENT PRACTICES IN APPAREL SECTOR



2 authors:

Chandana Perera
Sri Lanka Institute of Information Technology
36 PUBLICATIONS 265 CITATIONS
SEE PROFILE

Indra Mahakalanda
University of Moratuwa
7 PUBLICATIONS 18 CITATIONS
SEE PROFILE

# KNOWLEDGE MANAGEMENT PRACTICES IN APPAREL SECTOR

H.S.C. Perera
*Department of Management of Technology, University of Moratuwa, Sri Lanka*
hscp@mot.mrt.ac.lk

I. Mahakalanda
*Department of Management of Technology, University of Moratuwa, Sri Lanka*
motuom@gmail.com

## ABSTRACT

Apparel industry has become a premier foreign exchange earner of some developing countries including Sri Lanka. The manufacturers are facing tremendous pressure in the global market place and keen in implementing various performance improvement tools such as lean manufacturing, TQM and Six Sigma. Even though knowledge management (KM) has gained the popularity as a tool for enhancing performance, it seems KM is not much popular in the apparel sector. This research investigates the current status of knowledge management practices in apparel sector. A questionnaire survey along with some interviewing was carried out among 32 large scale manufacturers. Even though Knowledge Management is a novel concept in low tech labour intensive industries 60% of the respondents indicates that they are practicing knowledge management in their organizations. 20% respondents states that they have not heard about KM. Among the influential factors on knowledge management the apparel sector believes that people are more influential than technology and knowledge management process. Majority (60%) of the apparel companies have not understood implicit or tacit knowledge. Even though 40% of the companies are knowledgeable about tacit knowledge only 22.5% are aware of knowledge transfer process from tacit to explicit. However, none of them have formal process to convert tacit knowledge in explicit knowledge.

Keywords: Knowledge management, Apparel manufacturing, Performance improvement

## 1. INTRODUCTION

"The single greatest challenge facing managers in the developed countries of the world is to raise the productivity of knowledge and service works" (Drucker, 1991). Over the years knowledge has been known as a source of empowering firms to combat their rivals in the market place. Its validity and importance are much more crucial today than yester era. However to harness its potential one should manage it proactively like any other asset found in the firms. The knowledge management (KM) is being emerged as an interdisciplinary business model possessing the knowledge within the framework of an organization as its focus. Creating values to the firms' stakeholders through its processes using the knowledge base in its possession is simply known as knowledge management. Thus KM is the process of capturing and making use of an organization's knowledge assets any-where in the organization – on paper, in documents, in databases (called explicit knowledge) or in people's heads (called tacit knowledge). KM practices include knowledge creation, collection, storing, sharing, and application towards organizational survival through which organizations generate value from their knowledge based assets (Wiig, 1996).

In recent years many high-tech industries such as pharmaceutical, electronic component manufacturing and software have applied Knowledge Management to improve their productivity (Kremp and Mairesse, 2002). One can observe that there are number of research



*Proceedings of International Research Conference on Management and Finance,* University of Colombo Sri Lanka, December 2008. pp. 1-7.

work have been performed in relation to knowledge management practices in high tech manufacturing. However only handful of studies carried out to study how knowledge management practices are used or can be used in low tech labor intensive industries. Thus one could argue that there could be possibilities that some of the practices of KM used in technology intensive industries are equally applicable in low technology labor intensive industries and hence the performance can be reaped in low technology labor industries such as apparel, furniture, and printing.

Having notified as one of the oldest industries on the earth, rooting its origins to the inception of human civilization, initially known to be a basic human need but today it has evolved into much broader and complex industry. High level of customization of product and need of human touch for critical processes irrespective of use of high technologies are considered to be unique to the industry. If one focuses on the market structure of the global apparel market, United States of America accounts for more than 50% of global consumption giving second place to Europe. Even though every country possess its own apparel industry in its own rights in terms of levels of technology involvement, product and service variation etc, over the years these countries have experienced that domestic markets themselves unable to provide the expected levels of sustainability; whereby most countries have taken initiatives to produce apparel for export markets. With right strategies aiming at upgrading the quality of service levels, manufacturing capabilities, standards and competitive labour and material costs have given Asian countries the industry leadership.

At present, the apparel industry has become the top revenue generating source in Sri Lanka; in fact apparel industry is one of the most lucrative foreign exchange earning sources for the entire Asian region. In this context, existence of intense competition among rivals in the global market place and other factors have compelled these firms to seriously think about various aspects of improvement to take the lead among other. Among these performance improvement measures lean manufacturing, TQM and Six Sigma took major honours. However, it seems that there is no much popularity in Knowledge Management as a tool for improving the performance in the apparel sector. The amount of research done relate to above is below par. Thus it is worthwhile to study how KM practices are used and how KM can contribute to improve the performance in apparel manufacturing.

In order to achieve above purpose following objectives shall be met.

- To investigate the present levels of practice of knowledge management in apparel sector as one of the labour intensive industries.
- To investigate as how the knowledge management could influence the apparel sector manufacturing operations

The study is limited to four focus group survey taken from countries in Asian region and respective countries were selected taking into account the availability of data. Though the firms may possess knowledge regarding its stakeholders, products, processes, people etc., the research has focused on organizations' knowledge regarding people, product, process and customers. Unlike other industries this sector generally does not have super technologies, still it has complicated transformation processes including step-wise primary, secondary and or intermediate activities such as prototyping, pilot runs, sampling, procurement, etc. However, only key transformation processes such as procurement, planning, pre-production and manufacturing are to be considered in this study.

## 2. LITERATURE REVIEW

### 2.1. KNOWLEDGE AND KNOWLEDGE MANAGEMENT

Wiig (1996) defines knowledge as the insights, understandings, and practical know-how that we all possess is the fundamental resource that allows us to function intelligently. There are two types of knowledge: tacit knowledge and explicit knowledge, as supported by Duffy (1999), Nonaka (1998) and others. Tacit knowledge is the form of knowledge that is subconsciously understood and applied, difficult to articulate, developed from direct experience and action and usually shared through interactive conversation, storytelling and shared experience. Explicit knowledge, on the other hand, is easy to articulate, capture and distribute in different formats, since it is formal and systematic. Sunassee and Sewry (2003) regard knowledge as the human expertise stored in a person's mind, gained through experience, and interaction with the person's environment. Knowledge is also highly subjective, depending on a number of

factors such as culture, beliefs, values, insights, intuitions and emotions of the individual.

Although there are numerous definitions and classifications on knowledge and knowledge management given by many advocates, it is a widely accepted fact that knowledge is an asset which enables the organizations to create a sustainable competitive advantage over their rivals in the global market place.

Knowledge Management has been given different definitions by different scholars and practitioners. Wiig (1996) defines Knowledge Management as the systematic approach on explicit and deliberate building, renewal and application of knowledge, to maximize an enterprise's knowledge related effectiveness and returns from its knowledge assets. Duffy (1999) defines knowledge management as the identification, growth and effective application of an organization's critical knowledge. However, Takeuchi (1998) presents a contradictory view on Knowledge Management which advocates less control over employees and involving everyone in the organization to create and share knowledge. Takeuchi's (1998) philosophy is supported by Sveiby (2000a) who argues that knowledge is not something that can be managed, and that the term to be Knowledge Focused is preferable. Sveiby (2000b) also states that knowledge focused managers do not manage knowledge, since this is impossible, but they should mange the environment in which knowledge is created.

Wiig (1996) presents knowledge management as a cycle which consists of several processes: knowledge creating, identifying, collecting, organizing, storing, sharing, adopting and using. Nonaka and Takeuchi (1995) explain knowledge creation as a spiraling process of interactions between explicit and tacit knowledge. They present four patterns of knowledge conversion in knowledge creation: socialization (tacit to tacit), externalization (tacit to explicit), combination (explicit to explicit) and internalization (explicit to tacit).

A key element of KM concept is requirement to address people, process and technology issues in tandem and not focus any one element. Specific approaches to knowledge management vary from firm to firm and there is no one single way for all organizations. Technology is 10% of the effort required; process is 20% and 70% being people/cultural issues. A well-designed and executed knowledge strategy will take us a long way towards meeting organizational goals and objectives. At the same time, the absence of a knowledge strategy may very well restrict the success of the organization (Bhatt, 2000).

Bixer (2001) states that it is all about managing the leadership, organization, technology and learning aspects of internal and external intellectual assets through retention and collaborative sharing of knowledge for the purpose of improving performance and inspiring innovation throughout an enterprise.

Though the concept of knowledge management is not a brand new concept to the man kind, the usage and requirement for its applicability has a considerable demand today than it was decades back. Ever becoming complexities in demand and supply along with continuous advancement of technology making competition more and more intense and changing nature of relationships among stakeholders of businesses, the business entities compelled to re-think about their competitive strategies. In this context knowledge management not only helps in bottom line savings but it creates range of non-quantifiable value to the organizations. According to the advocates comment on knowledge management, fostering innovation and creativity in an organization ranks at the top among above non-quantifiable values that creates by knowledge management. Rumizen(1998) suggests that many organizations already have began to recognize the need to manage the knowledge assets to meet the business needs. This argument of importance of knowledge management is further strengthened by Quintas et al. (1997) stating that lot of innovations depends on knowledge which has long been known but not applied to the current problem.

## 2.2. KNOWLEDGE MANAGEMENT IN MANUFACTURING INDUSTRY

According to Kremp and Mairesse (2002), in high-tech manufacturing industries such as the pharmaceutical industry, aeronautical and space construction, and electronic component manufacturing 40% to 45% of companies implemented policies to foster knowledge sharing, to motivate employees to stay with the firm or to establish partnerships for knowledge acquisition. Some 30% implemented a written policy. These policies do not concern low technology sectors such as clothing and leather, home equipment, publishing, printing &

reproduction, and the wood and paper industries as much. The dissemination of knowledge management methods was roughly twice as low as in high technology sectors. Nissen and Levitt (2002) pointed out that knowledge is unevenly distributed through most of the enterprises in high tech industries such as aircraft and software and then knowledge flow is critical to organizational performance.

Yang et al. (2006) investigates the effect of knowledge management on a firm's innovation capability. Knowledge acquisition and innovation are particularly examined for their impacts on innovation capability in high technology firms in China and the effect of innovation capability on long-term corporate growth is also assessed. Results show that the innovation capability of high technology firms is significantly related to knowledge acquisition and innovation in these firms. The innovation capability also has been shown to positively contribute to long-term corporate growth.

Kim et al. (2003) suggest a method of analyzing knowledge flow by using a process-based approach. To abstract organizational knowledge inherent in business processes, they adopt the concept of knowledge flow, which enables knowledge transfer among workers. They present new categorization of knowledge and then propose a process-based knowledge-management framework for manufacturing.

Sveiby (1998) points out the value of intangible assets are greater than tangible assets even in labor intensive industries points out the importance of knowledge transfer among shop floor workers. Also he highlights that when product is more towards consumer goods and when cater for globalize customer base knowledge management has greater impact even within the labor intensive industries. Hirsch-Kreinsen et al. (2005) have studied policy and innovation in low tech industries and conclude that low and medium technology industries contribute more than 90% to knowledge economy through continuous process upgrading and improved design skills even though many argue that high tech industries are the major contributors of the new knowledge economy.

## 3. RESEARCH METHODOLOGY

### 3.1. CONCEPTUAL MODEL

This research aims to investigate the current knowledge management practices in apparel sector and its influence on operations. In order to investigate above the research is conceptualized using the models in Figure 1.

The framework, shown in Figure 1 was created using elements representing knowledge categories, knowledge management functions and operations (Wig, 1996; Sveiby, 2000a and others). The framework was formulated after referring the work done by different advocates to the subject.

Fist we investigate the importance of knowledge areas for the manufacturing and how far KM practices are implemented in the apparel sector. Then we investigate how the KM practices influence the apparel industry operations.

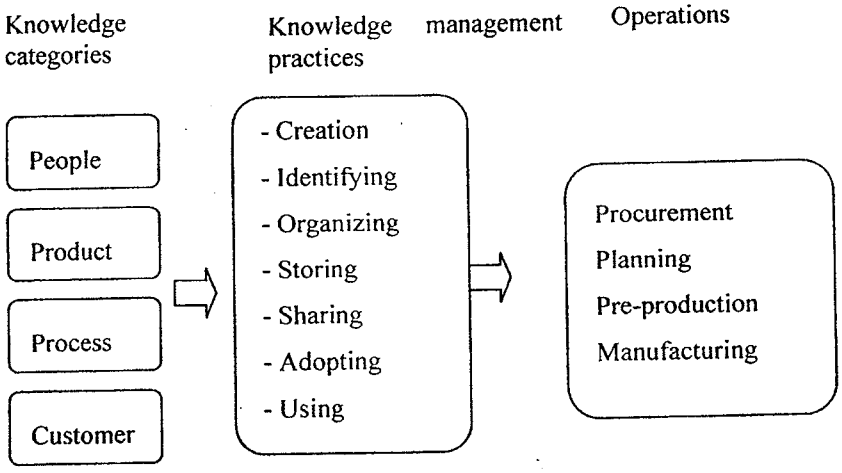


Figure 1: Conceptual framework

## 3.2. DATA COLLECTION AND SAMPLING PLAN

According to research objectives and conceptual framework, the data was collected from apparel operators in Sri Lanka, India, Jordan and Indonesia. Attention was given to large scale manufacturers, thus 10 manufacturers from each country were selected as sample lot making the total size to 40. Selection of sampling was done under simple random sampling but prior to select the sample whole population was stratified as large scale manufacturers and small and medium scale manufacturers. Attention was given to large scale manufacturers in each country concerned.

A questionnaire survey is used to collect data. The questionnaire was designed to achieve the objectives and in accordance with the conceptual framework. KM practice was measured on a five point Likert scale: "strongly disagree" to "strongly agree". The questionnaire was sent to 40 large scale manufacturers. Data collection was limited to large scale manufacturers since there is very rare opportunity that KM is used by the small companies which do not follow the best practices in the industry. Such companies mainly focus on other widely used performance improvement tools to solve their burning problems. All questionnaires were directed to one of the senior managers of the company. Thirty two completed responses were received for the analysis.

## 3.3. DATA ANALYSIS

To achieve the purpose of the study and satisfy the stated objectives, statistical techniques were employed to analyze the survey data.

To analyze the first framework which achieves the first objectives, the descriptive statistical techniques were used to analyze the survey data of the sample.

Inferential statistics were used to analyze the second objective where correlation and regression tools were utilized with relevant statistical tests.

## 4. RESULTS AND DISCUSSION

In order to investigate the present levels of practice of knowledge management in apparel sector, following measures were analyzed. Even though Knowledge Management is not much popular concept in low tech labour intensive industries, Figure 2 shows that 60% of the respondents indicated that they are practicing knowledge management in their organizations. 20% respondents states that they have not heard about KM.

In the context of Knowledge Management there are different categories of knowledge: knowledge on product, knowledge on process, knowledge on customer, knowledge on people, etc. Table 1 presents the importance of these knowledge categories as mentioned by the apparel companies.

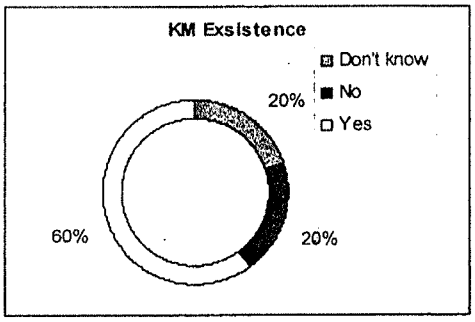


Figure 2: Existence of KM in apparel industry
Source: Survey data, 2006

Table 1: Importance of knowledge categories

| Knowledge | Mean | Std. deviation |
|---|---|---|
| People | 3.62 | 0.239 |
| Process | 3.56 | 0.282 |
| Product | 3.71 | 0.213 |
| Customer | 3.77 | 0.270 |

The above results show that knowledge on customer is considered as the most important knowledge in apparel manufacturing having received a highest mean 3.77 (1-5 point scale). Among the influential factors on knowledge management the apparel sector believes that people are more influential than product and process. Majority (60%) of the apparel companies have not understood implicit or tacit knowledge. Even though 40% of the companies are knowledgeable about tacit knowledge only

22.5% are aware of knowledge transfer process from tacit to explicit. However, none of them have formal process to convert tacit knowledge in explicit knowledge.

Level of implementation of knowledge management practice in apparel industry is shown in Table 2. Mean in all cases is greater than 3, which means that there exists KM practice in the apparel industry.

Table 2: Level of implementation of KM practices

| KM Practice | Mean | Std. deviation |
|---|---|---|
| Creation | 3.67 | 0.34 |
| Identify | 3.59 | 0.30 |
| Collecting | 3.64 | 0.31 |
| Organizing | 3.65 | 0.26 |
| Storing | 3.79 | 0.26 |
| Sharing | 3.61 | 0.35 |
| Adopting | 3.81 | 0.37 |
| Using | 3.57 | 0.37 |

Table 3 depicts respondents view on influence of KM on operations of apparel industry (1- no influence, 5 – heavy influence). All means are greater than 3 reflecting that KM positively influences the operations of apparel sector. Further, there exists a significant positive correlation (0.279, p=0) between KM practice and overall operations performance according to statistical data analysis. Further, significant and positive correlations could be identified between knowledge storing and procurement (0.411), knowledge using and pre-production (0.427) and knowledge creation and using practices (0.492).

Table 3: Influence of KM on operations

| Operations | Mean |
|---|---|
| Procurement | 3.61 |
| Planning | 3.68 |
| Pre-production | 3.81 |
| Manufacturing | 3.56 |

## 5. CONCLUSIONS

Knowledge management practices are reasonably implemented in the apparel industry. Apparel manufacturers consider knowledge on the product is more important than the other knowledge categories while considering that people are more influential in KM implementation. Even though they have understood the importance of tacit knowledge there is no effort for converting tacit knowledge into explicit knowledge. Apparel manufacturers believe that KM practices influence operations such as procurement, planning, pre-production and manufacturing. Even with in an industry like apparel there could be a variation in labour intensity. Thus the research could be further extended by introducing another parameter to represent the intensity of labour and investigating how KM behaves with labour intensity.

## REFERENCES


Bhatt, D. (2000). *Excellence model and knowledge management implications.* Retrieved: October 19, 2006, from http:// www.eknowledgecenter.com

Drucker, P. (1991). The new productivity challenge. *Harvard Business Review, 69*(6), 69-80.

Duffy, N. (1999). Benchmarking knowledge strategy. In leveraging knowledge for business performance, In N. Duffy, A. Jooste, and L. Whittaker (Ed.), *Knowledge In Action* (pp. 211-228). WITS Business School, Johannesburg.

Hirsch-Kreinsen, H., Jacobson, D. and Robertson, P. (2005). Low-tech industries: Innovativeness and development perspectives, *A Summary of a European Research Project, PILOT Project Consortium.*

Kremp, E. and Mairesse, J. (2002). *Knowledge management in the manufacturing industry – an asset for innovation,* Retrieved December12, 2006, http://www.industrie.gouv.fr/accueii.htm

Kim, S., Hwang, H. and Suh E. (2003). A process-based approach to knowledge-flow analysis: a case study of a manufacturing firm. *Knowledge and Process Management, 10*(4), 260–276.

Ref No: 2.2.9 (10)


Nissen, M. and Levitt, R. (2002). Dynamic models of knowledge-flow dynamics, *CIFE Working Paper No. 76*, Stanford University, November.

Nonaka, I. (1998). The knowledge-creating company. *Harvard Business Review on Knowledge Management*. Harvard Business School, Publishing, Boston.

Nonaka, I. and Takeuchi, H. (1995). *The knowledge-creating company*, Oxford University Press, New York, NY.

Quintas, P., Lefrere, P., Jones, G. (1997). Knowledge management: a strategic agenda. *Long Range Planning, 30*(3), 385-91

Rumizen, M.C (1998). Report on the second comparative study of knowledge creation conference. *Journal of Knowledge Management, 2*(1), 77-82.

Sunassee, N. and Sewry, D.A., (2003). An Investigation of Knowledge Management Implementation Strategies, *Proceedings of SAICSIT.*

Sveiby, K-E. (1998). *Intangible revenues,* Macmillan.

Sveiby, K.-E. (2000a). *What is knowledge management?* Retrieved November 14, 2006, from http://www.sveiby.com.au/

Sveiby, K.-E. (2000b). *Knowledge management - The viking way.* Retrieved October 15, 2006. from http://www.sveiby.com.au/

Takeuchi, H. (1998). *Beyond knowledge management: lessons from Japan.* Retrieved October 15, 2006, from http://www.sveiby.com.au/LessonsJapan.htm

Wiig, K.M. (1996) On the Management of Knowledge, *Position Statement for Knowledge Management Forum,* Retrieved November 14, 2006, from http://www.km-forum.org/what_is.htm

Yang, J., Rui, M. and Wang J. (2006). Enhancing the firm's innovation capability through knowledge management: a study of high technology firms in China. *International Journal of Technology Management. 36*(4), 305 - 317