knowledge sharing tendencies of people as well as unable them to understand the importance of the same.

6. There is lack of maintenance of records of intellectual property among textile units which is probably due to absence of an organized setup for knowledge management. Further it has been seen that there is no trend of giving more importance to intellectual assets of the units rather than physical assets.

CHAPTER 10

SUMMARY AND RECOMMENDATIONS

Business scenario has undergone a massive change in recent years thus changing the outlook of economies across the world. Last decade has seen accelerated growth of knowledge based industries and knowledge work. It has also witnessed the ever-increasing
onslaught of competition and change. Intangibles have become highly important factors in determining organizational effectiveness. The changing business scenario and the role of information technology has made it imperative to take a new look at existing business systems, policies and structures. Knowledge therefore has become the most crucial resource and how an organization manages it, makes all the strategic difference.

The Present study on Knowledge Management in Textile Industry of Punjab has been aimed at exploring the current status of knowledge management in textile industry of Punjab.

Researcher has defined knowledge as an outcome of reasoning of human mind that enables effective action.

Knowledge management has been defined as the deliberate process of capturing, creating, storing, retrieving, renewing, updating and diffusing the knowledge into business to create value, attain competitive advantage and improve business performance.

10.1 RELEVANCE OF STUDY

In chapter two, the review of existing literature has resulted into following:

7. Knowledge management is a new concept and is still evolving. It is still in infancy stage in our country.

8. Knowledge management can not be ignored and sooner or later a firm has to become aware of this concept and its
implementation to sustain the competitive advantage.

9. In India penetration of knowledge management is limited to few organizations that too in some sectors only. It is yet to make its mark in all industries of our country.

10. Textile industry is a pillar of Indian Economy and is undergoing huge changes ever since expiry of Agreement on Textiles and Clothing. As new opportunities for trade with other countries have arisen, more challenging it has become for this industry to keep pace with changes in domestic as well as international environment to maintain competitive advantage and expand globally.

11. Recession (in the year 2009) has been another major change which has hit export units allover the country, and due to this sudden change, the cost cutting practices were suddenly in demand, making clever use of knowledge even more important.

12. No research has been undertaken regarding knowledge management practices in textile industry of Punjab so far although studies are available in other sectors like automobile, software, pharmaceuticals, steel etc.

All this is a reflection of the existence of gap for study of knowledge management in textile sector. This makes the rationale for this research work.

10.2 OBJECTIVES OF STUDY
The principal objectives of the study are as follows:

7) To study the imperatives and trends of knowledge management in the textile industry.

8) To identify the knowledge vision of selected companies.

9) To study the tools and techniques of knowledge management in textile industry.

10) To study the effectiveness of knowledge management system in the organizations.

11) To study the penetration of knowledge management in the organizations.

12) To relate knowledge management with the performance of organization.

The study is limited to 24 companies in Punjab. Sampling basis is judgmental. Based upon the annual turnover, units have been divided into three categories. Units with low turnover (upto 200 crore) are categorized as Group 1, units with turnover ranging from 201-500 crores (medium level) have been categorized as Group 2 and units with turnover of more than 500 crores have been categorized as Group 3. These three groups shall be referred as G1, G2 and G3 henceforth.

10.3 RESEARCH METHODOLOGY: Following steps were undertaken for carrying out present research:

**Selection of Sample:** As the present study is focused on textile industry of Punjab, twenty four textile units were selected, on the
basis of judgmental sampling. The selected units have their presence in different parts of textile value chain which includes spinning, weaving and readymade garments.

Data was collected only from managerial personnel. Managers were categorized in Top level, Middle level and Junior level. Top level management comprises of Chief Executives, Senior Vice-Presidents, Vice-Presidents; Middle level includes Senior Managers, Chief Managers, Managers and Deputy Managers while junior level includes Assistant Managers. Total number of respondents (N) was 240. The demographic factors such as size of the unit, total number of employees, product category and markets served were taken into consideration.

Size categorization and categorization of units on the basis of markets served was done by using cumulative cube root method.

**Sources of data:** The secondary data was collected from various sources like libraries (The British Library Chandigarh, Panjab University main library, Library of University Business School- Panjab University, M.S. Randhawa Library-Punjab Agriculture University Ludhiana, Library of Punjabi University Patiala and The Browser- Chandigarh), Govt. publications (various reports published by ministry of textiles, CII and CII etc) and publications from international agencies (World Bank, APQC etc). Literature was also collected from internet (using surfing facility providing free access to journals of international repute in Panjab University Library and Thomas Gale database available through website of British library and website of
To carry out research, primary data was then collected from 240 respondents with the help of well-structured questionnaire. Collection of primary data was a challenging task, as questionnaires were administered and collected personally.

**Questionnaire design:** A well-structured questionnaire designed by the researcher with lots of inputs from academicians and experts was used as data collection tool. Initially 40 items with 124 statements were selected. Each of the items was operationally defined and an initial set of statements developed, these were further refined on the basis of preliminary and pilot studies.

Items were developed on the basis of literature search as well as discussions with managers, knowledge professionals and academicians. The items were then presented to experts for content validity check, clarity of wording and appropriateness. Items were retained on the basis of consensus of the judges. In the rough draft 35 statements were selected for trends of knowledge management, 31 statements for knowledge vision, 24 statements for tools and techniques of knowledge management, 9 statements for knowledge penetration, 17 statements for effectiveness of km systems and 8 statements for knowledge and performance were selected. The questionnaire also contained some questions relating to the name of the company, number of employees in the organization, turnover of the organization (in Rs.), and markets that the company serves i.e. domestic or international, product category of the company i.e. industrial goods, consumer goods or both and
title of the respondent. As there were no previous research studies in the area of knowledge management in textile industry of Punjab, the questionnaire items had to be specifically generated for this study. Pilot study and preliminary studies were conducted and the final draft of questionnaire was made.

The final questionnaire had total 30 items including 20 statements for trends and imperatives of knowledge management, 15 statements for knowledge vision, 16 statements for tools and techniques of knowledge management being used in organizations, 28 statements for effectiveness of knowledge management systems in organization, 13 statements for knowledge penetration, and 6 statements for performance and knowledge management. All statements were tested on five point Likert scale except the statements for tools and techniques being used for knowledge management in the organization for which multiple choice answers were given and respondents had to rank the options. The final questionnaire was much small, brief and to the point to make it convenient for the respondent to give appropriate replies in less time consuming manner to the various questions being asked.

Main study: The main study as discussed earlier was conducted in 24 textile units of Punjab. 240 knowledge workers (at managerial level only) were taken as respondents. Out of 24 units, majority (16) are located in and around Ludhiana. Two units are located in Dera Bassi, one in Lalru, one in Chandigarh, one in Jallandhar and one in Phagwara. Two such units are located in Amritsar.

Analysis of data: The collected from 240 respondents was organized into a master table. To analyze the data collected, various statistical
methods were used. Descriptive statistics was used to calculate mean, and ranks. Cumulative cube root method was used to categorize units on the basis of the turnover and markets being served. On majority of questions one way ANOVA (Analysis of Variance Test) was applied. SPSS Software was used for all statistical analysis.

10.4 RESULTS OF THE STUDY: From the present study, findings has been made regarding knowledge management in textile industry of Punjab as well as a comparative analysis of three groups within the industry i.e. G1, G2 and G3. The findings are presented below.

10.4.1 Knowledge management in Textile Industry of Punjab: Following observations have been made in textile industry of Punjab:

Objective 1: Imperatives and trends of knowledge management in textile industry of Punjab.

Ever increasing competition followed by changing needs of customers are the most important changes in textile industry responsible for knowledge orientation of firms. Globalization is the third major change in this context. Advent of information and communication technology is also important albeit to lesser extent.

Reducing cost and new product development are two most and equally important stimulants for knowledge management. Unlike changes which are more concerned with external environment, stimulants are responsible for triggering knowledge orientation within the firm.

Know-how and know-what are the most important forms of knowledge in textile units taken for study. Know-why and know-where are moderately important. Most important areas of knowledge application are customer
relationship management. This is followed by research and development and innovation.

Sharing knowledge and best practices is the most important focal points of knowledge with lot of scope for knowledge application followed by research and development/innovation.

A comparison regarding **Imperatives and trends of knowledge management in G1, G2 and G3** shows that ever increasing competition is the most important change among G1 and G3 whereas changing needs of customers is the most important change for G2 responsible for knowledge orientation. Second important change for G1 is globalization, whereas this is the third factor in order of importance for G2 and G3. Changing needs of customers is the third important change for G1. For G2 and G1, the second important change is increasing competition and changing needs of customers respectively. All three groups have rated advent of information technology as the fourth change responsible for knowledge orientation.

New product development is considered as the most important stimulant for knowledge in G1 whereas this is rated as second major stimulant by G2 and G3. Cost reduction is the biggest knowledge stimulant for G2 and G3 and for G1 this is the second important stimulant.

Know-how, know-what and know-why are the most important forms of knowledge in all units (G1, G2 and G3). Know-where is dominant form of knowledge in G2 and G3 and know-whom, is considered important by G2 only.
Most important area of knowledge application in three groups is customer relationship management. This is followed by research and development and innovation.

Sharing knowledge and best practices is the most important focal points of knowledge in all categories; G1, G2 and G3 followed by research and development/innovation. Capturing/recording experiences is third important factor existing only in G1.

**Objective 2:** Knowledge vision as envisaged by top management in textile industry of Punjab.

Competitive advantage is the biggest factor responsible for knowledge creation. Drive from top management to innovate and changes in the markets are next important factors which propel the process of knowledge creation.

Customers are most important for majority of the units. Hence most important role of knowledge as envisaged by top management for next five years is capturing and leveraging the knowledge of customers. Further, customer information is considered to be the biggest knowledge asset by all units. Innovation is next in terms of importance.

External knowledge focus is important for majority of the units. This signifies that majority of the units believe in capturing the knowledge (knowledge acquisition) rather than creating it.

A comparison regarding knowledge vision of G1, G2 and G3 has led to the outcomes that the frequent changes in the market is the most important factor triggering knowledge creation in G1; whereas in G2 and G3, the tendency to acquire competitive advantage is responsible for knowledge
creation. For G1, competitive advantage is second important factor for G1. But for G2 and G3 drive from top management to innovate is the second important factor. For units in G1 category, drive from top is the third significant factor for knowledge creation but for G2; the third factor is frequent changes in the market.

Most important role of knowledge as envisaged by top management for next five years is capturing and leveraging the customers’ related knowledge in all groups. Acquiring and leveraging competitors’ knowledge is second important role as envisioned by top management of G2.

Acquisition of knowledge (from external sources) is highly important in G1 and G3 whereas in G2 not much importance is given to external or internal focus of knowledge.

Customer information is considered to be the biggest knowledge asset by all groups, followed by innovation.

**Objective 3:** Tools and Techniques being used in textile industry of Punjab:

Use of intranet is very uncommon in textile industry.

All the information of the companies is not integrated and hence not available to employees on company intranet giving an indication of low penetration of knowledge.

Environmental scanning is the most commonly used technique for knowledge creation. Data mining is the next important technique.
After action review is the most commonly used technique for knowledge sharing followed by sharing best practices in textile units taken for study.

Knowledge harvesting is the most commonly used technique for managing and organizing knowledge in textile industry of Punjab. This is followed by knowledge audit.

**A comparison among G1, G2 and G3 regarding tools and techniques being used shows** that use of intranet is very uncommon in G1, G2 and G3.

There is no integration of business related information in any of the groups.

Data mining and environmental scanning are most commonly used techniques for knowledge creation in all the groups.

It has been observed that preferences of three groups vary as far as techniques used for knowledge creation are concerned. After action review is the most commonly used technique for knowledge sharing in G1, while it is second preferred technique in G2 and G3. Techniques used for knowledge sharing are story telling (for G2) and sharing best practices (G3).

Knowledge harvesting is most commonly used technique for managing knowledge in three groups. Second preferred technique for this purpose is knowledge mapping in G1, and knowledge audit for G2 and G3.

**Objective 4: Effectiveness of knowledge management systems in textile industry of Punjab:**
Environmental scanning is considered to be the best technique used for knowledge creation. This is followed by data mining.

The most effective technique of knowledge sharing is considered to be after action review. Sharing best practices is moderately important technique.

Knowledge harvesting is considered to be the most effective technique when it comes to organizing and managing knowledge. This is followed by knowledge audit.

Inadequate reward for contribution is the biggest barrier faced by most of the textile units which hinders the knowledge creation.

The existing knowledge system in all the textile units needs to be reviewed. Though the existing system is ranked moderately important as far as its accessibility is concerned. The extent of agreement for various aspects of existing knowledge system including its efficiency, capacity to yield desired results, tuning with the existing culture, its being meant for people at all levels is low and ability to meet knowledge needs of every employee is low. This characterizes the low penetration of knowledge in most of the textile units.

A comparison among G1, G2 and G3 regarding Effectiveness of Knowledge Management Systems indicates that environmental scanning has been rated as the best technique used for knowledge creation by G1, G2 and G3. This is followed by data mining. Business simulation is used in G3 but to very limited extent.
The most effective technique of knowledge sharing is considered to be after action review by all groups. Identifying and sharing best practices is moderately important for G1 and G2 while for G3, story telling is next best technique.

G1 and G2 have ranked knowledge harvesting to be the most effective technique when it comes to organizing and managing knowledge. This is followed by knowledge audit which is moderately important. But in G3, knowledge audit seems to be more preferred technique as compared to knowledge harvesting.

Inadequate reward for contribution and use of knowledge is the biggest barrier faced by most of the G1 and G2 units which hinders knowledge creation. As far as G3 is concerned, this variable is but somewhat important, showing that lack of reward is not much of a hurdle in knowledge creation activity in G3.

Three groups (G1, G2 and G3) agree to the statement that existing knowledge system needs to be reviewed. G1 agrees to the fact that existing knowledge system is accessible to all and easy and efficient to use. In G2 the major characteristic of existing knowledge system is its being meant for people at all levels of management whereas in G3, existing knowledge system meets the knowledge needs of most of the employees.

**Objective 5: **Extent of Penetration of Knowledge in textile industry of Punjab:
Top management is the most important knowledge centre in most of the units. Mid level managers are next important knowledge centers. Lower level managers are not considered important knowledge centers, which leads to the conclusion that extent of knowledge penetration in textile industry is very low.

Not many problems are faced during knowledge implementation as all problems listed have been given least importance. Knowledge enrichment culture in most of the firms is characterized by active learning from customers. Willingness to share knowledge is given the least importance showing lack of knowledge sharing culture in these firms.

As automatic integration of interactions done with customers/suppliers is almost missing, it is showing near absence of such practices in textile industry.

As only some of the information is readily available throughout the organizations in most of the firms, it can be concluded again that penetration of knowledge in most of the units is low.

A comparison regarding extent of penetration of knowledge in G1, G2 and G3 shows that top management is the most important knowledge centre in three groups. Mid level managers are next important knowledge centers in G2 and G3. In G1, mid level managers are not considered as important knowledge centers.
Not many problems are faced during knowledge implementation as all problems listed have been given least importance by G1, G2 and G3.

Knowledge enrichment culture in all the groups is characterized by active learning from customers. In G2, emphasis is given on both: active learning from customer as well as from competitor. In G3 in addition to learning from customers and competitors, learning from supplier is also considered important. It shows that G3 has better knowledge enrichment culture.

As automatic integration of interactions done with customers/suppliers is given least importance in G1, G2 and G3. it shows the absence of such practices in most of the units.

Only some of the information relating to marketing and customers is readily available in majority of the units in three groups G1, G2 and G3 indicating low penetration of knowledge.

**Objective 6: Knowledge and performance in textile industry of Punjab:**

The common point of agreement amongst all the units is that imparting knowledge surely improves the performance.

Almost all the units have very well developed and appropriate systems to train and develop their employees where training is imparted as per the requirements of business.
Almost all the units face problems in measuring results of imparting knowledge.

Lack of motivation to show knowledge related behavior in majority of the firms is common complaint. This factor is responsible for poor knowledge sharing culture.

There is no inclusion of knowledge related behavior in performance appraisal system. This is a big deterrent to knowledge sharing tendencies of people as it unable them to understand the importance of the same.

There is lack of maintenance of records of intellectual property among textile units which is probably due to absence of an organized setup for knowledge management. Further it has been seen that there is no trend of giving more importance to intellectual assets of the units rather than physical assets.

**A comparison regarding knowledge management and performance in G1, G2 and G3 has led to the conclusion** that all groups (G1, G2 and G3) strongly accept the fact that there exists a positive link between improvement in performance and imparting knowledge.

Majority of the firms in G1, G2 as well as G3 have a system to develop human expertise. Training and development programmes are conducted in house and frequently.
There is lack of motivation in context of knowledge related behavior of employees among three groups. Top management does not recognize or reward the knowledge sharing/using behavior displayed by employees.

In the absence of standardized procedure, measuring results of knowledge implementation is a common major problem as seen in G1, G2 and G3.

In majority of the units among all groups the management does not include knowledge related behavior in performance appraisal.

There is no regular maintenance of records of intellectual property of the units and neither is given equal importance as that of other physical assets.

10.5 RECOMMENDATIONS

After going through the findings of the study, following recommendations can be made to bring the effectiveness of knowledge management initiatives in textile industry of Punjab:

1. Use of Information and communication technology (this includes internet, intranet, company website and e-commerce etc) in most of the units is very low. Most of the units are technically well equipped but low on use of IT. This results into various outcomes e.g. lesser availability of business related information on intranet, the prevalence of which cause delay in
decision making and low knowledge penetration. To overcome these hurdles the textile units need to be more techno savvy.

2. The knowledge focus of most of the units is external which leads to capturing knowledge from outside and lays lesser emphasis on creating knowledge internally. This hinders the development of individual competencies/ expertise and tacit knowledge of employees remain unused. To leverage on these points, the focus of knowledge creation should be internal. This can also lessen the expenditure done on capturing knowledge externally to certain extent.

3. The lack of adequate reward to encourage knowledge related behavior is a big problem being faced by most of the units. This can be related to lack of motivation too. Top management should introduce such rewards which can be monetary or non monetary in nature.

4. Knowledge centers in almost all the units are found to be the top management and to certain extent; middle management. This shows low penetration of knowledge. This should be overcome with use of IT, intense communication and involving lower level employees in decision making wherever applicable.

5. Knowledge enrichment culture shows very low score for willingness to share knowledge. This is negative sign and hampers the learning and use of each others’ tacit knowledge.
This too can be tackled with introducing reward system, use of IT and other motivational measures.

6. Only some of the information is available online. To encourage the knowledge sharing online and faster decision masking most of the information should be available on intranet.

7. Measuring results to ascertain the extent of success and monetary benefits of knowledge related programmes is a major problem. As there is no standardized procedure for these measurements, companies can select their own parameters to measure the success of these initiatives.

8. There should be inclusion of knowledge related behavior in performance appraisal system. This will ensure that employees take interest in contributing, using and sharing knowledge.

9. There should be regular conduct of knowledge audit to assess the gap between the existing and required knowledge of employees. Action should be taken to bridge these gaps. Employees showing betterment in knowledge related behavior should be then rewarded. As knowledge may become redundant after sometime, knowledge audit helps keeping it updated.

10. Almost all the units require their existing knowledge system to be reviewed. A formal department catering to the knowledge
needs of the firm can be established which can help maintaining the relevant knowledge, its diffusion into business process, up dating the knowledge and avoiding information overload. It can also focus on knowledge processes like socialization, externalization, combination and internalization by encouraging knowledge sharing.

11. Focus on leveraging suppliers and competitors knowledge should be more; it will encourage inter unit knowledge transfer which would further lead to organizational effectiveness.

10.6 LIMITATIONS OF THE STUDY

No research initiative is without certain limitations. This study also has its own share of limitations. The following are the limitations of present research work.

1. The research study has been conducted in twenty four textile units in Punjab. This sample might not portray an accurate representation of the textile industry scenario on a national level.

2. While extreme caution has been exercised to avoid the pitfalls like perceptual differences arising out of individual viewpoints, some biases on the part of the respondents might, still have crept in.

3. Few respondents might have given incorrect information due to shortage of time, lack of interest or to conceal their identity.
4. While reviewing the existing literature it was found that knowledge creation and knowledge sharing are vast areas and these can constitute independent research projects. But this could not be undertaken as a part of present study due to time and cost constraints, thus making it another limitation of study.

10.7 SUGGESTIONS FOR FUTURE RESEARCH

1. The present study evaluates the knowledge management in textile industry of Punjab. A comparative study including more states may be undertaken.

2. The study can be further extended to other knowledge intensive sectors (manufacturing and services) in India. This will understand the knowledge position of these sectors and areas of improvement for the same.

3. In depth focus studies on knowledge management practices carried out at organization level can be great source of learning for top management of various companies.

4. In order to enhance organizational effectiveness, these thirty items can be further, independently studied to understand their individual impact on organizational performance.

BIBLIOGRAPHY