generalists’ business overview. General Managers need to be active in managing the entire business and not just those activities that are directly affected by knowledge.

CHAPTER 3
RESEARCH DESIGN

During review of existing literature on knowledge management, a clearly perceived need for studying the knowledge management in textile industry of Punjab emerged. To undertake the study a research framework was made. This chapter contains a detailed account of the whole process involved in carrying out present research.

3.1: RELEVANCE OF STUDY:

The extensive literature survey in chapter two brings out the following issues:

1. Knowledge management is a new concept and it is still evolving. It is still at an infancy stage in our country.

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

3. 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.
4. 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.

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

6. 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.

3.2 OBJECTIVES AND SCOPE OF STUDY
The principal objectives of the study aim to have an insight on knowledge related aspects in the units undertaken for research. These include: to study the imperatives and trends of knowledge management in textile industry; to identify the knowledge vision of selected companies; to study tools and techniques of knowledge management in textile industry; to study effectiveness of knowledge management system in organizations; to study penetration of knowledge management in organizations and to relate knowledge management with the performance of organization. The study is limited to 24 textile units in Punjab. The flow chart given below represents a stepwise detail of the research process undertaken.
3.3 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 on 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.

3.3.1 Profile of Sample: This includes various characteristics of the units selected for study. These include size, markets served (domestic or international), number of employees and type of the product (consumer goods or industrial goods).

Size categorization of sample: Based upon the annual turnover, the units were 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. By applying the cube root method the categorization of the units has been done as under.

<table>
<thead>
<tr>
<th>Size</th>
<th>Range (Crore Rs.)</th>
<th>No. of respondents</th>
<th>%age</th>
<th>Average Size (Crore Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.1
Categorization of units*
As seen in table 3.1 out of 24 units’ average size of G1, G2 and G3 categories are (in Crore Rs.) 100.46, 382.14 and 2125 respectively. The number of respondents in G1, G2 and G3 were 130, 70 and 40 respectively.

**Distribution of units according to markets served:** Units undertaken for study were operating either in international market or domestic market or in both. Table 3.2 (next page) shows the distribution of units according to markets served.

**Table 3.2**

**Distribution of units on the basis of markets served**

<table>
<thead>
<tr>
<th>Size</th>
<th>Upto 200</th>
<th>201-500</th>
<th>Above 500</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>130</td>
<td>70</td>
<td>40</td>
<td>240</td>
</tr>
<tr>
<td>G2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>240</td>
</tr>
</tbody>
</table>

*Using cumulative cube root method*
As can be seen from table, two units in G1 operated only in international market, one operated in only domestic market whereas eight units operated in both domestic as well as international markets. In G2, one unit had operations in international market and six units operated in both, international as well as domestic markets. No unit in G2 operated exclusively in domestic market. In G3, none of the unit operated exclusively in domestic or international markets. All the six units had operations in both markets. Overall it can be seen that three units operated exclusively in international markets i.e. export units and twenty units catered to both domestic as well as international markets. Only one unit catered exclusively domestic market.

**Distribution of units on the basis of number of employees:**

Table 3.3 given on next page presents the distribution of units on the basis of number of employees.

Out of 24 units undertaken for study, ten units had more than 1500 employees. Three units had 1500 employees whereas seven units had employee strength of 1000. Only four units had 500 employees.

**Table 3.3**

<table>
<thead>
<tr>
<th>Size</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Up to 500</td>
</tr>
<tr>
<td>G1</td>
<td>4</td>
</tr>
</tbody>
</table>
As seen in table above, in G1, four units had 500 employees and four had 1000 employees, three units had employees in the range of 1001 to 1500. No unit in G1 had more than 1500 employees. In G2, two units had employees in the range of 501 to 1000 and five units had more than 1500 employees. In G3, only one unit had employees in the range of 500 to 1000. Five units had more than 1500 employees. No unit in G2 and G3 had less than 500 employees or employees in the range of 1001 to 1500.

**Distribution of units on the basis of product category:** Out of 24 units, 12 had industrial goods as primary products, 8 had consumer goods as primary products while 4 had both industrial as well as consumer goods as primary products.

As seen in table 3.4, in G1, six units had products only for industrial use and five units dealt in the products exclusively for consumer. No unit dealt in products in both the categories. In G2, five units manufactured products for industrial use only, whereas only one unit made product for consumers. One unit made both types of products.
### Table 3.4

**Distribution of units on the basis of product category**

<table>
<thead>
<tr>
<th>Size</th>
<th>Industrial</th>
<th>Consumer</th>
<th>Both</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>G2</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>G3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>24</td>
</tr>
</tbody>
</table>

In G3, only one unit dealt in exclusively industrial products, two units dealt in consumer products only and three units dealt in both, industrial as well as consumer products.
3.4 SOURCES OF DATA:

Before setting up objectives and to have knowledge of previous research done so far in the field of knowledge management, an extensive review of existing literature was done. Both primary and secondary data was collected to present a comprehensive analysis of knowledge management in textile industry.

3.4.1 Secondary 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, CITI 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 social sciences research network), magazines, company websites and annual reports.

3.4.2 Primary data: To carryout research, primary data was then collected from 240 respondents with the help of a well structured questionnaire. Collection of primary data was a challenging task, as questionnaires were administered and collected personally.

3.5 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 variables was operationally defined and an initial set of items developed, these were further refined on the basis of preliminary and pilot studies.

A five point Likert scale was constructed with response categories ranging from strongly agree (5) to strongly disagree (1). 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.

3.5.1 The preliminary study: Managerial staff and knowledge professionals from the different organizations were interviewed using a preliminary
questionnaire, which evolved out of extensive literature review and discussion with experts. This was discussed with twenty respondents the responses of whom were analyzed to ratify the questionnaire and gain clarity over the items being used and the type of response received. The information thus gained helped in further modification of the questionnaire and clarification of the concepts involved.

3.5.2 The pilot study: On the basis the results of the preliminary study some major changes were made in the questionnaire. Items that respondents found highly technical and difficult were removed. Also items lacking clarity and facing validity problem were removed. The length of the questionnaire was reduced.

Pilot study was conducted on forty respondents from managerial staff. The main objective of study was to finalize the items to be included in the main study. In addition, it was also meant to incorporate any changes suggested by the respondents in the final version of the questionnaire. The questionnaire was personally administered to respondents. Researcher personally explained the objective behind questionnaire and sought the suggestions from respondents. The respondents were encouraged to clarify doubts and give their comments or suggestions about the questionnaire. Average time taken to fill the questionnaire by each respondent was approximately twenty five minutes.

3.5.3 Refining measures: One common observation was about the length of the questionnaire. Items were again analyzed, and those which seemed to evoke doubtful responses or which seemed to need clarification were noted. Also some items were repeated at certain places. These too were noted down. All such items were subsequently withdrawn from the questionnaire.
3.5.4 Questionnaire: For remaining items, reliability test was performed after completion of pilot study and refining measures. Reliability can be defined to the extent to which a variable is consistent in what it is intended to measure. Several measures of reliability can ascertain the reliability of the measuring instrument. In the present research, the reliability was determined by using Cronbach’s Coefficient alpha as shown in the table 3.5. The value of Cronbach’s alpha was found to be 0.947. An alpha value of 0.60 and 0.70 or above is considered to be the criterion for demonstrating internal consistency of new scales and established scales respectively.

Table 3.5

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.947</td>
</tr>
</tbody>
</table>

As the value exceeded the minimum requirement, it is thereby demonstrated that all the items and statements included in the questionnaire are internally consistent.

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 for
statements for tools and techniques being used for knowledge management in the organization for which multiple choice answers were given and ranking was done.

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.

3.6 MAIN STUDY

The main study as discussed earlier was conducted in 24 textile units of Punjab. 240 knowledge workers were taken as respondents from managerial level. 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.

The data was collected through questionnaire developed which was personally administered in all organizations either individually or in small groups. In some of the cases questionnaire was sent via e-mail and later discussed telephonically by the researcher with respondents. Some of the respondents kept the questionnaire after discussing it and filled it later due to shortage of time and mailed a scanned copy of the same. Care was taken in all the cases to establish rapport with the respondents and they were requested to fill the questionnaire only after a detailed presentation was made to them about the nature and purpose of the study. The respondents were assured complete confidentiality and anonymity, especially with
reference to their organization/management. They were invited to clarify any doubts regarding any term in the questionnaire. All this was expected to yield a high degree of response authenticity. Several of them showed keen interest in understanding the knowledge management concept which is so far not very common in the textile industry. Some additional inputs were also obtained by researcher during these discussions.

3.7 ANALYSIS OF DATA

The data 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.

3.8 LIST OF COMPANIES: Following units spread across state of Punjab were undertaken for study:

1. Aarti International Ltd. Ludhiana
2. Arisudana Ltd, Ludhiana
3. Bhandari Hosiery Exports, Ludhiana
4. Cheema Spintex Ltd, Lalru
5. Duke Fashions (India Ltd), Ludhiana
6. ESSMA Group of Companies, Amritsar
7. JCT Ltd. Phagwara
8. Jindal Cotex Limited, Ludhiana
9. Malwa Industries Ltd, Ludhiana
10. Nahar Spinning Ltd. Ludhiana
11. OCM Group, Amritsar
12. Oswal Spinning Mills Ltd. Ludhiana
13. Oswal Woollen Mills, Ludhiana
14. Rana Polycot Limited, Lalru
15. Setia Group (T.C. Spinners), Lalru
16. Shamken Spinners, Dera Bassi
17. Shital Exports, Jallandhar
18. Shiwaya Exports, Ludhiana
19. Sportking Group Ludhiana
20. Supreme Tex Mart Ltd, Ludhiana
21. S T Cottex Exports (P) Ltd, Ludhiana
22. Trident (Abhishek Industries Limited), Ludhiana
23. Vardhman Textiles Ltd. Ludhiana
24. Vinayak Textile Mills, Ludhiana