CHAPTER – 3
DATA BASE AND RESEARCH METHODOLOGY

This chapter explains the need of the study, objectives of the study, universe of the study, sample design, variables studied, procedure of data collection, and the statistical techniques used for the analysis of data.

3.1 NEED OF THE STUDY

Defining quality in education is a massive challenge since it deals with the most sensitive creation on earth i.e. the human beings. Education is goal-oriented. Accordingly, quality of education should be seen with reference to excellence in education, value addition in education, fitness of educational outcome and experience for use, conformance of education output to planned goals, specifications and requirements, defect-avoidance in the education process, and meeting or exceeding customer’s expectations of education. Education quality leads to a prospective future. Hence, insight on quality indices and virtual implementation need to be given top priority and due attention should be paid to the category in the wide range of educational strata including educational institute, educational management, administration, staff, students and community.

Worldwide, much research has been conducted in the field of TQM implementation in education. After a review of the relevant TQM literature, it has been found that different researchers adopted different TQM definitions and frameworks based on their own understanding of TQM and research objectives. Consequently, there are fewer agreements on what TQM is and what constitutes it in the sphere of education. Also, there is no comprehensive study covering different aspects of Total Quality Management in Education in India, more specifically in Punjab.

Accordingly, the present study is an endeavour to explore the implementation of Total Quality Management practices in the management educational institutes in the region of Punjab.
3.2 OBJECTIVES OF THE STUDY

The main objective of the present study is the investigation of the implementation of Total Quality Management practices in management institutes in Punjab. However, the specific objectives are:

1. To study the perception of faculty members in the management institutes regarding the implementation of TQM practices in management institutes.
2. To examine the variations between the students’ expectations and the actual state of affairs with regard to TQM practices in the management institutes.
3. To make appropriate suggestions for the effective implementation of TQM practices in the management institutes in Punjab.

3.3 DATA COLLECTION

Literature review revealed that in management research, questionnaire-method has been discussed and used by many researchers. Questionnaires are a positive methodology as no survey can be better than questionnaire. In this research, questionnaire-data was collected by personally contacting respondents, as well as by postal survey. These respondents comprised of faculty members as well as students of various management institutes in Punjab.

3.4 UNIVERSE OF THE STUDY

The objectives of the research required the study of both the faculty members and the students. Hence, the study was also conducted and framed in two parts. For the faculty members, universe comprised of all the faculty members from various management institutes in Punjab.

For students, the universe comprised of all the students from various management institutes in Punjab.

One peculiar thing that was discovered by the researcher in the initial stages of data collection was that some of the faculty members and students were not very comfortable with giving desired response. Hence, to make the study meaningful, the focus was fixed on those respondents who were willing to provide adequate response.
3.5 SAMPLE AND SAMPLE DESIGN

Keeping into consideration the objectives of the study, two separate structured questionnaires were prepared for both the faculty members and the students so as to make a meaningful investigation.

The questionnaires were framed on the basis of intuition, previous literature, discussion with experts in the field, and opinion and verdict of experts in the field of management education. All the questions were close ended. Researcher also interacted with some corporate executives to customize the study.

Various management institutes and departments of management in various Engineering institutes investigated along with their respective districts for the purpose of present study are listed in Table 3.1.

Students' Survey

The questionnaire for students was pre-tested on 30 respondents, who were actively involved in various activities of their respective educational institutes. Based on the written and verbal comments of these respondents, some items were re-worded to eliminate ambiguity and some were deleted.

The questionnaire was administered to 600 respondents from various management institutes in Punjab as listed in Table -3.1. Judgment sampling was adopted in selecting the students from various management institutes in the above mentioned districts.

The questionnaire was administered to the respondents in two ways. Firstly, wherever it was possible, the researcher got the questionnaire filled from the respondents personally. However, in some cases, data was collected by mailing the questionnaire to the Head of Departments (HODs) of various management educational institutes. They got it filled by the students and mailed it back to the researcher.

In all, 500 usable questionnaires have been considered for this study. The respondents belonged to different locations and include both the male and female students.
### TABLE – 3.1
LIST OF MANAGEMENT INSTITUTES STUDIED

<table>
<thead>
<tr>
<th>District</th>
<th>Name of the Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amritsar</td>
<td>▪ Global Institute of Management</td>
</tr>
<tr>
<td></td>
<td>▪ Global Institute of Management &amp; Emerging Technologies</td>
</tr>
<tr>
<td></td>
<td>▪ Sai Institute of Management</td>
</tr>
<tr>
<td></td>
<td>▪ Swami Satyanand College of Mgt &amp; Technology</td>
</tr>
<tr>
<td></td>
<td>▪ Amritsar College of Engineering &amp; Technology</td>
</tr>
<tr>
<td>Fatehgarh Sahib</td>
<td>▪ Punjab Institute of Management &amp; Technology</td>
</tr>
<tr>
<td></td>
<td>▪ Mata Gujri College</td>
</tr>
<tr>
<td></td>
<td>▪ Desh Bhagat Institute of Management &amp; Computer Science</td>
</tr>
<tr>
<td></td>
<td>▪ RIMT Institute of Management &amp; Technology</td>
</tr>
<tr>
<td></td>
<td>▪ RIMT School of Management Studies</td>
</tr>
<tr>
<td></td>
<td>▪ RIMT Institutes Of Computer Technology</td>
</tr>
<tr>
<td>Gurdaspur</td>
<td>▪ Swami Sarva Nand Institute of Management &amp; Technology</td>
</tr>
<tr>
<td></td>
<td>▪ Sai Institute of Engineering &amp; Technology</td>
</tr>
<tr>
<td>Jallandhar</td>
<td>▪ Appejay Institute of Management</td>
</tr>
<tr>
<td></td>
<td>▪ CT Institute of Management &amp; Information Technology</td>
</tr>
<tr>
<td></td>
<td>▪ CT Institute of Management</td>
</tr>
<tr>
<td>Kapurthala</td>
<td>▪ Lovely Institute of Management</td>
</tr>
<tr>
<td></td>
<td>▪ Lovely Institute of Technology</td>
</tr>
<tr>
<td></td>
<td>▪ ST. Soldier Management &amp; Technology Institute</td>
</tr>
<tr>
<td></td>
<td>▪ GNA Institute of Management &amp; Technology</td>
</tr>
</tbody>
</table>

Cont....
<table>
<thead>
<tr>
<th>City</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ludhiana</td>
<td>Punjab College of Technical Education, Gujrawala Guru Nanak Institute of Management &amp; Technology, Guru Nanak Institute of Management &amp; Technology, Doraha Institute of Management &amp; Technology, Bhutta College of Engineering &amp; Technology, Ludhiana College of Engineering &amp; Technology</td>
</tr>
<tr>
<td>Malout</td>
<td>Malout Institute of Management &amp; Information Technology</td>
</tr>
<tr>
<td>Mohali</td>
<td>Centre for Management Training &amp; Research, Gian Jyoti Institute of Management &amp; Technology, SAS Institute of Information Technology, Chandigarh Business School</td>
</tr>
<tr>
<td>Moga</td>
<td>Lala Lajpat Rai Memorial Management Institute</td>
</tr>
<tr>
<td>Nawan Shahar</td>
<td>Rayat Institute of Management, Rayat Institute of Engineering &amp; Information Technology</td>
</tr>
<tr>
<td>Patiala</td>
<td>Aryans School of Management, Chitkara Institute of Management, Dr. IT Business school</td>
</tr>
<tr>
<td>Ropar</td>
<td>Institutes of Management Studies, Rayat &amp; Bahra Institute of Management, Rayat &amp; Bahra Institute of Management (Women)</td>
</tr>
<tr>
<td>Sangrur</td>
<td>Bhai Gurdas Institute of Management &amp; Technology</td>
</tr>
</tbody>
</table>
Faculty Members’ Survey

The questionnaire for faculty members was pre-tested on 25 respondents. Based on the written and verbal comments of these respondents, some items were modified to remove ambiguity and some were deleted.

The questionnaire was administered to 300 respondents from the various management institutes as listed in Table 3.1. Judgment sampling was adopted in selecting the faculty members from various management institutes in the above mentioned districts.

The questionnaire was administered to the respondents in two ways. Firstly, wherever it was possible, the researcher got the questionnaire filled from the respondents personally. However, in some cases, data was collected by mailing the questionnaire to the Head of Departments (HODs) of various management institutes. They got it filled from the faculty members and mailed it back to the researcher.

In all, 250 usable questionnaires have been considered for this study. The designation-wise classification of these respondents is given in Table 3.2.

<table>
<thead>
<tr>
<th>Designation</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturer</td>
<td>163</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>68</td>
</tr>
<tr>
<td>Reader</td>
<td>10</td>
</tr>
<tr>
<td>Professor</td>
<td>09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>

3.6 VARIABLES STUDIED

There may be large number of variables that may influence the respondents’ perceptions towards the implementation of TQM practices in their respective educational institutions. For the purpose of the present study, various variables studied are listed below.
Faculty Members’ Survey

Faculty members were asked to give their response on 5-point scale, ranging from strongly agree to strongly disagree, concerning following parameters:

i. Leadership

It comprised of 8 statements relating to the top management participation and learning, the top management encouragement and empowerment to employees, mobilization of resources by the top management, management by fact, top management perception, and pursuit of long term objectives by the top management.

ii. Supplier Quality Management

To identify supplier quality management, 5 dimensions were formulated. These were: partnership with suppliers, supplier selection criteria, participation in supplier quality related activities, supplier performance evaluation, and supplier quality audit.

iii. Vision and Plan Statement

This section comprised of 7 statements relating to

(i) Vision statement,
(ii) Overall business performance plan,
(iii) Quality policy,
(iv) Quality improvement plan, and
(v) Formulation and communication of plans.

iv. Evaluation

The 10 statements related to evaluation comprised of evaluation of Strategy, quality audit, benchmarking, quality costs, quality related data, evaluation of overall business performance, evaluation of departments’ performance, evaluation of employee performance, information system, and rationale of evaluation.

v. Process Control and Improvement

This section comprised of 8 statements relating to cleanliness, process capability, equipment maintenance, inspection, ideal system, and use of quality tools.

vi. Product Design Vis-a-Vis Industry Needs

To identify whether the product design is in accordance with industry needs or
not, 7 statements relating to industrial exposure, marketing exposure, design and implementation of learning methodology, and departmental participation were formulated.


To evaluate the level of adherence the recommendations of ISO 9001:2000, 4 statements were related. These statements related to quality system, use of ISO 9000 as a guideline, quality manual, and quality system procedures.

viii. **Employee Participation**

This section comprised of 8 statements concerning cross functional teams, quality circles, employee involvement and encouragement, employee suggestions, and employee commitment.

ix. **Recognition and Reward**

To analyse the recognition and reward system in the management institutes investigated, 6 statements related to the working environment improvement, salary promotion, position promotion, recognition, rewards and penalties program were formulated.

x. **Education and Training**

This section comprised of 6 statements related to employee encouragement, availability of resources, and education and training plan.

xi. **Customer Focus**

To identify the degree of customer focus in the management institutes investigated, 5 statements relating to customer complaint information, customer satisfaction survey, market investigation, and customer services were formulated.

**Students’ Survey**

Students were asked to rate their expectations and actual state of affairs with regard to various parameters described below.

i. **Infrastructure**

This section comprised of 11 sub-variables consisting of Library, Labs, Tutorials
Conference Hall, Seminar Hall, Class Room, Hostel, Administration Block, Reception, Canteen, Auditorium, and Staff Room.

ii. **Academic Environment**

To identify academic environment in management institutes investigated, 4 criteria consisting of student-teacher ratio, student-computer ratio, student performance, and opportunity for faculty development were framed.

iii. **Faculty**

This section comprised of 4 variables relating to qualification, publication, communication skills, and research experience of the faculty members.

iv. **Industry Liaison**

To identify industry liaison, 3 variables comprising industrial visit, industry sponsored projects, and visiting faculty from industry were used.

v. **Teaching Methodology**

This section comprised of 7 variables concerning use of modern teaching aids, lectures, case studies, emphasis on individual learning, group learning, teacher-student interaction beyond classroom and use of internet.

vi. **Subject Matter**

The 3 issues related to the relevance of syllabus to industry needs, modification of syllabus in accordance with the needs and balanced contents were included in this section.

vii. **Placements**

The four variables comprising of role of placement cell, quality and quantity of placements and number of companies visiting the campus for placements were considered for the purpose of this section.

viii. **Personality Development**

This section comprised of 2 variables related to co-curricular activities and extra-curricular activities.

ix. **Sports**

The 4 variables related to playgrounds, gymnasium, sports equipment and sports events were included in this section.
3.7 STATISTICAL TOOLS USED

1. **Weighted Average Score (W.A.S.)** was used to find out the weightage/importance given by the respondents to a given factor rated or ranked.

2. **Chi-square test ($\chi^2$)** i.e. the test of goodness of fit was also applied to investigate the variations in students’ expectations and actual position regarding individual variables related to infrastructure, academic environment, faculty, industry liaison, teaching methodology, subject matter, placements, personality development, and sports.

3. **One Way ANOVA** was used to find out as to whether the faculty members differ in their response, when studied on the basis of their designation.

*These tests were applied using SPSS 13 version.*

3.8 LIMITATIONS OF THE STUDY

1. The present study is based on a survey conducted with the help of a questionnaire. Any study based on a survey through a pre-designed questionnaire suffers from a basic limitation of the possibility of difference between what is recorded and what is the truth, no matter how carefully the questionnaire has been designed and the field of investigation has been undertaken. This is because the respondents may not deliberately report the true response, and even if they want to do so, there are bound to be differences owing to the well known problems of filters in the communication process.

2. The samples were taken from the students and the faculty members of the management course only. Extending the samples to the engineering students and faculty members may yield better insight.

3. Due to the constraints of time and resources, the present study was restricted to the state of Punjab only.

4. For the purpose of the present study, researcher has used the questionnaire method only for data collection. Other methods like in-depth interview, and focus-interview with Top Management, faculty members as well as students could also have been used.