CHAPTER 2.0

RESEARCH PROCESS AND METHODOLOGY

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CHAPTER 2.0

RESEARCH PROCESS AND METHODOLOGY

2.1 OBJECTIVES OF THE STUDY:

The primary objective of this study is to discover how industries are tackling the issue of quality improvements and keeping themselves cost conscious to remain competent and maintaining the focus on customer satisfaction.

Acquisition of thorough insight of the business processes involved in carrying out production activities and the work culture made available for the employees to get involved and contribute to the improvement processes is undoubtedly the main focus of the research.

With this consideration at the backdrop, the statement of objectives is as under:

2.1.1 To carry out critical study of some selected private sector industries in Pune Region as regards status on quality improvements and related cost reduction programmes and their effect on quality standards, production economics and customer satisfaction.

2.1.2 To identify areas of Cost of Bad Quality prevalent in the industry and seek solutions for reducing such costs to improve financial performance.

2.1.3 To identify problems, if any and inability of the business organizations surveyed to achieve results in their stated objectives on quality improvements and related cost reduction programmes and to seek solutions to some of the problems identified.
2.1.4 To throw light on the status of organisation culture with reference to following:

2.1.4.1 Status on the strategic plans (short term/ long term) for quality improvements and related cost reduction programmes. Also the organization’s belief in competitive Bench Marking.

2.1.4.2 Status on the environment that allows employees to take risks and be creative.

2.1.4.3 Status on the empowerment of employees to take decisions and do not depend on the top management for every trivial issue.

2.1.4.4 Status on environment that ensures cross functional teamwork at all levels so that everyone is involved including active participation of the top management.

2.1.4.5 Status on the organization’s commitment for continuous improvement and the extent to which it honours its commitment.

2.1.4.6 Status on the practice of fool proofing the previous process by prevention rather than detection (inspection) after producing the products. Status on the application of techniques like SPC (Statistical Process Control) and FMEA (Failure Mode Effect Analysis).

2.1.5 To consult experts for their opinions on the issues discussed and integrate their views on solutions based on their experiences.
2.2 RESEARCH DESIGN:

2.2.1 Basically research design is a plan for collection, measurement and analysis of data. The design includes development of a strategy for collecting primary data through a structured questionnaire and subsequent interviews through personal visits, observations, data collection and analysis of the same. It also includes interpretations of analyzed information and drawing conclusions of the same.

2.2.1.1 Elements Covered:
In order that the study becomes comprehensive all the relevant elements are covered which are as follows:
1) The quality improvement process
2) Cost reduction, production economics and customer satisfaction as a sequel to quality improvement process.
3) Identification of cost of bad quality and measures to reduce the same.
4) Organisation culture, which empowers and motivates employees to take risks in implementing ideas of continuous improvement of elements mentioned at 1 to 3 above.

2.2.2 Design Classification:
Design approaches considered are:
a) The research study is a formal one the goal being to test the hypothesis.
b) The method of data collection is mainly communication based. The data collection has resulted from personal interviews and meetings through visits to facilities as well as subsequent discussions for clarifications. In addition, in select cases, observational studies to substantiate points discussed were also conducted.
c) The researcher has attempted ex-post facto design as control or influence on variables in the study was not in the scope of study.
d) The purpose of the research study is causal relationship between quality, business performance and attitudes and mindsets.

e) As regards time dimension cross-sectional studies of the sample are carried out.

f) The topical scope consists of statistical capturing a population's characteristics by making inferences from a sample's characteristics. Hypothesis is tested quantitatively. Generalizations about findings are presented based on the representativeness of the sample and the validity of the design.

g) The research environment selected for the design is "occurrence under actual environmental conditions" also called as "field conditions".

h) There is no evidence noticed during the study regarding subjects perception deviated from everyday routine as observed through various related pieces of information, supplementary observational studies of the processes and products.

2.2.3 Data Collection:

2.2.3.1 "Data" is defined as "the facts presented to the researcher from the study's environment". The method selected for gathering primary data is through Questionnaire, interviews and observations. Primary data are collected by conducting surveys and structured interviews in the selected sample to answer research questions.

2.2.3.2 Secondary data represents studies made by others for their own purposes such as relevant reports of prior research studies, if any, published documents by other authors, articles on Internet, periodicals, books and news articles. Data from secondary sources assists in understanding what needs to be done and may present as an important service of hypotheses. Highlights on review of literature in the form of footnotes appears at end of each chapter together with related bibliography. Study of relevant literature is listed in References at the end of thesis.
2.3 Sampling:
Juran\textsuperscript{55} explains difference between sample and population as "a distinction between a sample and a population is that a sample is a limited number of items taken from a larger source, while a population is a large source of items from which, the sample is taken". Measurements are made on the items. Many problems are solved by taking the measurement results from a sample and based on these results, predictions are made about the defined population containing the sample. Sampling helps us to draw conclusions about the entire population by selecting certain elements in a population. Sample survey has definite economic advantages as against census and gives much quicker results. The sample must be valid, which means it must be accurate and must also be precise. Fig. 2.1 differentiates regarding accurate and precision results of measurement methods.

**Fig : 2.1**

**ACCURATE & PRECISION RESULTS OF MEASUREMENTS**

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<tr>
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* Accuracy is defined as the lack of bias.

In the case of present research the total population was found to be 97. Considering the varieties of industries such as Automotive, Engineering, Pharmaceutical, Chemical, MNCs, Paper, Plastic etc in the region to be given justice during the survey the sample size was taken as 46 units which works out to be 47 percent and which is large enough to ignore any sampling method to be applied.

2.4 METHODOLOGY:

2.4.1 A list of Private Sector Manufacturing industries in and around Pune was obtained with the help from institutions like Maharatta Chamber of Commerce, Industry and Agriculture (MCCIA).

2.4.2 A structured questionnaire (Ref. Annexure 4) has been prepared and forwarded to the select industries covered in the sample for getting details and comments with a view to collect data. This is followed by several visits and interviews with the concerned.

2.4.3 Elements of the questionnaire are discussed in person through subsequent visits to the industries covered in the sample to get first-hand information and findings through observations.

2.4.4 Search for the relevant secondary data through selective library work-including data obtained through technical papers, periodicals, newspapers etc. has been carried out. The information thus generated is found useful for the purpose of comparison and knowing latest status on relevant topics.

2.4.5 The findings of the survey are analyzed using appropriate statistical tools. The findings are tested for statistical significance.

2.4.6 The problems noticed during the survey are listed, analyzed and solutions as also corrective and preventive actions are discussed.
2.4.7 A focus on participative culture, processes, customer satisfaction, continual improvements and Kaizen is maintained.

2.5 METHOD OF EVALUATING UNITS:

2.5.1 All units have been awarded an overall numerical score. The following methods were used to award the score.

(i) Each unit was asked to evaluate itself with respect to its performance on each of the 40 attributes on a Likert scale (Ref.: Questionnaire, Annexure 4)

(ii) The value indicated by the unit was finalized after detailed discussion with the researcher.

2.5.2 The benefits of the findings of the survey are clearly established.

2.5.3 The findings of the survey are discussed with experts for their valuable views on the subject.

2.5.4 Such factors emerging out of the findings of the survey, which will contribute to the field of knowledge, are identified.

2.6 HYPOTHESIS:

2.6.1 Hypothesis is called as a statement in which variables are assigned to a case being investigated. There are three types of hypothesis:

a) Descriptive Hypothesis: States existence, size, form or distribution of a variable. Hypothesis is useful for testing statistical significance.

b) Relational Hypothesis: Describes relationship between two variables with respect to a case.
c) **Explanatory (causal) Hypothesis**: Where one variable causes an effect on another variable. (cause-effect relationship)

In the present research we are following ‘Descriptive Hypothesis’. The same is as under:

2.6.2 “Even though there are efforts on the part of Domestic Units of the industry to continuously improve quality of processes, productivity and customer satisfaction and also reduction in cost of bad quality, these efforts are still far from status which will ensure global competency as represented by Multinational Corporations.”
## 2.2 Bibliography

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## 2.2 Foot Notes

54. Donald R. Cooper and Pamela S. Schindler (1999) in their book on Business Research Methods define data as the facts presented to the researcher from the study's environment. Data may be further characterized by their (1) abstractness (2) verifiability (3) elusiveness and (4) closeness to the phenomenon.

55. J. M. Juran (2000) has made a distinction between a sample and a population. A sample is a limited number of items taken from a larger source. A population is a large source of items from which the sample is taken.

170 Donald R. Cooper and Pamela S. Schindler (1999) in their book on Business Research Methods define Hypothesis and its types