

RESEARCH METHODOLOGY

4.1 Introduction:

I understand research as a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. The Advanced Learner's Dictionary of Current English lays down the meaning of research as "a careful investigation or inquiry especially through search for new facts in any branch of knowledge.

According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

The objective of this process is the creation of knowledge in a pre-specified area of study and/or review of existing knowledge in a specific field in order to prove or disprove a pre-stated assumption.

4.2. Objectives of this Research:

The present study is being done in order to test the hypothesis - Hypothesis: The ability of the 'target costing technique' to achieve the 'Asking Price' by controlling production cost differs in countries which are in different stages of development.

4.3. Motivation for the Research:

1] Desire to get a research degree in order to pursue academics as a career in cost accounting.

2] The desire to find out if 'Target costing' would work equally well in a country like Libya, and if not are there any lessons to be learnt from a large and growing economy like India.

4.4. Type of Research Selected:

The following type of research technique has been chosen owing to the nature of the problem to be researched, the availability of data and the geographical possibility of procuring the data.

(I) Descriptive vs. Analytical: Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. In social science and business research we quite often use the term Ex post facto research for descriptive research studies. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Most ex post facto research projects are used for descriptive studies in which the researcher seeks to measure such items as, for example frequency of shopping, preferences of people, or similar data. Ex post facto studies also include attempts by researchers to discover causes even when they cannot control the variables. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and co relational methods. In analytical research, on the other hand, the researcher has to use facts or information already available, and analyse these to make a critical evaluation of the material.

This type of research is appropriate for the present study since. It is Ex post facto, There is no control over variables in both the very dynamic economies, It is an attempt to discover cause and therefore compare.

Quantitative vs. Qualitative: Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. Attitude or opinion research i.e., research designed to find out how people feel or what they think about a particular subject or institution is also qualitative research.

In the present case it can be called a combination of the quantitative and qualitative since though a questionnaire is being used and the data will be quantified for analysis nevertheless the manner of query is descriptive and attitudinal and the quality of the answer has an effect on the final conclusion.

Conceptual vs. Empirical: Conceptual research is that related to some abstract idea(s) or theory. It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research relies on experience or observation alone, often without due regard for system and theory. It is data-based research, coming up with conclusions which are capable of being verified by observation or experiment. We can also call it as experimental type of research. In such a research it is necessary to get at facts first and, at their source, and actively to go about doing certain things to stimulate the production of desired information. In such a research, the researcher must first provide himself with a working hypothesis or guess as to the probable results. He then works to get enough facts (data) to prove or disprove his hypothesis. He then sets up experimental designs

which he thinks will manipulate the persons or the materials concerned so as to bring forth the desired information. Such research is thus characterised by the experimenter's control over the variables under study and his deliberate manipulation of one of them to study its effects. Empirical research is appropriate when proof is sought that certain variables affect other variables in some way. Evidence gathered through experiments or empirical studies is today considered to be the most powerful support possible for a given hypothesis. Research methods may be understood as all those methods/techniques that are used for conduction of research. Research methods or techniques, thus, refer to the methods the researchers use in performing research operations. In other words, all those methods which are used by the researcher during the course of studying his research problem are termed as research methods. Since the object of research, particularly the applied research, is to arrive at a solution for a given problem, the available data and the unknown aspects of the problem have to be related to each other to make a solution possible.

This study will be conducted with the help of a questionnaire and therefore the actual empirical data will then be analysed to conclude.

4.5. Research Methods:

Keeping this in view, the following are the research methods:

1. Since specific data is not available comparing India and Libya as in the process and effects of 'Target Costing', and considering the physical distance between the two countries the required data is collected in two different ways. Due to the presence of the researcher in India the questionnaire in India is presented to the respondents of companies personally but The Libyan respondents were e-mailed the questionnaire. In the first group we included those methods which are concerned with the collection of

data. These methods are used where the data already available are not sufficient to arrive at the required solution.

2. The data collected is then analysed through by comparing each respondent of comparable status from India with one from Libya. This is done for every question. The comparison reveal the similarities and dissimilarities between the two countries as to the understanding and application of the target costing method as a cost reduction technique, it will also show any if at all differences or not in results attained thereof.

Research methods falling in the above stated last two groups are generally taken as the analytical tools of research.

4.6. Methodology:

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. From what has been stated above, we can say that research methodology has

many dimensions and research methods do constitute a part of the research methodology. The scope of research methodology is wider than that of research methods. Thus, when we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others. Research purposes may be grouped into four categories, viz., (i) Exploration, (ii) Description, (iii) Diagnosis, and (iv) Experimentation. A flexible research design which provides opportunity for considering many different aspects of a problem is considered appropriate if the purpose of the research study is that of exploration. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that minimises bias and maximises the reliability of the data collected and analysed. There are several research designs, such as, experimental and non-experimental hypothesis testing. Experimental designs can be either informal designs (such as before-and-after without control, after-only with control, before-and-after with control) or formal designs (such as completely randomized design, randomized block design, Latin square design, simple and complex factorial designs), out of which the researcher must select one for his own project.

4.7. The Research Design:

(I) The required data has been obtained by presenting a questionnaire to personnel in corporations manufacturing heavy vehicles [trucks] in India and Libya. The said questionnaire is answered by personnel from different levels in the organisational hierarchy and across functional departments which are give us a comprehensive picture of the understanding of 'Target Costing' as:

1] The understanding of the importance of ‘Target Costing’,

2] The variations in practice.

3] The perceived benefits and drawbacks.

4] Factors affecting effectiveness in achieving ‘asking price’.

(ii) The researcher has to his credit a master's degree in accounts enabling an intrinsic understanding of accounting techniques such as ‘Target costing’ and the ability to engage persons in Libya with similar qualification resulting in gathering of proper collection and analysis of primary data.

(iii) The reason for the selection of the nation’s viz. India and Libya is that the researcher is has been living and studying in India and therefore has access to authentic data here and by virtue of being a Libyan national has access to authentic data there too. The researcher is in the unique position of comparing the two countries ensuring dependable research findings.

4.8. The Sample Design:

The researcher decided the way of selecting a sample or what is popularly known as the sample design. In other words, a sample design is a definite plan determined before any data are actually collected for obtaining a sample from a given population. Samples can be either probability samples or non-probability samples. With probability samples each element has a known probability of being included in the sample but the non-probability samples do not allow the researcher to determine this probability. Probability samples are those based on simple random sampling,

systematic sampling, stratified sampling, cluster/area sampling whereas non-probability samples are those based on convenience sampling, judgement sampling and quota sampling techniques.

The two countries- India and Libya are non-probability, deliberate samples chosen due to convenience in procuring data and the researcher's judgement stemming from knowledge of the economies.

Deliberate sampling: Deliberate sampling is also known as purposive or non-probability sampling. This sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe. When population elements are selected for inclusion in the sample based on the ease of access, it can be called convenience sampling. If a researcher wishes to secure data from, say, gasoline buyers, he may select a fixed number of petrol stations and may conduct interviews at these stations. This would be an example of convenience sample of gasoline buyers. At times such a procedure may give very biased results particularly when the population is not homogeneous. On the other hand, in judgement sampling the researcher's judgement is used for selecting items which he considers as representative of the population. For example, a judgement sample of college students might be taken to secure reactions to a new method of teaching. Judgement sampling is used quite frequently in qualitative research where the desire happens to be to develop hypotheses rather than to generalise to larger populations.

Primary data can be collected either through experiment or through survey. If the researcher conducts an experiment, he observes some quantitative measurements, or the data, with the help of which he examines the truth contained in his hypothesis.

But in the case of a survey, data can be collected by any one or more of the following ways:

Through personal interview: The investigator follows a rigid procedure and seeks answers to a set of pre-conceived questions through personal interviews. This method of collecting data is usually carried out in a structured way where output depends upon the ability of the interviewer to a large extent. By mailing of questionnaires: The researcher and the respondents do not come in contact with each other if this method of survey is adopted. Questionnaires are mailed to the respondents with a request to return after completing the same. It is the most extensively used method in various economic and business surveys. Questionnaire to be used must be prepared very carefully so that it may prove to be effective in collecting the relevant information. In this context Dr A.L. Bowley very aptly remarks that in collection of statistical data common sense is the chief requisite and experiences the chief teacher.

In the present study the primary data collection is done by interviewing in person in India and by mailing a questionnaire to Libya and getting it answered. In both cases experience of market survey is available with both the persons who will question the respondents.

Execution of the project: Execution of the project is a very important step in the research process. The researcher oversees the project is executed in a systematic manner and in time. Since the survey is conducted by means of structured questionnaires, data is readily machine-processed. Questions as well as the possible answers are coded. A careful watch is kept for unanticipated factors in order to keep

the survey as much realistic as possible. This is to make the results of this study dependable.

4.9. Population and Sampling Details:

Table (4) Population and Sampling Details:

	India	Libya
No. of automobile industries approached for data collection	03	01
No. of employees on role (Population)	1757	679
No. of employees working in the departments such as (design engineering, production, marketing, finance, research and development etc)	206	188
Questionnaires circulated to employees	110	100
Questionnaires returned by the employees	86	92
% Response by the employees	78.2%	92.0%
Questionnaires not completely filled-up / not willing to answer	24	08
% Non-Response by the employees	21.8%	8.0%

4.10. Method of sampling:

Stratified random sampling by considering different departments as strata of the employees working in the study area.

4.11. Questionnaire Design:

The nature of the topic researched in this study dictated the use of a questionnaire survey as the primary research tool. Questionnaire surveys are highly structured data collection techniques in which respondents are asked the same set of questions. The questionnaire in this study was developed from the theoretical analysis of the literature study in Chapter 2. The questionnaire is divided into two sections.

Section A is made up of biographical questions in which respondents were asked to indicate their name, job title, amount of work experience generally and in accounting and/or finance specifically.

Section B determines the academic and professional qualification of the respondent. Section C comprises of questions which were designed to research the general aspects of target costing.

Section D aimed at finding the respondents opinion on the specific aspects of target costing.

Section C Reconsidering the fact that the study includes a comparison of one Indian and one Libyan, heavy vehicle manufacturers, these are product specific questions allowing a case study approach.

As a means of gathering the required information, the following types of questions were used in the questionnaire:

- Semi-open questions. These questions provide prespecified answers, but allow for open comments in order to get clarification or probe a person's reasoning.
- Open-ended questions. These questions allow the respondents to answer in their own words and freely express themselves. This enables the respondents to shed more light on their answers and provide more detailed explanations.
- Scaled-response questions. The purpose of this question format is to collect data on the attitudes and perceptions of the respondents. The five point Likert-scale, ranging from strongly agree to strongly disagree, was used to determine respondents' level of agreement on a given subject. It purposefully included a middle point reflecting the neutral response as it was felt that this will erase researcher bias if it was left out. In analysing the responses, mode and median were computed to determine the highs and lows of the result or frequencies of responses.

4.12. Data Analysis:

In modern times, with the availability of computer facilities, there has been a rapid development of multivariate analysis which may be defined as "all statistical methods which simultaneously analyse more than two variables on a sample of observations" (William Emory, Business Research Methods, p. 356).

. Usually the following analyses are involved when we make a reference of multivariate analysis:

(a) Multiple regression analysis: This analysis is adopted when the researcher has one dependent variable which is presumed to be a function of two or more independent variables. The objective of this analysis is to make a prediction about the dependent variable based on its covariance with all the concerned independent variables.

(b) Multiple discriminate analysis: This analysis is appropriate when the researcher has a single dependent variable that cannot be measured, but can be classified into two or more groups on the basis of some attribute. The object of this analysis happens to be to predict an entity's possibility of belonging to a particular group based on several predictor variables.

(c) Multivariate analysis of variance (or multi-ANOVA): This analysis is an extension of two ways ANOVA, wherein the ratio of among group variance to within group variance is worked out on a set of variables.

(d) Canonical analysis: This analysis can be used in case of both measurable and non-measurable variables for the purpose of simultaneously predicting a set of dependent variables from their joint covariance with a set of independent variables.

Inferential analysis is concerned with the various tests of significance for testing hypotheses in order to determine with what validity data can be said to indicate some conclusion or conclusions. It is also concerned with the estimation of population values. It is mainly on the basis of inferential analysis that the task of interpretation (i.e., the task of drawing inferences and conclusions) is performed. (Jagdish N. Sheth, "The Multivariate Revolution in Marketing Research")

1.13. Statistical Methods Used:

1. The values on qualitative characteristics have been shown as n (% of respondents). While the values on quantitative variables are shown as Mean \pm Standard deviation.
2. To quantify the scores on attributes the weighing scheme through weighted arithmetic mean is used for 5-point Likert scale being implemented in the questionnaire. Higher weights are given for those responses who are in favor of importance of the attributes/factors and vice-versa.
3. For comparing the statistical significance of difference of distribution of several qualitative characteristics across two countries, the use of Chi-square test for independence of attributes if cell frequency is more than 5, else Fisher's exact probability test is used.
4. For testing the equality of distributions of several quantitative variables, we used Mann-Whitney U test which is a non-parametric test for comparing two independent groups for non-normally distributed quantitative variable.
5. In order to obtain the joint correlation between the duration of use of cost reduction techniques and the appreciation of benefits of target costing we used Spearman's correlation analysis.
6. A p-value less than 0.05 is considered to be statistically significant throughout the study.
7. The entire statistical analysis was done using Statistical Package for Social Sciences (SPSS version 12.0) for MS Windows.
8. The entire data was entered and cleaned in MS Excel before it was transferred to SPSS for further statistical analysis.