An Introduction to Research Methodology

Meaning of Research

Research may be defined as systematic gathering of data and information and its analysis for advancement of knowledge in any subject. Research attempts to find answer of intellectual and practical questions through application of systematic methods. Webster's Collegiate Dictionary defines research as "studious inquiry or examination; esp: investigation or experimentation aimed for the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws". Some people consider research as a movement, a movement from the known to the unknown.

Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. The systematic approach concerning generalization and the formulation of a theory is also research. As such the term 'research' refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions(s) towards the concerned problem or in certain generalizations for some theoretical formulation.

Objectives of Research

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formulative research studies);
2. To portray accurately the characteristics of a particular individual, situation or a group(studies with this object in view are known as descriptive research studies);
3. To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies);
4. To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies).

Utility of Research

a) Research is an aid to decision-making.
b) Research facilitates the process of thinking, analysis, evaluation, and interpretation of the business environment; and of the various business situations.
c) Research provides a basis for innovation.
d) Research and development helps to develop new products and to modify the existing products.

e) Research identifies problem areas.
f) Research establishes the relationship not only between variables in each functional area, but also between the various functional areas.
g) Research is an aid to forecasting, which is an effective tool in the hands of managers.
h) Research helps all the managerial functions.
i) Research helps in the economic utilization of resources
j) Market and marketing analysis may be based on research.
k) Research is an aid to management information systems and
l) Research is helpful in the formulation of policy and strategy.

Research Methods

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 possible solution. Keeping this in view, research methods can be put into the following three groups:

1. In the first group we include those methods which are concerned with the collection of data. These methods will be used where the data already available is not sufficient to arrive at the required solution;
2. The second group consists of those statistical techniques which are used for establishing relationships between the data and the unknowns;
3. The third group consists of those methods which are used to evaluate the accuracy of the results obtained.

Research methodology

It 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. 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. All this means that it is necessary for the researcher to design a methodology for his problem as the same may differ from problem to problem. For example , an architect , who designs a building , has to consciously evaluate the basis of his decisions , i.e. , he has to evaluate why and on what basis he selects particular size , number and location of doors ,

windows and ventilators , uses particular materials and not others and the like. Similarly, in research the scientist has to expose the research decisions to evaluation before they are implemented. He has to specify very clearly and precisely what decisions he selects and why he selects them so that they can be evaluated by others also.

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.

Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated what data have been collected and what particular method has been adopted, why particular technique of analyzing data has been used and a host of similar other questions are usually answered when we talk about research methodology concerning a research problem or study.

Need of Research Methodology

It is necessary for a researcher to design a research methodology for the problem chosen. One should note that even if the research method considered for two problems are the same the research methodology may be different. It is important for the researcher to know not only the research methods necessary for the research undertaken but also the methodology. For example, a researcher not only needs to know how to calculate the mean, variance, and distribution function for a set of data, how to find a solution to a physical system described by a mathematical model, how to determine the roots of algebraic equations and how to apply a particular method but also need to know

i) Which is a suitable method for the chosen problem?

(ii) What is the order of accuracy of the result of a method?

(iii) What is the efficiency of the method? And so on.

Considerations of these aspects constitute a research methodology. More precisely, research methods help us get a solution to a problem. On the other hand, the research methodology is concerned with the explanation of the following:

1. Why is a particular research study undertaken?
2. How did one formulate a research problem?
3. What types of data were collected?
4. What particular method has been used?
5. Why was a particular technique of analysis of data used?