

Chapter Four: Research Design

Decisions regarding what, when, how much, by what means concerning an inquiry or a research study constitute a research design “A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in procedure”. In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blue print for the collection measurement and analysis of data. As such, design includes an outline of what the researcher will do from writing the hypothesis and operational implications to the final analysis of data. More specifically the design decisions happen to be in respect of

1. What is the study about? (Type of the study-exploratory or experimental etc)
2. Why is the study being made? (The purpose of the study)
3. Where will the stud be carried out? (The location of the study or the places to be covered by the study)
4. What type of data is required? (Primary or secondary or both)
5. Where can the required data are found? (The sources of data)
6. What periods will the study include? (Time frame)
7. What will be the sample design? (Method of sampling and size of sample)
8. What techniques of data collection will be used? (Questionnaire method, personal interviews, schedules etc.
9. How will the data be analyzed? (Analysis of data)
10. In what style will the report be prepared?

Keeping in view the above stated decisions, one may split the overall research design in to the following parts.

- a) The Sampling Design: which deals with the methods of selecting items to be observed for a given study?
- b) The Observational Design: This relates to the conditions under which the observations are to be made.

- c) The Statistical Design: which concerns with the question of how many items are to be observed and how the information and data gathered are to be analyzed.
- d) The Operational Design: which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

Important Features of Research Design:

1. It is a plan that specifies the sources and types of information relevant to the research problem.
2. It is a strategy specifying which approach will be used for gathering and analyzing data.
3. It also includes the time and cost budgets since most studies are done under these two constraints.
4. In brief a research design, at least contain:
 - (a) A clear statement of research problem.
 - (b) Procedures and techniques used for gathering information.
 - (c) The population to be studied.
 - (d) Methods to be used in processing and analyzing data.

Criteria of a Good Research Design:

A good design is often characterized by factors like flexibility, appropriateness, efficiency and economy. Of course, there are many other features which make the design better but the following are the minimum requirements. Generally the design which minimizes bias and maximizes the reliability of the data collected analyzed is considered as good design. The design which gives smallest experimental error is supposed to be best design in many investigations. Thus the question of good design is related to the purpose or objective of the research problem and also with the nature of problem to be studied. A design may be quite suitable in one case, but may be found wanting in one respect or the other in the

context of some other research problem. One single design cannot serve the purpose of all types of research problems.

A research design appropriate for a particular research problem, usually involves the consideration of the following facts:

1. The ways and means of obtaining information.
2. The availability and skills of the researcher and his staff.
3. The objectives of the problem to be studied.
4. The nature of the problem to be studied.
5. The availability of time and money for the research work.

Design Strategies:

Design strategies is concerned with the arrangement of the conditions and preparing blue print, plan and a road map for conducting research in scientific and systematic manner. Design Strategies mean a grand plan which helps the researcher to develop an appropriate plan or type of research to be conducted in a given environment. The most important aspect of research design is that, the newly developed design may not conform to the originally prepared research proposal out the basics of the research should not be stifled. In other words, the important aspect of research design such as objective, hypothesis, statement of problem should not be altered. Decisions to construct a suitable research design is not easy as there are a number of methods of scientific research, methods of collection of data, and methods of sampling are accessible to the researcher. Among them, a suitable design he has to choose and proceeds to implement.

Classification of Research Designs

Early in any research study, one faces the task of selecting a specific design to use. A number of design approaches exist but, unfortunately, no simple classification system define all the variations that must be considered. Here the

research designs are classified using different descriptors. A brief discussion of these descriptors illustrates their nature and contribution to research.

- (1) Based up on the Degree of research Question crystallization: a study may be viewed as exploratory or formal based up on the degree of structure and the immediate objective of the study.

Exploratory: tends toward loose of structure with the objective of discovering future research tasks .Its immediate purpose is to develop hypotheses or questions for the future.

Formal study: beings where the exploration leaves-off. It begins which research hypotheses and involve precise procedures and data source specifications. Its goal or immediate purpose is to test hypotheses or to answer research questions.

- (2) Based on the Researchers control over the variables: In terms of the researchers ability to manipulate variables we differentiate between experimental and ex post facto design.

- (3) Experimental design: the researcher attempt to control and manipulate the variables in the study. It is enough that we can cause variables to be changed or held constant in keeping with our resear5ch objective. It is appropriate when one wish to discover whether certain variables produce effect on other variables.

- (4) Ex post facto design: the investigators have no control over the variables on the sense of being able to manipulate them. The can only report what has happened or what is happening.

- (5) Based on the purpose of the study: The essential difference between descriptive and casual research designs lie in their purpose /objective.

Decretive: it is concerned with finding out who, what, where, when, how much. The purpose is to describe.

Casual: it is concerned with why and how one variable produce changing in anther. The purpose is to explain causal relation among variables under investigation.

(6) Based up on the time dimensions: based on the time dimension of the research design can be classified as longitudinal and cross- sectional.

Longitudinal: if the data collection for the research taken place in multiple time points and the research is undertaken in several time periods. The advantage of longitudinal design is that it can track changes over time and comparison of data across time is possible.

Cross- sectional: if the data collection is taken place in single time point are research is undertaken in single time period (i.e., carried out once and represent a snapshot one point in the time)

Descriptors of Research Designs

Category	Options (Type of design)
1.The degree to which the research question has been crystallized	a)Exploratory b)Formal
2. The researchers control over the variable	a) Experimental b) Ex post facto
3. Based on the purpose of the study	a) Descriptive b) Casual
4. Based up on the time dimension	a) Longitudinal b) Cross sectional.