Research Design

Introduction

When a particular research area has been identified, research problem defined, and the related literature in the area have been reviewed; the next step is to construct the research design. A research design is the plan of attack: What approach to the problem will be taken? What methods will be used? What strategies will be most effective?

Definition

Fred N. Kerlinger (1986): "Research design is the plan, structure, and strategy of investigation conceived so as to obtain answers to research question. The plan is the overall scheme or program of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data".

John W. Creswell (2011): "Research designs are plans and the procedures for research that span the decision from broad assumptions to detailed methods of data collection and analysis."

William Zikmund (2013): "Research design is a master plan specifying the methods and procedures for collecting and analyzing the needed information".

Essential elements of a research design

- A research design is an *overall plan* for the activities to be undertaken during the course o a research study.
- The research design serves as a *framework for the study*, guiding the collection and analysis of the data, the research instruments to be utilized, and the sampling plan to be followed.
- It is an *organized and integrated system* that guides the researcher in formulating, implementing, and controlling the study.
- The research design is a *blueprint* specifying the method to be adopted for gathering and analyzing data.

- The research design is a *strategy* of obtaining information for the purpose of conducting a study and making generalizations about the population.

In planning a research investigation, choices have to be made about research strategy (experimental vs non-experimental), research setting (laboratory vs natural setting), measures(questionnaires, observations, interviews), the data analysis strategies (descriptive vs

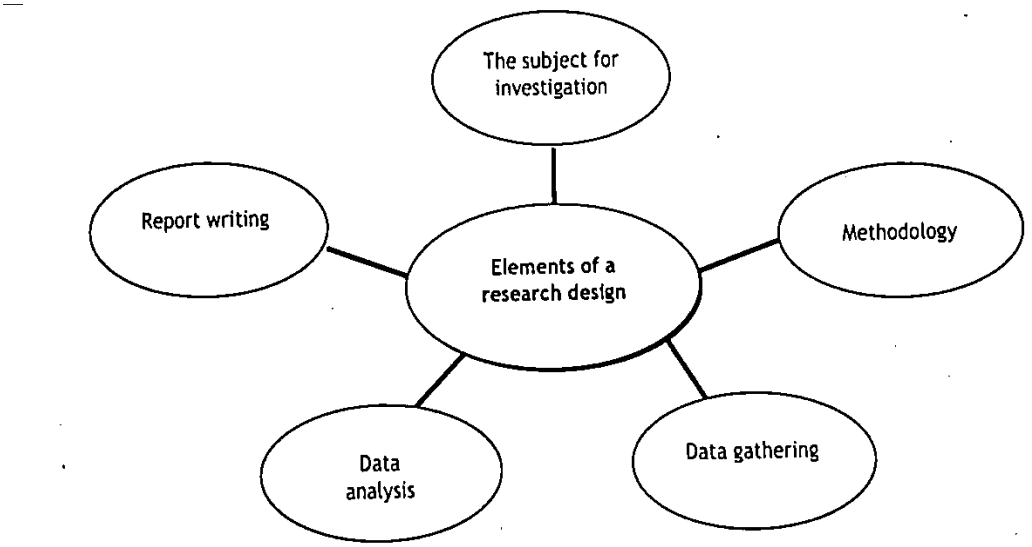
inferential statistics), and a host of other factors. A research design thus includes all these essential factors of an investigation.

Good research is not accidental. It requires careful planning as well as careful execution. Before launching a research project, you have to prepare a research design, in which you have to set forth your plans for the research you intend to undertake.

Research design is like a philosophy of life; no one is without one, but some people are more aware of theirs and thus able to make more informed and consistent decisions. Similarly, every type of empirical research has an implicit, if not explicit, research design. Because a design always exists, it is important to make it explicit, to get it out in the open where its strengths, limitations, and implications can be clearly understood (Maxwell, 2013).

Elements of a Research Design

The basic elements of a research design are (a) the problem, (b) the methodology, (c) data gathering, (d) data analysis, and (e) report writing. These elements of research design have been shown in figure. A good research design considers all these elements. The first element of a research design is to answer the research question or test research hypothesis.



Every research work usually requires an explanation of the methodology and the sample description. What methods were used to choose the sample? Why these methods were chosen and how they were applied? Next, there should be an explanation of what the variables are in the hypothesis and how they were measured. Furthermore, the details of the data collection must he explained and a discussion on the reliability and validity of the measurements included. Finally, it is necessary to explain how the data were analyzed.

Preparation of the Research Design

A research design is a clearly planned procedure for carrying out the research. Many things need to be planned in advance. The design generally incorporates answers to the following kinds of questions (Oliver, 2011):

- What sort of data do I need to collect in order to test the hypothesis and/or achieve research aims?
- Where will I collect the data?
- How will I collect the data?
- What type of data-collection instruments and procedures will I use?
- Who will provide me with the data?
- Do I need to ask permission before trying to collect data?
- When will I collect the data?
- How will the data be analyzed?
- Will I use a particular theoretical frame in order to interpret the data?

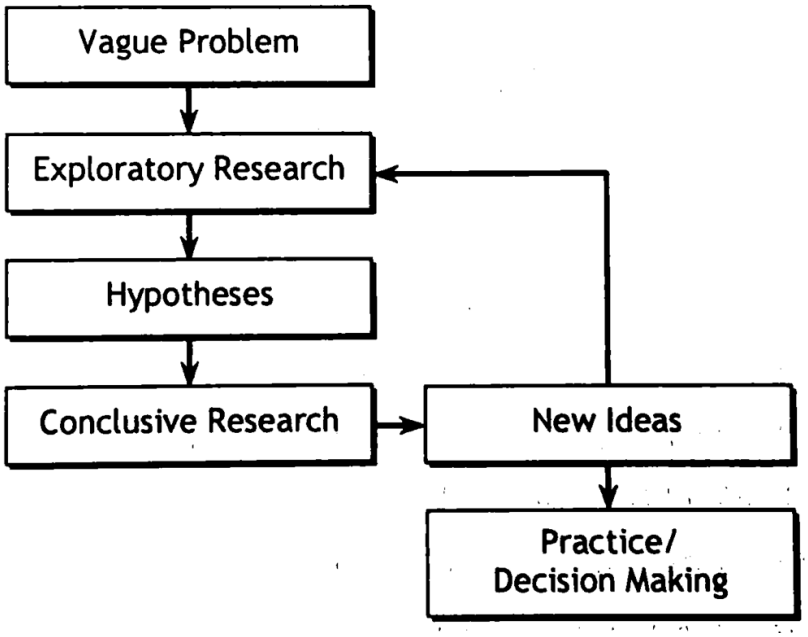
These are some of the initial questions in developing a research design.

Exploratory Research Design

The relationship and sequence of research activities are shown in figure. When searching for hypotheses, exploratory designs are appropriate. When hypotheses have been established and are to be tested, conclusive research designs are needed. Figure given below, highlights the sequence of research activities, from vague problem to new idea generation. First, let us define exploratory research. An exploratory research is defined as "a study undertaken in areas where very little prior knowledge or information is available on the subject under investigation". It is thus the initial research conducted to study and define the nature of a problem. An exploratory study is undertaken when we do not know much about the situation at hand. In such cases, extensive preliminary work needs to be done to gain familiarity with the phenomenon in the situation.

The purpose of exploratory research is to achieve new insights into a phenomenon. The major emphasis in those studies is the discovery of new insights or ideas. There are three purposes for exploratory research:

- Diagnosing a situation
- Screening alternatives
- Discovering new ideas



An exploratory study is undertaken to orient the researcher and the study. It is, therefore' a important method of finding out what is happening, to see new insights, to ask questions, and assess phenomena in a new light. It is particularly useful if you wish to clarify your understanding of a problem. In such study, the focus is initially broad and becomes progressively narrower in the research progresses.

Exploration is thus the first stage of any research project, which is new and unexplored. It, important to note that doing a study for the first time in a particular issue does not make the research exploratory in nature. Only when knowledge is scant and a deeper understanding is needed, the study becomes exploratory.

Characteristics

■ There is no set method of conducting exploratory research. The key requirements for this research are: imagination and flexibility. It is less structured and more flexible.

■ Exploratory research studies are not characterized by formal research

design. Hence, they are not very scientific in nature.

■ The researcher may utilize any number of informal approaches in attempting to define the problem and gather the data.

■ Exploratory research provides low-risk form of research that may result in good outcomes. A clear picture of the situation can emerge leading to hypothesis formulation.

■ Exploratory research provides direction for a more formal research effort.

Descriptive Research Designs

Descriptive research describes phenomena as they exist. Such studies involve the systematic collection and presentation of data to give a clear picture of a particular situation. These studies attempt to obtain a complete and accurate description of a situation. These studies can be classified in the following five categories:

(a) Historical

(b) Descriptive

(c) Developmental

(d) Survey

(e) Case Study.

These five types of descriptive research designs are not mutually exclusive. A combination of all these could also be used in some research projects. We will now look at each of them in some greater detail.

a. Historical Research

History is a meaningful and an organized record of past events. It is not merely a list of events arranged chronologically, but a valid integrated account of social, cultural, economic, and political forces that had operated to produce a historical event.

Historical research is concerned with past phenomena. It can be defined as "the systematic and objective location, evaluation, and synthesis of evidence in order to establish facts and draw conclusions about past events." Historical research is thus a process of collecting, evaluating, verifying, and synthesizing past evidence systematically and objectively to reach a conclusion. Historical research may also attempt to discern trends in the past and reconstruct the origin and development of those events. The main purpose of conducting historical research is to show the relevance of past events to the present. In other words, the purpose is to arrive at an accurate account of the past so as to gain a clearer perspective of the present.

Accuracy of gathered information is the main ingredient of success in historical research. There are two main sources from where past evidences can be found. One is the primary source, where you were a direct observer of the recorded event and the other is the secondary source, where you are reporting the observations of others. In most cases, you have to depend upon the data observed by others rather than by yourself. At the same time, you must also be aware that inappropriate and biased information results in faulty conclusions and findings.

Characteristics

- Good historical data result from painstaking detective work which analyzes the authenticity, accuracy, and significance of source material.
- Historical research must be rigorous, systematic and exhaustive.
- Historical research depends upon two kinds of data: primary sources where the author was a direct observer of the recorded event and secondary sources where the author is reporting the observations of others and is one or more times removed from the original event. Of the two primary sources carry the authority of firsthand evidence and have priority in data collection.
- This critical evaluation of the data is what makes true historical research so rigorous - in many ways, more demanding than experimental methods.
- While historical research is similar to the, "reviews of the literature" which precede other forms of research, the historical approach is more exhaustive, seeking out information from a larger array of sources.

b. Descriptive Research

Descriptive research is a fact-finding operation searching for adequate information. It is a type of study, which is generally conducted to assess the opinions, behaviors, or characteristics of a given population and to describe the situation and events occurring at present. Descriptive research is a process of accumulating facts. It does not necessarily seek to explain relationships, test hypotheses, make predictions or get at meanings and implications of a study. Hence, a descriptive research is an extension of an exploratory research.

Descriptive research can be either quantitative or qualitative. This research involves gathering data that describes events and then organizes, tabulates, depicts, and describes the data collection. Descriptive statistics is used to reduce the data to manageable form. Descriptive research is unique in the number of variables employed:

- Descriptive research, like other types of research, can include multiple variables for analysis.
- Descriptive research might simply report the percentage summary on a single variable.

Descriptive studies thus simply portray an accurate profile of organizations, events, or situation. Investigators collect, classify, and correlate data to describe what exists. However, they do not fully analyze and explain why phenomena behave as they do. They do not put the relationships they describe to crucial experimental tests. Although descriptive research cannot predict and control conditions and events, it contributes to science primarily by building a foundation of facts upon which exploratory hypotheses may be constructed, by checking the validity of

existing theories, and by directing attention toward alternative hypotheses which better fit the facts (Van Dalen, 1973). In a descriptive research, it is necessary to have a clear picture of the phenomena on which you wish to collect data prior to the collection of data. Isaac (1978) identifies the characteristics and steps in a descriptive research as follows:

Characteristics

Nature

- Descriptive research is used in the literal sense of describing situation or events.
- It is accumulation of a database that is solely descriptive - it does not necessarily seek or explain relationship, test hypotheses, make predictions, or get at meanings and implications, although research aimed at these more powerful purposes may incorporate descriptive methods.

Purposes of Descriptive Studies

- To collect detailed factual information that describes existing phenomena.
- To identify problems or justify current conditions and practices.
- To make comparisons and evaluations.
- To determine what others are doing with similar problems or situations and benefit from their experience in making future plans and decisions.