

# A STUDY ON RESEARCH DESIGN AND ITS TYPES

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## Abstract

While designing research it's essential that we find the proper substantiation needed to answer the question in a specific manner. For testing the thesis research design works as backbone structure for research for answering exploration question [Pawar Neelam, 2020]. There are different types of research design which can be applied to colourful fields for carrying out research work. A research design should be grounded more or less on some methodology the research design should be made once the content and problem of exploration have been named and formulated, objects have been duly outlined, generalities have been duly defined and the thesis have been duly framed [Akhtar Inaam, 2016].

Research design plays vital part for achieving and channelising research work and ideal. A poignant research generally creates a minimal bias in data and increases trust in the delicacy of collected data. A design that produces the least periphery of error in experimental research is generally considered the asked outgrowth. In this manner, the study shows the need, significance, and its type, that are Descriptive Research Design, Correlational Research Design, Experimental Research Design, Diagnostic Research Design, Explanatory Research Design.

**Keyword:** *Research Types, Research Design, Descriptive Research Design, Correlational Research Design, Experimental Research Design, Diagnostic Research Design, Explanatory Research Design.*

## 1 Introduction

Research design is a wide framework that explains the total plan of performing research work. It designate objectives, data accumulation and method of analysis, hours for work, price, duty, conclusion, and actions. There are various types of research such as pure research, applied research, descriptive research, analytical research, fundamental research, conceptual research, empirical research, longitudinal research, laboratory research, exploratory research, and conclusion-oriented research [Pawar Neelam, 2020]. There are various types of research inquiries, including surveys, fact-finding, case studies, correlation studies, and comparative studies.

Research designs belonging to this type include descriptive design, exploratory design, experimental design, longitudinal and cross-sectional designs, casual design, action research design, cohort research design, and case study design.

The research is related to systematic investigation based on the methodology of research and knowledge on a particular topic or subject, the user group, the research problem it investigates etc. According to Creswell (2003) need to focus on three methods like quantitative, qualitative, and mixed method approaches [Pawar Neelam, 2020].

Quantitative research methods use numbers and amounts for describing events that support hypotheses and prediction formulas. Qualitative research methods allow researchers to evaluate the quality of the subject, level of findings, and the kind of picture they are presenting from a researcher's perspective. Mixed method includes combination of both qualitative and quantitative data [Creswell, J. 2014].

### 1.1 Need for Research Design

Formulating a research design helps the researcher to make correct decisions in each and every steps of the study. It assist to spot the important and insignificant tasks of the research work. It creates the research work constructive and interesting by providing microscopic facts at every step of the research process. Grounded on the pattern of experimental work (research design), an analyst can simply form the plan of the research work. A acceptable research design assist the researcher to complete the plan of the study in a given period and ease getting the ideal solution for the research problems [Akhtar Inaam, 2016]. It assist the researcher to accomplish all the work in a better way, even if the available resources are very less. The need of a good research design is that it provides accuracy, reliability, consistency, and legitimacy to the research.

## 2 Research design and its types

Several types of Research designs are available. The researcher should resolve in advance, data accumulation and its analysis which will be the best for the project of research design.

Different types of Research design are explained below,

- Descriptive Research Design.
- Correlational Research Design.
- Experimental Research Design.
- Diagnostic Research Design.
- Explanatory Research Design.

### 2.1 Descriptive Research Design

Descriptive research design is a type of research project that aims to obtain information to systematically describe an object, situation, or population. Clearly, it helps to answer questions about what, when, where, and how about a research problem, rather than why? This method comprehend the use of different kind of research method to investigate the variables in question. In this method researcher does not control any variables he only takes an account of what has occurred or happened [Kumar, C. R, 2008]. Descriptive research is also called as ex-post facto research [Kumar, C. R, 2008]. The descriptive approach to research can involve the use of a wide variety of research methods to investigate the variables being discussed. It uses mostly quantitative data, although quality data is also sometimes used for descriptive purposes. It is important to note that in the descriptive method of research, unlike experimental research, the researcher does not control or apply any changes. Instead, the variables are only seen, observed, and measured.

The different characteristics of the descriptive research design are quantitative in nature in which descriptive research involves the collection of questionable and systematic data that can be used to analyze statistical problem statistics. Uncontrolled variables are one of the outstanding features of descriptive research is that, unlike experimental research, the variables are not controlled or used. Instead, they are simply identified, monitored, and evaluated. A basis for further research is the data collected from descriptive research provides the basis for further research as it helps to gain a complete understanding of the research question in order to be answered appropriately. Cross sectional studies are one of the descriptive method of research which is usually done by cross-sectional studies. A cross-sectional study is a type of observational study that involves collecting information on a variety of variables at each level in a particular time period.

### 2.2 Correlational Research Design

Correlational research is a non-experimental design in which the researcher uses relational statistics to measure and define the level of correlation between variables or sets of scores [Bostley, 2019]. Correlational research is something we do every day; think about how you establish a connection between the ringing of a doorbell at a certain time and the arrival of a milkman. Therefore, it is worthwhile to understand the different types of relationship research available and most importantly, how to do it. Relationship research is a type of research method that involves two dynamic observations to establish statistically correlated relationships between them. The purpose of correlational research is to identify variables that have a specific type of relationship that causes the change in one to create a certain change in the other. This type of research is descriptive, not the same as experimental research that is entirely based on scientific method and hypothesis. For example, relationship research may reveal statistical relationships between high earners and relocation; that is, the more people earn, the more likely they are to move or not to move.

There are 3 types of correlational research which are Positive Correlational Research is a method of research that involves 2 mathematically consistent variables in which an increase or decrease of 1 variability creates a similar change in another. An example is when an increase in workers' wages leads to an increase in the price of goods and services and vice versa. Negative Correlational Research is a method of research involving 2 statistically opposite variables in which an increase in one variant creates one effect or a decrease in another variability. An example of a negative relationship is that an increase in goods and services causes a decrease in demand and vice versa. Zero Correlational Research is a type of correlation study that involves 2 variables that are not really mathematically related. In this case, the conversion of one of the variables may not initiate a corresponding or distinct change of the other variables. The Zero correlational study looks at variables with vague mathematical relationships. For example, wealth and tolerance can be variable under zero correlational research because they are statistically independent.

### 2.3 Experimental Research Design

Experimental Research is the inspection where one or more dependent variables is controlled to determine the effect on one or more variable [Bostley, 2019]. It employs the use of two group that is control and experimental group where the experimental group where the experimental groups is given the treatment and control group is no manipulated in order to formed the nature of the relationship between the studied [Bostley, 2019]. There are four type of experimental research design, pre experimental design is the method where researchers studied a single group and provide a intervene during the experiment [Bostley, 2019]. In this method no control group is formed to compare with experimental group[Bostley, 2019]. Quasi experiment is the method where the researcher use, control and experiment but doesn't randomly assign participants to the group [Bostley, 2019]. Single subject design is the method where researcher observe the behavior of a single individual or a small number of individuals. Experimental research is a scientific method of research, in which one or more variables are modified and applied to one or more dependent variables to measure their impact on the latter [Bostley, 2019]. The impact of independent interdisciplinary variables is often observed and recorded over time, to assist researchers in making a logical conclusion about the relationships between these 2 variables [Rahi, S, 2017]. The experimental research methodology is widely used in physical and social sciences, psychology, and education. It is based on comparisons between two or more direct groups, which, however, may be difficult to make. Related to the laboratory testing process, experimental research projects involve collecting quantitative data and performing statistical analysis on it during the study. So, to make it an example of quantitative research method. True Experiment should be controlled, random, and deceptive

Experimental research design is common. The design of experimental research is especially useful if you want to explore how different aspects affect the situation, making this type of design more versatile. The design of the experimental research uses a scientific approach, which includes features such as hypothesis, independent variable, dependent variable, control variable. Hypothesis is a statement that describes what you are predicting that your research will reveal. Independent variable is a variable that does not depend on other variables. Dependent variables are variables that depend on other variables. The control variables are static variables that remain constant during the experimental study.

### 2.4 Diagnostic Research Design

In a diagnostic research design, the researcher is trying to evaluate the cause of a specific problem or phenomenon. This research design is used to understand more in detail the factors that are creating problems in the company. Diagnostic research design includes the inception, diagnosis and solution for the issue, Inception of the issue asks that, when did the issue arise? In what situations is inception issue more evident? Diagnosis of the issue states, what is the underlying cause of the issue? What is influencing the issue to worsen? Solution for the issue is to tell about what is working in curing the issue? Under what situations does the problem seem to become less evident?

### 2.5 Explanatory Research Design

The study of exploring a new universe one that has not been studied earlier that research work is called as explanatory resarch design[Akhtar Inaam, 2016]. It is also defined as the research work of particular topic that has been studied before or had not been well explained previously in proper way. The main purpose of this research design is to gain familiarity in unknown [Akhtar Inaam, 2016]. For example, If you want to know why certain number of people are buying that product why companies change their business processes or what motivates people in their workplaces. Explanatory research design always starts with a theory or hypothesis and after gathering evidences it approves or disapproves a theory. The explanatory study always carries with a set of concept that guide the researcher to look for the facts [Akhtar Inaam, 2016]. Explanatory Research is designed for a problem that has not been thoroughly researched before, that requires priorities, that produces performance descriptions and provides a better researched model. It is actually a type of research design that focuses on explaining the features of your research in a detailed way. The researcher begins with a common view and uses research as a tool that can lead to future studies. It is intended to provide information where a limited amount of information is available for a particular product in the mind of that researcher. To start your research, you need to create a research framework or lecture framework to submit your research idea to your professor or supervisor or to a board meeting.

Explanatory research was done to help us identify a problem that has not been studied in depth before. Explanatory research is not used to give us complete evidence but to help us understand the problem more effectively. When conducting research, the researcher should be able to adapt the new data and the new insights that he acquires when studying the study. Purpose of Explanatory Research is the purpose of explanatory research is to increase the researcher's

understanding of a particular topic. It does not give solid results because of its lack of mathematical power, but it does cause the researcher to decide how and why things happen. Another purpose of explanatory research is secondary sources, such as published literature or data, which are often used in the explanatory form of research. It should be noted that, choosing a wide range of logical sources to provide a broad and equitable understanding of the topic. It also provides better conclusions in experimental research, which can be of great benefit in directing the following research methods. A greater understanding of the topic allows the researcher to hone the following research questions and can greatly enhance the effectiveness of the research conclusions. This assessment is also very important in determining the best way to deal with achieving a professional goal. A CV is also very important.

### **3 Conclusion.**

For performing a research work it is very much needed to frame the steps in which objective of the research are to be obtained. While framing the steps, research design is one of the steps which consist of studying and finalizing the methods and the techniques that are to be used for carrying out research work. Based on type of research, type of research design is selected because sum research demands for only descriptive work while some needs a detailed investigation of issue. Also some needs exploring totally new phenomenon, ideas, innovative methods which are not get carried out. So in this paper we have tried to mention different types of research design for different types of research work.

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