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THE RESEARCH DESIGN

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►INTRODUCTION

A research is valid when a conclusion is accurate or true and research design is the conceptual blueprint within which research is conducted. A scholar for his research, prepare an action plan, it constitutes the outline of collection, measurement and analysis of data. Research design is not associated to any particular technique of data collection or any particular type of data. When designing research it is necessary that we recognize the type of evidence required to answer the research question in a reasonable way.[1]

1.1 WHAT IS A RESEARCH DESIGN?

Say that you have already decided what you want to study. The next question you should ask yourself is – how are you going to conduct your study? What are thedoesanddon'tsintheprocessofundertakingtheresearch?Theanswertothis question comprises the core of a researchdesign.

A research design is a procedural plan that is adopted by a researcher to answer questions in a valid way. It is very objective and accurate. Normally, a research design will determine the type of analysis you should carry out to get the desired results. To what extent your design is good or bad will depend on whether you are able to get the answers to your research questions. If your design is poor, the results of the research also will not bepromising.[2]

Research design is defined as a framework of methods and techniques chosen by a researcher to combine various components of research in a reasonably logical manner so that the research problem is efficiently handled. It provides insights about "how" to conduct research using a particular methodology. Every researcher has a list of research questions which need to be assessed – this can be done with research design.The sketch of how research should be conducted can be prepared using research design.[3]

Research design is a logical and systematic plan prepared for directing a research study. It specifies the objectives of the study, the methodology and techniques to be adopted for achieving the objectives. It constitutes the blue print for the collection, measurement and analysis of data. It is the plan, structure and strategy of investigation conceived so as to

[1] https://www.researchgate.net/publication/308915548_Research_Design
[2] file:///C:/Users/hp/Downloads/2011-0021_22_research_methodology.pdf
[3] https://www.questionpro.com/blog/research-design/

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obtain answer to research question. The plan is the overall scheme or program of research. A research design is the program that guides the investigator in the process of collecting, analyzing and interpreting observation. It provides a systematic plan of procedure for the research to follow.[4]

Different textbooks place different meanings on research design. Some authors consider research design as the choice between qualitative and quantitative research methods. Others argue that research design refers to the choice of specific methods of datacollection and analysis. In your dissertation you can define research design as a general plan about what you will do to answer the research question. [5]

Unlike a research proposal, a research designis usually not a public document and may be seen by only a few people close to the researcher. It is an integrated statement of and justification for the more technical decisions involved in planning a research project. Ideally, designing social research is the process of making all decisions related to the research project before they are carried out. This involves anticipating all aspects of the research, then planning for them to occur in an integrated manner. Designing a research project is the way in which control is achieved (Blaikie 2000).

> *To design is to plan; that is, design is the process of making decisions before the situation arises in which the decision has to be carried out. It is a process of deliberate anticipation directed toward bringing an expected situation under control. ... If, before we conduct an inquiry, we anticipate each research problem and decide what to do before-hand, then we increase our chances for controlling the research procedure. (Ackoff,1953).*

This process is analogous to the activities of an architect in designing a building: it involves recording, relating and then evaluating the decisions that need to be made. Careful attention to detail, and a concern with the overall workability ofthe design, is required. Designing social research involves the same processes.In particular, it is necessary to make sure that individual design decisions areconsistent and fit together. These decisions then need to be evaluated critically,and, to do this, the design decisions need to be made explicit.

[4] http://mu.ac.in/portal/wp-content/uploads/2014/04/Research-Methodology.pdf
[5] https://research-methodology.net/research-methodology/research-design/

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1.2 Definitions of research design

DISCUSSION

1. According to Seltizdeutsch and cock, "A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose which economy in procedure".

DISCUSSION

7. According to Kerlinger, "research design is the plan, structure and strategy and strategy of investigation conceived so as to obtain answers to research questions and to control variance" Research design is in fact the conceptual framework within which the research is conducted.

DISCUSSION

6. According to Bernard Philips he research design "as a blue print for the collection, measurement and analysis of data".

DISCUSSION

5. According to Claire Seltiz, "a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure".

DISCUSSION

2. According to S.L. Gupta and Hitesh, "a research design provides a flow of activities from problem formulation to hypothesis development to data collection to data analysis to final results to implications". A research design provides a flow of activities from problem formulation to hypothesis development to data collection to data analysis to final result (kumar, 1999).

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1.3 Components of research design

The components of a research design can be organized in many ways. Thefollowing framework is presented as an example *of* what the structure of a research design might look like.

- ✓ **Title**
- ✓ **Statement of the topic/problem**
- ✓ **Motives and goals**
- ✓ **Research questions and objectives**
- ✓ **Review the literature**
- ✓ **Research strategies**
- ✓ **Concepts, theories, hypotheses and models**
- ✓ **Data sources, types and forms**
- ✓ **Selection of data sources**
- ✓ **Data collection and timing**
- ✓ **Data reduction and analysis**
- ✓ **Problems and limitations**

Having proposed possible structures and content for research proposals and research designs, the next task is to find out how to prepare them. This will be done by discussing the three main components: the core elements, which follow closely the headings just used to structure the research design; for each element, the range of alternatives from which choices are made; and the context in which these choices are made, i.e. the factors that can influence the choices (Blaikie 2000).

As a research student, you should have a good understanding of your research\problem such as the method that you would like to use in your work, be clear about your research questions and what is it that you intend to establish. Never select a design and then try to fit the research questions to the design! It should be the other way around. It is very important for you to see if the design could answer your research questions. It is necessary for you to choose a design that will give you theoptimizedresultoverfactorsthatexplaintheresearchresultsobtained.

1.4 NEED AND IMPORTANCE OF RESEARCH DESIGN

A research without a pre-drawn plan is like an ocean voyage without Mariner's compass. The preposition of a research plan for a study aids in establishing direction to the study and in knowing exactly what has to be done and how and when it has to be done at every stage. It enables the researcher to consider beforehand the various decisions to be made. What are the objectives of the study? What are the investigative questions? What are the sources of data? What is the universe of the study? What sampling method is appropriate? And so on.

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Without a plan, research work becomes unfocussed and aimless empirical wandering the researcher would find it difficult. The use of a research design prevents such a blind search and indiscriminate gathering of data and guides him to proceed in the right direction. A research plan prescribes the boundaries of research activities and enables the researcher to channel his energies in the right work with clear research objectives in view, the researcher can proceed systematically focused their achievement the design also enable the research to anticipate potential problems of data gathering operationalization of concepts, measurement, etc.[6]

1.5 Types of Research Design

A researcher must have a clear understanding of the various types of research design to select which type of research design to implement for a study. Research design can be broadly classified into quantitative and qualitative research design.

1. **Qualitative Research Design:** Qualitative research is implemented in cases where a relationship between collected data and observation is established on the basis of mathematical calculations. Theories related to a naturally existing phenomenon can be proved or disproved using mathematical calculations. Researchers rely on qualitative research design where they are expected to conclude "why" a particular theory exists along with "what" respondents have to say about it.

2. **Quantitative Research Design:** Quantitative research is implemented in cases where it is important for a researcher to have statistical conclusions to collect actionable insights. Numbers provide a better perspective to make important business decisions. Quantitative research design is important for the growth of any organization because any conclusion drawn on the basis of numbers and analysis will only prove to be effective for the business.

Further, research design can be divided into five types –

1. Descriptive Research Design: In a descriptive research design, a researcher is solely interested in describing the situation or case under his/her research study. It is a theory-based research design which is created by gather, analyses and presents collected data. By implementing an in-depth research design such as this, a researcher can provide insights into the why and how of research.

2. Experimental Research Design: Experimental research design is used to establish a relationship between the cause and effect of a situation. It is a causal research design where

[6] http://mu.ac.in/portal/wp-content/uploads/2014/04/Research-Methodology.pdf

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the effect caused by the independent variable on the dependent variable is observed. For example, the effect of an independent variable such as price on a dependent variable such as customer satisfaction or brand loyalty is monitored. It is a highly practical research design method as it contributes towards solving a problem at hand. The independent variables are manipulated to monitor the change it has on the dependent variable. It is often used in social sciences to observe human behavior by analysing two groups – effect of one group on the other.

3. Correlational Research Design: Correlational research is a non-experimental research design technique which helps researchers to establish a relationship between two closely connected variables. Two different groups are required to conduct this research design method. There is no assumption while evaluating a relationship between two different variables and statistical analysis techniques are used to calculate the relationship between them.

Correlation between two variables is concluded using a correlation coefficient, whose value ranges between -1 and +1. If the correlation coefficient is towards +1, it indicates a positive relationship between the variables and -1 indicates a negative relationship between the two variables.

4. Diagnostic Research Design: In the diagnostic research design, a researcher is inclined towards evaluating the root cause of a specific topic. Elements that contribute towards a troublesome situation are evaluated in this research design method.There are three parts of diagnostic research design:

- *Inception of the issue*
- *Diagnosis of the issue*
- *Solution for the issue*

5. Explanatory Research Design: In exploratory research design, the researcher's ideas and thoughts are key as it is primarily dependent on their personal inclination about a particular topic. Explanation about unexplored aspects of a subject is provided along with details about what, how and why related to the research questions.[7]

1.6 FUNCTIONS OF RESEARCH DESIGN

A research design relates to the identification of procedures and logistical arrangements to start a study and also at the same time emphasizes the importance of quality in producing optimized research results. It glues all the components and subcomponents in a research project together. In typical experimental research design, there are a few symbols that a researcher should know which have been widely used to show the design of a study. These

[7] https://www.questionpro.com/blog/research-design/

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symbolsare:

R = Random assignment:subjects are assigned in random and into various groupings

X = Means treatment, which maybe design and implementation, performance evaluation, simulation study and so forth

O = Observation or Measurement
(e.g. data rate, baud rate, respond time, buffering period,etc.)

Generally, we can divide the functions of research design into two:

(a) **Constructing an operational procedure:**to execute the tasks required in completing your researchwork.

(b) **Ensuringtheseproceduresaresufficient:**togetvalid,objectiveandanswers which are accurate to the questions posed in the researchwork.

One of the most fundamental aspects of a research design is to specify everything in depth and clear. This is to ensure that a reader will understand what method to follow and how to follow it. A research design should have thefollowing:

(i) Naming the study design (e:g comparative, cross-sectional, or random control)

(ii) How will the study population beidentified?

(iii) What are the sampling methods used?

(iv) What method of data collection will be used in the researchwork?

(v) How will ethical issues be considered?

1.7 RESEARCH DESIGN VS RESEARCH METHODOLOGY

Research design is different from the method by which data are collected. Many research methods texts confuse research designs with methods. It is not uncommon to see research design treated as a mode of data collection rather than as a logical structure of the inquiry. But there is nothing intrinsic about any research design that requires a particular method of data collection. Although cross-sectional surveys are frequently equated with questionnaires and case studies are often equated with participant observation (e.g. Whyte's Street Corner Society, 1943), data for any design can be collected with any data collection method. How the data are collected is irrelevant to the logic of the design. Failing to distinguish between design and method leads to poor evaluation of designs. Equating cross-sectional designs with questionnaires or case studies with

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participant observation, means that the designs are often evaluated against the strengths and weaknesses of the method rather than their ability to draw relatively unambiguous conclusions or to select between rival plausible hypotheses.

Research design

1. Focuses on the end-product: What kind of study is being planned and what kind of results are aimed at. E.g. Historical - comparative study, interpretive approach OR exploratory study, inductive and deductive etc.
2. Point of departure (driven by) = Research problem or question.

3.Focuses on the logic of research: What evidence is required to address the question adequately?

Research methodology

1. Focuses on the research process and the kind of tools and procedures to be used. E.g. Document analysis, survey methods, analysis of existing (secondary) data/statistics etc.)
2. Point of departure (driven by) = Specific tasks (data collection or sampling) at hand.
3. Focuses on the individual (not linear) steps in the research process and the most 'objective' (unbiased) procedures to be employed.[8]

1.8 Nature of Good Research Design

A good research design is regularly characterized by adjectives like flexible, appropriate, efficient, and economical and so on. Generally, the design which minimizes bias and collected & analyses is considered a good design. The design which gives the smallest experimental error in supposed to be the best design in many investigations similarly; a design which yields maximal information many different aspects of a problem is considered most appropriate and efficient design in respect of many research problems. Some of the strategies of good research design are as follows:

Theory – Grounded

Good research reflects the theories which are being investigated where specific theoretical expectations can be hypothesized these are incorporated into the design.

Situational

Good research designs make known the settings for the study; this was shown above where a specific need of teacher and administrators was openly addressed in the design plan. Similarly, demoralization, intergroup competition and competition might be accessed throughout the use of the additional comparison group who are not in direct contact with the original group.

[8] file:///C:/Users/hp/Downloads/Research_and_Design_I.pdf

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Feasible

Good design can be implemented. The series and timing of events are cautiously throughout. Possible problems in measurement, devotion to project database construction and the like, are predictable.

Redundant

Good research designs have some flexibility built into them often this flexibility results from the repetition of essential design features (Akhtar 2016).

Summary:

A research design consists of strategy and specific procedures in seeking answers to a specific researchquestion.

- A weak research design does not allow controlling extraneous variables into experiment.
- Some examples of weak designs are one-shot design and one-group pretest-posttestdesign
- A true research design allows us to maintain control over a situation in terms of variables assignment.
- A quasi-experimental design is a design that does not provide full control overvariables.

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