TYPES OF RESEARCH DESIGN

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Different Research Design

- In case of Exploratory Research study
- In case of Descriptive and Diagnostic Research
- In case of Hypothesis-Testing Research studies

Exploratory Research Design

Conducted for of gaining better insight into a problem

- Evaluate the feasibility of a research project
- Formulation of a statement
- Provide theoretical basis to a hypothesis
- Provide alternative approaches to a problem
- Establish possibilities for further research

➢ Used when researcher has only a vague idea about the problems during the study

➢ Helps in saving time and money

Ex:- An advertising company got an account for a new coffee containing chicory, the company started the investigation process with exploratory research in order to identify the situation. The researchers found that virtually no one had heard about chicory. It wasn't being used, and no-one seemed to know how to put it to use. This resulted in the hypothesis that the advertising could depict the chicory ingredient in whatever way the customer desired.

The Survey Of Concerning Literature

- This is most simple and fruitful method of formulating the research problem .
- Hypothesis is taken from earlier workers and their usefulness is evaluated as a basis for further Research.
- Review available material for deriving the reverent hypotheses from it.

The Experience/Expert survey

- The experience survey means the survey of people who had practical experience .
- The object is to obtain new ideas relating to the research problem.
- A systematic interviewing format with flexibility is adopted.
- An expert could provide –
  - Source of hypothesis
  - Modus operendi of conducting research
  - Source of information
  - Possible problems in the study

Case Studies

- Also called Inside-Stimulating Examples
- Study of all cases which are prevalent to the area of study.
- Relatively unformulated problems
- It is also a fruitful method of suggesting the hypothesis
- Examining existing record
- Unstructured interviewing etc

Descriptive and Diagnostic Research

- Descriptive Research Study's are those studies which are concerned with describing the characteristics of a particular Individual , or a group.
- In diagnostic research study determine the frequency with which some thing occur or is associated with something else.

Descriptive and Diagnostic Research

- Formulating the objective of the study.
- Designing the method of data collection.
- Selecting Sample. (Size)
- Collecting the data.(Where and time)
- Processing and analysing the data.
- Reporting the findings.

➢ A descriptive research design should clearly state the subject of the study, object of the study, content of study, time and place of conducting the study and method adopted to conduct the study.

Descriptive and Diagnostic Research

- Clear definition of problem
- Method of Data Collection
- Preparation of Instruments
- Sampling Design
- Data Collection and Analysis Techniques

Difference between Formulate vs Descriptive/Diagnostic

- Flexible design
- Judgmental sampling
- No pre-determined design
- No fixed decision about the operational procedures

- No flexibility
- Random sampling
- Pre-determined design for analysis
- Advanced decisions

Hypothesis-Testing Research Studies

- Hypothesis-testing research studies known as experimental studies are those researcher tests the hypothesis of casual relationship between variables.
- Cause and effect relationship between variable under study.
- Researcher attempts to maintain control and manipulate the variables that affect the study.

Steps in Experimental Research

- Identification and definition of the problem
- Formulation of Hypothesis
- Developing experimental design-
  - Selecting the sample subjects
  - Group or pair subjects
  - Identify and control non experimental factors
  - Construct validate an instrument to measure
  - Determine place, time and duration of experiment
- Conduct the experiment
- Analyse the data and test the hypothesis
- Report the findings.

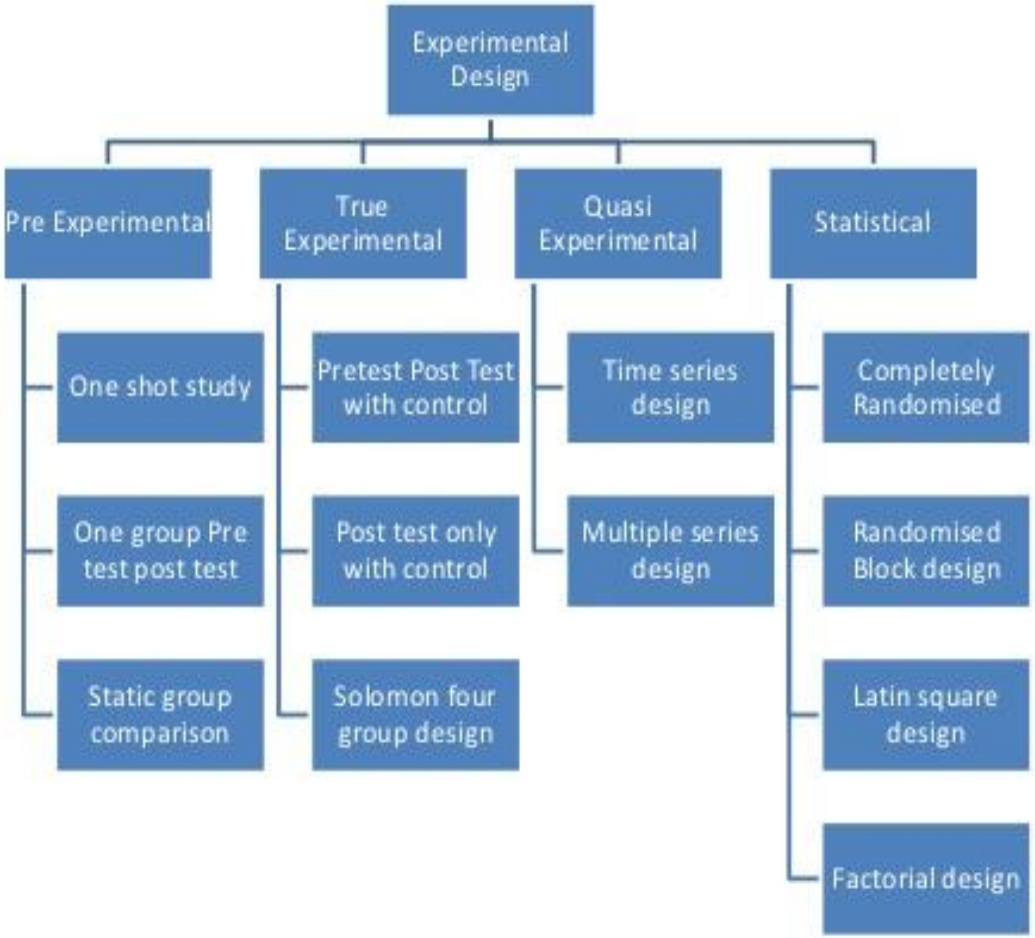
Experimental Research

- Controlling Extraneous Variable
  - Randomization
  - Matching
  - Statistical Control

Principles of Experimental Design

- Principle of Replication
- Principle of Randomization
- Principle of Local Control

Types of Experimental Design



Experimental Design

Symbol	Meaning
X	Treatment
O	Observation
R	Randomization
EG	Experimental Group
CG	Control Group
TE	Treatment Effect

Pre Experimental Design

- They follow procedures of Experimental Design but do not include control group.

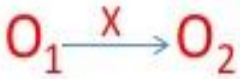
- One Shot Case Study

  Researcher attempts to explain a consequence by an antecedent.

  X →O

Pre Experimental Design

One Group Pre-Test-Post –Test study



$TE = O_1 - O_2$

Pre Experimental Design

- Static Group Design

EG : $\xrightarrow{X}$ O_1

CG O_2

TE = O_1 - O_2

True Experimental Designs

- Pre Test Post Test with Control group Design
  - Study the effects of variable on a carefully controlled sample

$$\text{EG: } R \quad O_1 \xrightarrow{X} O_2$$

$$\text{CG: } R \quad O_3 \qquad\quad O_4$$

$$\text{TE} = (O_2 - O_1) \quad -(O_4 - O_3)$$

True Experimental Designs

- Post Test Only Control Group design

EG: R $\xrightarrow{X}$ O_1

CG: R O_2

TE = O_1 - O_2

True Experimental Designs

- Solomon Four-Group Design

EG:	R	O_1	X	O_2
CG:	R	O_3		O_4
EG:	R			O_5
CG:	R			O_6

- $TE = O_2 - O_1$
- $TE = O_2 - O_4$
- $TE = O_5 - O_6$
- $TE = O_5 - O_3$
- $TE = [(O_2 - O_1) - (O_4 - O_3)]$

Quasi Experimental Designs

- Quicker to use and less expensive
- But do not involve randomization

1. Time Series Design
   - Pre-testing and post-testing of subjects
2. Multiple Time Series Design
   - Experimental and Control group Pre-testing and post-testing

Statistical Designs

- Extraneous variable which the research is able to identify called 'block factor' is isolated and its effects eliminated.

a) Complete Randomized Design

  - Used when dependent variable is influenced by a single independent variable.
  - Principles of replication and randomization is used.

Statistical Designs

- Two Group Simple Randomized Design
- Random Replication Design
- Randomized Block Deign
- Latin Square Design

Statistical Designs

- Factorial Design
  - Simple Factorial Design
  - Complex Factorial Design