

## QUESTION :

Discuss the key components in research design design of quantitative research, including research questions and hypothesis, variables, theoretical framework, sampling, data collection methods and tools, and data analysis techniques. How do these elements contribute towards conducting a well organised quantitative research study?

## QUANTITATIVE RESEARCH DESIGN :

Quantitative research design is one of the integral components of sociological research. This research design includes key components like research question, hypothesis construction, sampling methods and various data collection and analytical tools. An appropriate quantitative method will help to quantify



the result and produce an outcome applicable to solve present day problem. Hence, various components of quantitative research help in conduction of well organised research study.

## KEY COMPONENTS OF QUANTITATIVE RESEARCH METHOD:

Various integral features and components of quantitative research design are as follows:

### (1) Research Questions:

Research questions are composed of statements and problems on which the researcher is going to conduct the research about.

It aims to solve the present day issues with limited, quantifiable solutions.



Example:

What is the association between school drop outs and usage of illegal drugs?

## (ii) Hypothesis construction:

Hypothesis is defined as,

"Any proposition that needs to ~~em~~ undergo empirical test for proving the statement as wrong or right."

Hypothesis construction approach of quantitative research involves two ways mainly based upon "Deductive method".

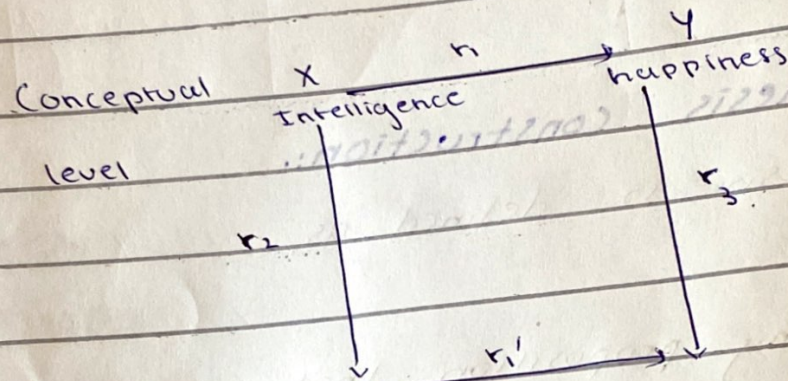
### ① Classical approach method:

Classical approach method includes defining concepts, writing proposition and conducting measurements to bridge the gap between concepts



and measurements.

Example:



② Strict operationalisation approach:

It attempts to define scientific measure concepts in terms of operations of measurement and observations.

Example:

Population growth is in terms of geometric numbers and food commodity grows in arithmetic



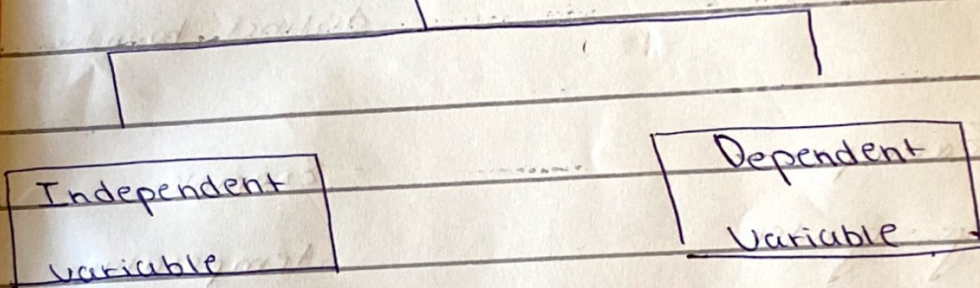
numbers

### (iii) Variables in Quantitative research:

Variables are defined as

"Any entity in research method which either produces change or is affected in process"

#### Types of variable



- Produces change in the process

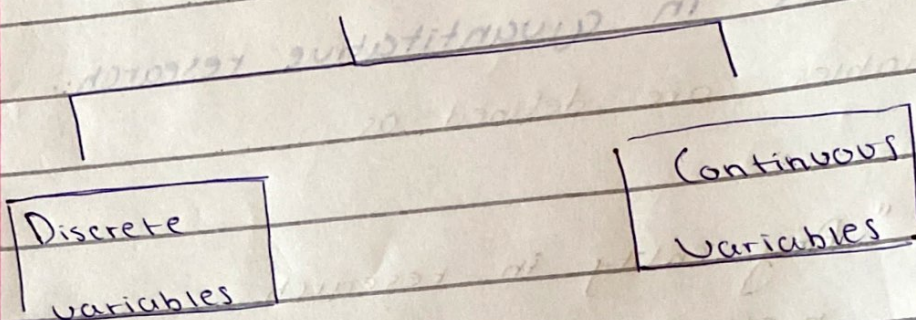
- Example:  
Age, gender, temperature

- It is the one affected in the process

- Example:  
Social conditions, behaviour



## Features of variables



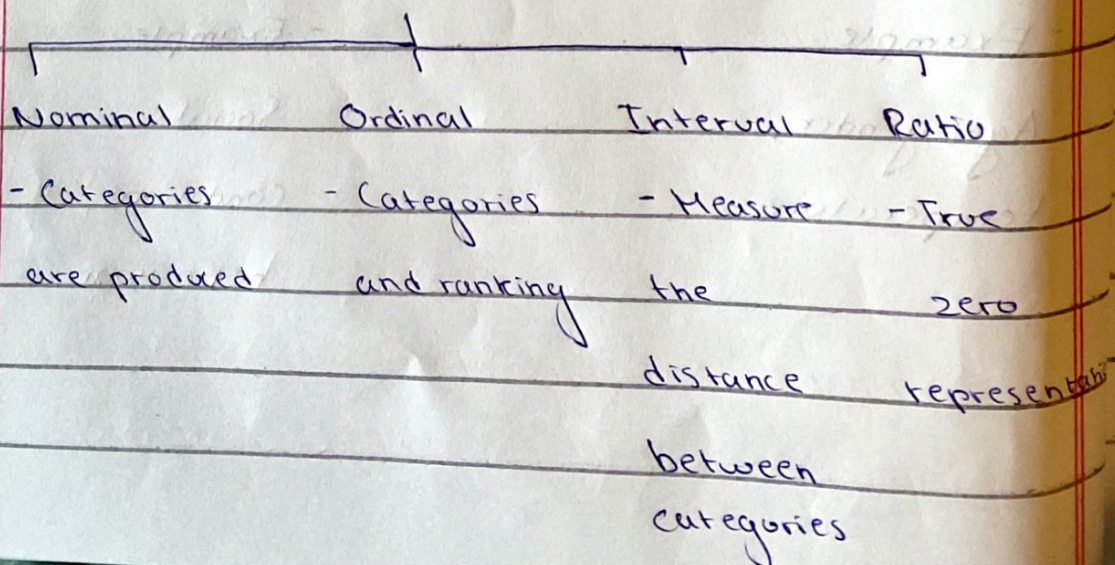
- Separate variables with distinct boundaries.
- Variables spread over a spectrum with no distinct boundary.

- Example:  
Age, gender

- Example:  
temperature

## LEVELS OF MEASUREMENT

### OF VARIABLES.





#### (iv) Theoretical framework:

Theoretical framework will define the paradigm and ambit of social research,

"Ability of the researcher or perspective of the researcher while viewing the world from social lens."

Examples:

Marxist Paradigm — takes capitalist as a central problem with implications such as overpopulation.

#### (v) Sampling methods:

Sampling methods are the probability sampling methods of quantitative research method.

(i) Simple random:

Selecting  $n$ th unit of analysis



randomly from the targeted population.

Example:

Selecting old age women with from a district.

(ii) Systematic Sampling:

Involves choosing individual entity from a sample with specific interval and the targeted element is not placed in any order.

Example:

Picking every 3<sup>rd</sup> student from 900 students. 3<sup>rd</sup> is the interval.

(iii) Stratified Sampling:

Forming strata (sub-categories) and then picking from each strata.

Example:

Forming multiple groups of specific students and then picking from each group.



Example:

(iv) Cluster sampling:

Forming clusters and picking sample from cluster which will act as primary cluster from which further sample will be collected.

Example:

Picking out specific cancer patients from cluster, from which further patients will be picked out.

Large cluster unit.



Sample picked



Again cluster formed



Sample picked

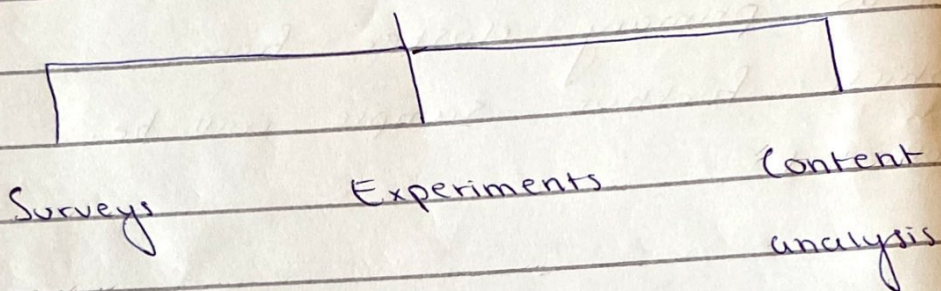


Process repeated.



(vi) Data collection methods, and tools:

DATA COLLECTION  
METHOD OF  
QUANTITATIVE RESEARCH.



- Mail, interview

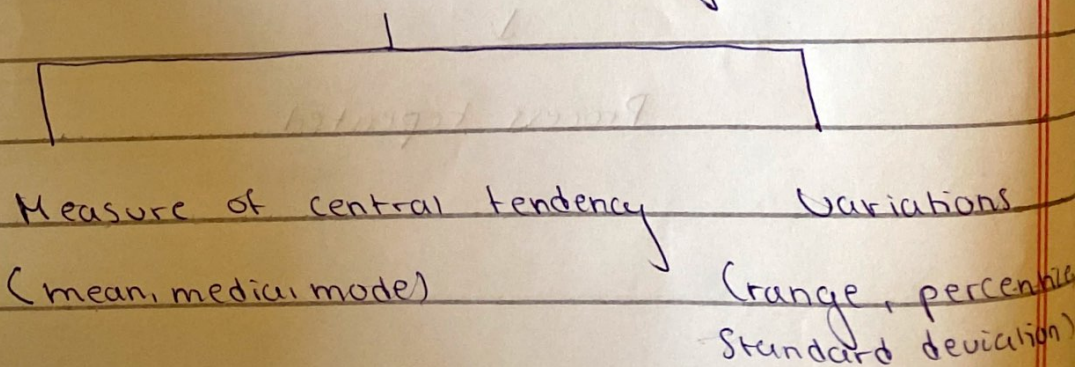
- Quasi or one short case study

- Analysing context of content.

viii) Data analysis techniques:

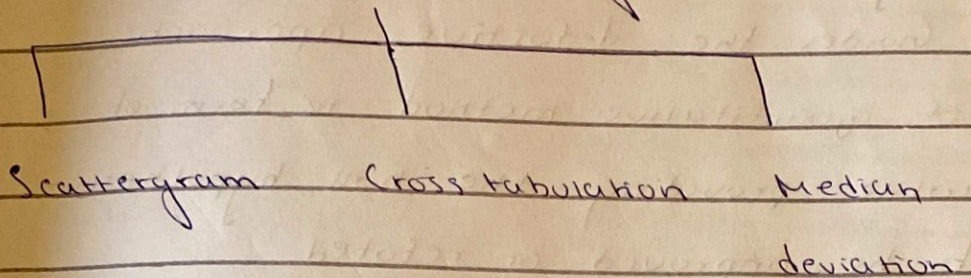
Data is analysed on the basis of number of variables present.

Univariate analysis



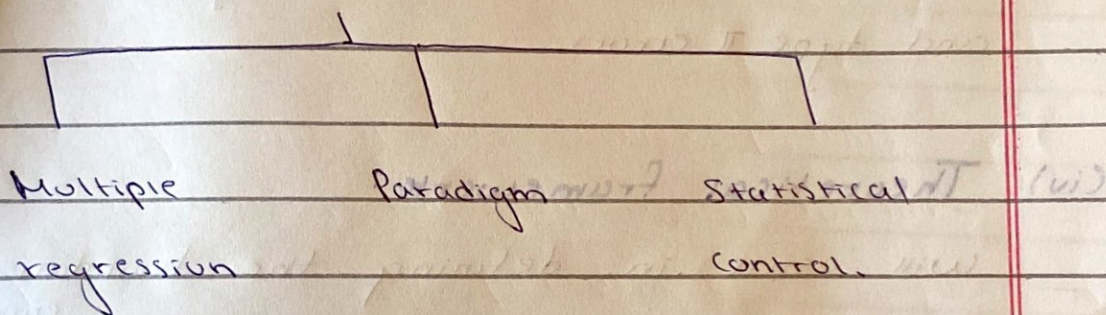


Bivariate analysis (ii)



More than two

variables



## KEY COMPONENTS CONTRIBUTING TOWARDS CONDUCTING AN ORGANISED QUANTITATIVE RESEARCH:

(i) Research Question:

Help to dictate the path of research either exploratory, explanatory or descriptive.



### (ii) Hypothesis:

Guides the deductive approach of quantitative method in form of while providing the null hypothesis to be approved or refuted.

### (iii) Variables:

Help in building the causal relationship and eliminate type I and type II errors.

### (iv) Theoretical framework:

Will assist in defining the boundaries of social lens, while reducing explanatory error.

### (v) Sampling techniques:

Enhances the internal validity of research.

### (vi) Data collection and data analysis:

Enhances the reliability and validity of the research.



## CONCLUSION:

Quantitative research is composed of several key components, which incorporated correctly will produce quantifiable outcomes. These results can be utilised to solve the current social problems of the society and produce reliable and valid end results.