Basic Research Approaches and Designs: An Overview

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Introduction…

- Most scholars agree with the definition that "research is a 'systematic' process of collecting and analyzing data for some purposes."
- Kerlinger (1986) observes that research is not only ''systematic but a 'controlled, empirical and critical investigation…"
- But, it is the design that gives research direction and systematizes it.
- In fact, the research design (or structure of research) is the 'glue' that holds all the elements in a research project together.
- Some people confuse design with Research methodology or methods but each of these concepts mean different things.

What is a Research Design?

- Different scholars define the term research design different.
- According to Leedy (1997), a research design is a plan for a study, providing the overall framework for collecting data.
- MacMillan and Schumacher (2001) on the other hand define it as a plan for selecting subjects, research sites, and data collection procedures to answer the research question(s).
- This implies that the research design is the logical structure for inquiring into a given research problem or for answering research questions.
- That is why Durrheim (2004) looks at it in terms of a strategic framework for action that serves as a bridge between research questions and the execution, or implementation of the research strategy .

What is Research Methodology…?

- According to Schwardt (2007), research methodology is defined as a theory of how an inquiry should proceed.
- It involves analysis of the assumptions, principles and procedures in a particular approach to inquiry.
- Meanwhile, Creswell and Tashakkori (2007) revealed that methodologies explicate and define the kinds of problems that are worth investigating; what constitutes a researchable problem; testable hypotheses; how to frame a problem in such a way that it can be investigated using particular designs and procedures; and how to select and develop appropriate means of collecting data.
- This shows that the research design is part of research methodology.

Criteria for Classifying Research Designs…

- Research designs are classified basing on different criteria such as:

1. The research approach/paradigm.
2. Ability to control research conditions.
3. The goal of the inquiry.
4. Time dimension of the study.
5. The intention to generalize study findings.
6. Phasing of data collection.
7. The desire to ensure validity and reliability

Research Designs/Approaches by Research Paradigms…

- Broadly, on the basis of research paradigm, there are three categories of research designs:
- Qualitative, Quantitative and Mixed-methods research approaches/designs.

1. Qualitative research design is a research method used extensively by scientists and researchers studying human behavior, opinions, themes and motivations etc.

- It is characterized by data (or information) that can be narratively described, not numerically.
- It is based on the philosophy of interpretivism.

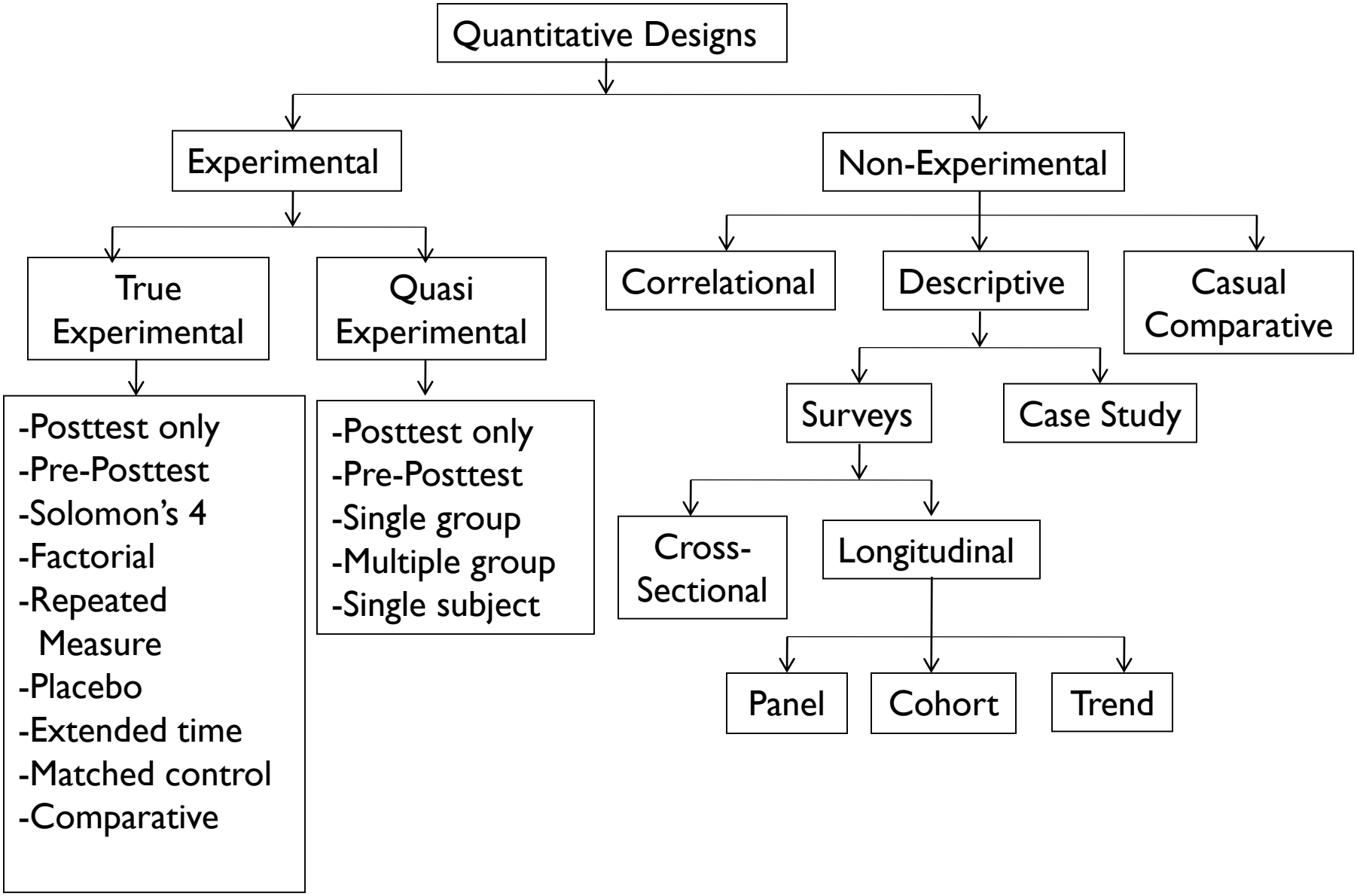
2. Quantitative research design relates to the design of a research project which uses quantitative research methods.

- Its characterized by data that are presented in form of numbers (or statistics).
- It is based on the theory of positivism, or more precisely, logical positivism.

3. Mixed methods research design is a methodology for conducting research that involves collecting, analysing and integrating quantitative (e.g., experiments, surveys) and qualitative (e.g., focus groups, interviews) data.

- This approach to research is used when this integration provides a better understanding of the research problem than either of each alone.

Specific quantitative research designs…



Specific Experimental Designs…

- True Experimental Designs - A study design in which the researcher has control over the conditions in which the study occurs i.e. the researcher can manipulate the variables as he/she wishes to examine their effects or relationships. For examples:
- Post-test only control group – the researcher uses two groups that are similar in characteristics.
- Pretest Post-test control group - The researcher uses two groups – starts experiments with pretest to get baseline condition of the participants. Later, the IV is administered to one group only and a post-test is done to measure the effect of the IV or DV.
- Solomon Fours Control Design - This combines post-test only group and pre-test control group designs. Therefore, there are four groups–two treatment groups and two control groups receive treatment but all groups receive post-tests. It helps to eliminate test effect in an experiment.
- Etc.

Elements of the Research Design…

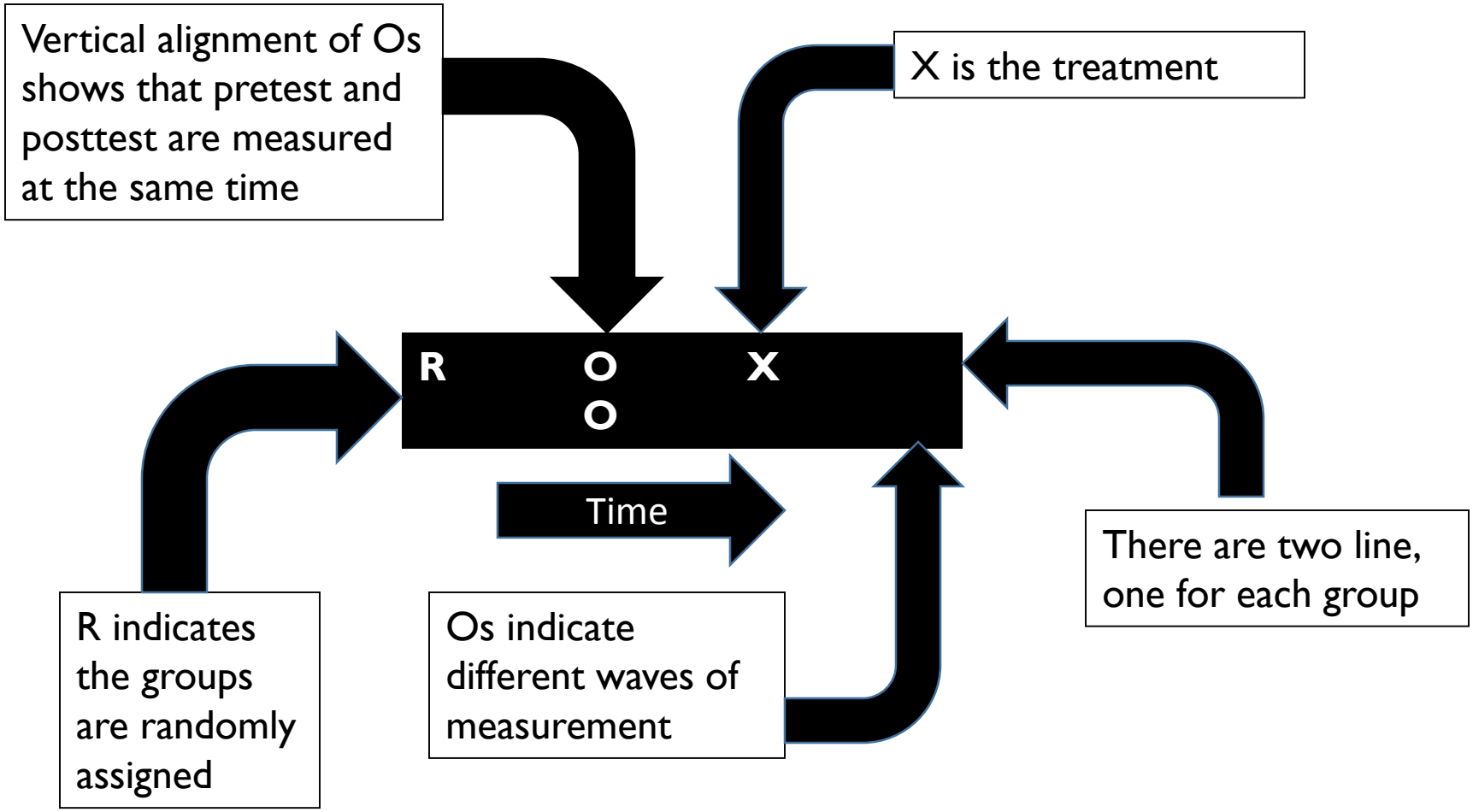
1. Observation or measures - These are symbolized by 'O' in design notation. An 'O' can refer to single measure. You may use a subscript to distinguish specific measures e.g. O_1, O_2
2. Treatments or programs - These are symbolized with an 'X' in design notation. The 'X' refers to an intervention. Some researchers use X+ or X- to indicate the treatment and control groups respectively.
3. Groups - Each group in a design is given its own line in the design structure. E.g. the notation in three lines means there are three groups.
4. Assignment to group - It is assigned by a letter at the beginning of each line (i.e. group) that describes how the group was assigned. The common letters are:

   R –Random Assignment

   N – Non-equivalent groups

   C - Assignment by cut-off
5. Time - Time moves from left to the right i.e. elements listed on the left occur before those on the right.

Example of Design Notations…



Source: Adapted from Trochim (2006)

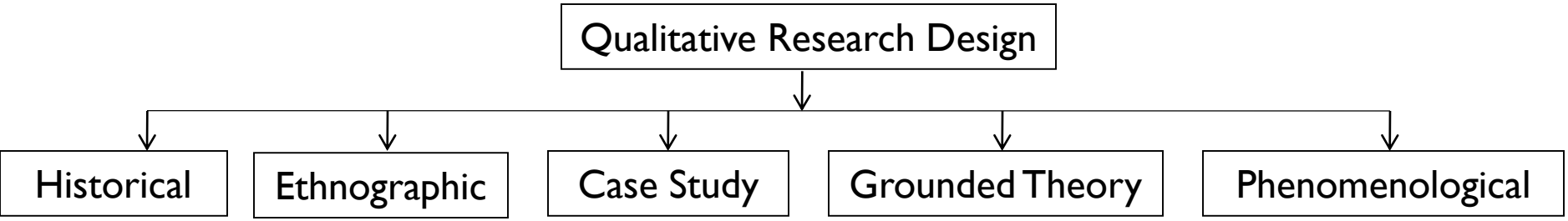
Non- Experimental Quantitative Designs…

- ❖ Survey – is a detailed investigation into characteristics of a population as expressed at a particular point in time. Data is collected on beliefs, attitudes, opinions, practices and perceptions related to the issue of interest.
- ❖ There are two broad categories of surveys: cross-sectional and longitudinal surveys.

1. Cross-sectional survey – data is collected at one point in time from a cross-section of the study population.
2. Longitudinal survey – data is collected from a population over different times. It can be a panel, cohort or trend survey.

- ❖ Panel survey – data is collected from the same group of a sample drawn from the population.
- ❖ Trend survey – the researcher identifies new target populations from which a sample is drawn at different times.
- ❖ Cohort survey – is a design in which a particular target group is identified and followed over time. That target population is called a cohort.
- ❖ NB. Surveys can also be classified by the data collection methods e.g. questionnaire and interview surveys.

Qualitative Research Designs…



- Historical research design – is a design used for investigating past happenings (historical events). Main types include: Biographical, Ideological, legal and organizational historical researches.
- Ethnographic design – is used to explore cultural groups so as to understand and be able to describe and interpret ways of life from their own point of view. It can be divided into traditional and critical ethnography or micro and macro ethnography.
- Phenomenological research design - a design applied for understanding daily life and activities from the actor's subjective point of view. There are several categories of phenomenology e.g. social or transcendental phenomenology, etc.
- Case study design – a design focusing on the study of a case or a few cases of a phenomena (single or multiple case design). Cases studies may also be descriptive, explanatory, evaluative or exploratory studies.

Types of Mixed Methods Research Designs...

1. **Sequential Explanatory Design –** is a design that involves the collection and analysis of quantitative data followed by the collection and analysis of qualitative data.

❖In the design, priority is given to the quantitative data, and the findings are integrated during the interpretation phase of the study.

- **When to use it?**

1. To help explain, interpret or contextualize quantitative findings.
2. To examine in more detail unexpected results from a quantitative study.

- **Strengths:**

1. Easy to implement because the steps fall into clear separate stages.
2. The design is easy to describe and the results easy to report.

- **Weaknesses**:

1. Requires a substantial length of time to complete all data collection given the two separate phases.

2. Sequential Exploratory Design (SED)...

- SED is a design where qualitative data collection and analysis is followed by quantitative data collection and analysis.
- In the design, priority is given to the qualitative aspect of the study, and the findings are integrated during the interpretation phase of the study.

When to use it?

1. To explore a phenomenon and to expand on qualitative findings.
2. To test elements of an emergent theory resulting from the qualitative research.
3. To generalize qualitative findings to different samples in order to determine the distribution of a phenomenon within a chosen population.

Strengths:

1. Easy to implement because the steps fall into clear, separate stages.
2. The design is easy to describe and the results easy to report.

Weaknesses:

1. Requires a substantial length of time to complete all data collection given the two separate phases.
2. It may be difficult to build from the qualitative analysis to the subsequent data collection

3.Concurrent Triangulation Design (CTD)…

- CTD is a design where only one data collection phase is used, during which quantitative and qualitative data collection and analysis are conducted separately yet concurrently.
- In the design, the findings are integrated during the interpretation phase of the study.
- Usually, equal priority is given to both types of research.
- **When to use it?**

1. To develop a more complete understanding of a topic or phenomenon.
2. To cross-validate or corroborate findings.

- **Strengths:**

1. Provides well-validated and substantiated findings.
2. Compared to sequential designs, data collection takes less time.

- **Weaknesses:**

1. Requires great effort and expertise to adequately use two separate methods at the same time.
2. It can be difficult to compare the results of two analysis using data of different forms.
3. It may be unclear how to resolve discrepancies that arise while comparing the results.

Questions to answer when choosing research designs…

1. What is your theoretical and epistemological perspective?
2. What type of study are you undertaking e.g. an exploratory research?
3. What is your research question?
4. What sample size will you base your data on?
5. What research methods will you use and why?
6. What steps will you take to ensure that your research is ethical?
7. How will you ensure reliability?
8. What about validity?
9. What about generalizeability?
10. What of transferability?

Conclusion…

- There are various types of research designs, each of them has its own strengths and weaknesses.
- It is advisable for the researcher to use a mixer of designs and methods to strengthen the validity and reliability of his/her study.
- This is termed triangulation in research circles. i.e. it is a way of approaching the same source of data from different angles.
- The researcher should always triangulate his study designs and methods to raise its validity.

THANK YOU