Research Methodology Course for Master 1- 2023-2024

Lecture 1: Fundamental research concepts

1. Research

Research is a systematic and structured undertaking that is used to fill up a gap in knowledge. The word systematic in here means in accordance to clearly established guidelines or "objective methods". for example, if we want to know what are the reasons behind students' demotivation, it is not enough to informally talk to some of them and draw conclusions. This instance of subjective endeavour does not respect the guidelines set up for undertaking research such as design and implementation of research tools. As for the key phrase of filling the gap, it refers to adding insights into the existing body of knowledge.

Tasks: Explain the meanings of the following definitions.

Kerlinger (1973) : "Systematic, controlled, empirical, and critical investigation of hypothetical situations".

Bern (1994), "Systematic investigation to find solution to a problem".

2. Research Design: It refers to the overall plan or strategy that guides a research project from its conception to the final analysis of data. In other words, it is a blueprint of how we go about designing research tools, collecting data, and analyzing this data to ensure consistency, reliability, and validity throughout the process.

3. **Positivism**: It is a scientific approach that studies only observable and measurable phenomena through the application of empirical principles, such as observation, hypothesis formation, hypothesis testing through experiments, and statistic measurement. It goes back to the 19th century, and it asserts that knowledge is derived from sensory channels, rejecting speculative metaphysical reasoning. Notable figures associated with this approach include Auguste Compte and Ernst Mach.

4. **Interpretive:** It is an approach that emphasizes the subjective explanation of social phenomena (e.g. sex abuse) and human behaviors. It is built on the premise that social phenomena can be understood only in their social context and through the interpretation of social actors, i.e. citizens. The methods used in this approach are qualitative methods such as interviews, participant observation, and content analysis. Prominent scholars associated with this approach are Max Weber and Alfred Schutez. This approach is more relevant to the field of sociology and anthropology.

5. A deductive approach: It is a logical method of reasoning where conclusions are drawn from general principles or premises. It involves moving from a broad perspective to a more specific one, applying known theories to make predictions or reach specific conclusions.

6. An inductive approach: It is a method of reasoning that moves from specific observations to broader generalizations and theories. In this approach, researchers gather and analyze specific data to derive patterns, themes, or principles. Unlike deductive reasoning, which

starts with general principles, inductive reasoning builds knowledge from specific examples, making it a bottom-up process.

Lecture two: Research approaches

1. **Quantitative Research**

1.1.Definition:

This word comes from the verb quantify, which means counting, and basically, this method concerns itself with objective measurement. Quantitative research gathers and analyzes data statistically in order to arrive at generalization.

1.2.Characteristics of Quantitative Research

- It aims at establishing a relationship between a dependent and an independent variable. This could involve a descriptive approach in which the researcher envisages the description of a relationship between the two variables. Or, it could be experimental, in which the researcher manipulates the variables and tests them twice looking for causality.
- It classifies features, counts them, and constructs statistical models.
- Data are gathered using structured research instruments.
- The results are based on large sample sizes that are representative of the population.
- The study can be replicated.
- It has clearly defined research questions. All aspects of the study are well-designed before data is collected.
- Data is in the form of statistics presented in a table and charts and not in text.
- It can be used for generalization, prediction, or predict future results and investigate causal relationships.
- Reports data explains relevant results in relation to the research problem.
- Explains hiatus between what planned and what happened.
- Explains the technique used to clean the data.
- Chooses minimally sufficient statistical procedures and explains why choosing them.
- Avoids inferring causality when little experimentation is done.
- Always tells the reader what to look for in the tables.

1.3.Limitations

Tests data, but does not give explanations

Uses rigid statistical approach

Development of questions by researchers might lead to bias

Uses narrow and superficial data.

Uses numerical descriptions rather than narrative accounts can lead to poverty or of data

Preset answers do not reflect how people feel about the subject

2. **Quantitative method**

Quantitative research is a systematic investigation in which data is collected and analysed in numerical form. It involves the use of statistical technique to gather and draw conclusions. The type of research is often used to quantify relationships,

patterns and trends in various fields, providing a basis for statistical analysis and generalization.

2.1.Features of quantitative design: It refers to **a** plan or structure that outlines how researches will conduct a study with a focus on collecting and analyzing numerical data. It involves the following features:

- Specifying the research questions
- Selecting the participants
- Defining the variables
- Choosing appropriate methods for data collection and analysis
- It involves experiments, surveys, and observational studies
- Results are based on large sample
- It can be used for predictions, generalization, and investigating causal relationships
- **2.2. Types of Quantitative Research**
- 1. **Descriptive**. It refers to the existing conditions, i.e., systematically gathering data without manipulating, no intervention.
- Example: investigating Smartphone addiction among youngsters. This research design can ask the following questions "what, who, where, when ?", and It can be used as a precursor to other research designs.
- 2. **Correlational Design**: It identifies relationships between variables without manipulating them. A change in one variable could be accompanied by a change in another variable, correlating positively or negatively (e.g., correlation between amount of time spent exercising and body weight). Here, we can look at the number of hours of exercise and its relation to the number of kilograms.
- 3. **Experimental design**. To look for causality, it manipulates independent variables and controls the dependent variable (using of flashcards to better retention span).
- 4. **Quasi-experimental:** It lacks full control over variables that true experiments have. Among its characteristics is that it cannot randomly assign participants. It uses existing groups. All this is due to the problems of practicality and ethics.
- **2.1. Types of Qualitative research**
- **2.1.1. Phenomenological research design**: It explores the meaning of lived experiences and how they are presented by individuals (it considers people's perspectives, evaluation and behaviors in a certain situation) with the aim of uncovering the essence of human experience, without imposing assumptions or preconceived ideas. As far as the research tools are concerned, it, basically, uses research tools in-depth interviews and open-ended questionnaires.
- An example of phenomenological research is exploring the lived experiences of individuals diagnosed with chronic illness in managing daily life challenges and maintaining a sense of being, that is, identifying commonalities and differences. Among the basic downsides of this research type is the use of small samples and its interpretive nature, which would engender bias.
- **2.1.2. Grounded theory**: It develops a theory by continually analyzing and comparing collected data from a relatively large sample of participants. It takes an inductive approach to let the data speak first. . It analyzes data to obtain patterns, and more and more data is collected until saturation is reached. Among the research tools it uses are

interviews, observations, and an example of grounded theory research how people perceive chronic pain.

- **2.1.3. Ethnographic research**: It involves observing and analyzing a culture shared by a group of people in their natural setting to gain insights into their behaviors, beliefs, and values. The research tools used in this type of research are, for instance, observation and interviews. As an example of this type of research is how traditional festivals are celebrated. Among the problems with this approach are: bias of the participants, confidentiality, and ethnic complexity.
- **2.1.4. Case study:** is a study of a single individual or a group of individuals to gain an in-depth understanding of their experiences, behaviors, and outcomes. This type of research is descriptive and bounded to contexts. An example of case study is *investigating workers' effectiveness in a factory*.

3. Mixed Methods

3.1. Introduction

Mixed method is a relatively new research that developed in the 1980s. However, strictly speaking, it could be said that it goes back to the works of Campbell and Frisk, who used a variety of methods in psychological studies. Their work prompted others to blend quantitative methods-like surveys with qualitative methods-like observations.

Mixed method is a way to navigate the weaknesses of each qualitative and quantitative design. Thus, it meshes qualitative and quantitative research approaches with the aim of arriving at a better research result and at a better understanding of the problem. It was thought that the combination of the two methods would overcome the weaknesses of each of them. Therefore, mixed method approach is used to triangulate data resources. According to Creswell, mixed methods could be used to the following aims.

- Quantitative data could be used to check the validity of quantitative data.
- Quantitative data can explain qualitative data.
- Quantitative data can explore different types of questions than qualitative or vice versa.
- One approach can lead to better instruments.
- One research approach can build on the other and they can alternate each other.

3.2.Types of Mixed Methods

3.2.1. Convergent-Parallel-Mixed Methods

In this model, the researcher collects both qualitative and quantitative data and then integrates them to explain the problem.

Example, effect of project work on classroom Interaction

- . Collective data: interviews with teachers
- Quantitative data: tests evaluative grades, observation schedules

After analyzing them separately, the findings are merged to better understand the problem.

2.2.2. Explanatory-sequential method: This design involves two distinct stages. In the first stage, the researcher collects and analyses quantitative data through, for example, close-ended interviews, and then qualitative design is used to seek further understanding and interpretations of results.

2.2.3. Exploratory-sequential mixed method: This design combines qualitative and quantitative research designs in data collection and analysis in two different stages. In the first stage, the researcher collects and analyzes qualitative data to generate hypotheses and themes, followed by a quantitative phase to test and validate findings.

Example: the researcher investigates the type and frequency of errors made by students through closed questionnaires and content analysis checklists; then, he or she probes into causes of errors using focus groups or unstructured interviews.

Example, Impact of Technology on Elderly Social Interaction

Methodology:

Qualitative stage. Using interviews to collect data (elderly perceptions about technology)

Quantitative stage: Designing an experiment to measure the trends observed, that is, test for example if technology connects them more or creates barriers.

2.3. More advanced models. These basic models can be used in more advanced methods,

• *Transformative mixed method*. It collects both collective and quantitative data, and then either converges them or presents them sequentially.

• *Embedded mixed method*. It involves a sequential or convergent use of data, but one model is embedded in the other. Qualitative is, for example, embedded in quantitative approach.

• *Multi-phase mixed method*. It is mainly used in advanced program evaluation, wherein two designs run in parallel to be understood in the long-term program.

Here are some differences between qualitative, quantitative, and mixed methods.

Qualitative	Quantitative	Mixed methods
1. Emerging methods 2. Open-ended questions 3. Interview data , observation data , document data and audiovisual data 4. Text and image analysis Themes, patterns, and interpretations	1. Pre-determined data 2. Instrument-based questions 3. Performance data , attitude data, observational data, and census data 4. Statistical analysis 5. Statistical interpretation	1. Both pre-determined and emerging methods 2. Both open-ended and closed-ended questions 3. Multiple forms of data drawing on all possibilities 4. Statistical and text analysis 5. Across databases

		interpretations

Criteria for selecting research approach:

1. Worldview
2. Design: exploratory or explanatory
3. Methods
4. Personal experience of the researcher
5. The audience

Task 1: what distinguishes qualitative study from quantitative study? Give three differences

Task 2: Write a blueprint research outline for the following research topics using qualitative, quantitative, or mixed methods, depending on the nature of the problem.

a. Understanding the impact of social media on adolescent mental health

b. Relationship between classroom size and academic performance

3. Impact of teaching methods on students' performanc

Lecture 3: General introduction to research

In this lecture, we are going to review the different components of a general introduction to social research. We have actually five components of a general introduction:

- Stating the research problem (telling what the problem is).
- reviewing studies that have addressed the problem (studies to research as a background)
- Indicating deficiencies in the studies, that is, what we call research gap.
- Advancing the significance of the study for a particular audience, that is saying who would be the beneficiaries or for whom this study is important.
- Stating the purpose statement or telling what is the objective behind the study.