

Introduction to Research Methods

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Introduction to Research Methods

Lecture 3



Learning Outcomes

1. Differentiate between research aims and objectives, and understand the essential components of writing a comprehensive research proposal.
2. Understand the transition from theoretical to conceptual frameworks and the role of hypotheses in research design.
3. Learn how to operationalize concepts into variables and recognize the importance of selecting appropriate variables for research.

Learning Outcomes

4. Present and justify methodological choices, including identifying and describing appropriate research instruments for data collection.
5. Structure of Research Proposal and its essential components.
6. Recognize the importance of ethical considerations and constraints in research, and develop strategies to address them effectively.

Research Aims and Objectives in Qualitative Research

Qualitative Research Focus

- Investigates phenomena in rich detail.
- Exploration, not testing or measuring, is the primary goal.
- Rare to test a hypothesis in qualitative research.
- Aims to explore a research question deeply.

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Establishing Aims and Objectives

- **Guiding Questions**

- Why am I doing this research?
- What is the purpose of this research?
- What do I hope to learn?
- What do I need to know?
- Who can provide access to that knowledge?
- What will be the likely output?

These questions help frame research aims and objectives.



Differentiating Aims and Objectives

Research Aim

- Conceptual level of research.
- Overall purpose, not necessarily time-bound.
- Answers "What is the purpose of this research?"



Example

- Aim: Answer the research question and provide evidence-based guidelines.

Research Objective

- Operational level of research.
- Defines how to achieve the aims.
- Often begins with a verb (e.g., examine, identify, establish).

Example

- Objectives: Examine specific variables, identify key factors, establish relationships.

Practical Guidance

- Objectives are the tasks leading to achieving the aims.
- They break down the aim into actionable steps.



Introduction to Conceptual Frameworks

Constructing a Conceptual Framework

- Developed from the literature review.
- Essential foundation for both qualitative and quantitative research.

Key Influences in Research Design:

- Your own research agenda.
- External requirements and constraints.
- Available resources.
- Personal experience and background in research.

Constructing
a conceptual
framework



Designing a Conceptual Framework

Influences on Research Design:

Research question should drive the design of the study.

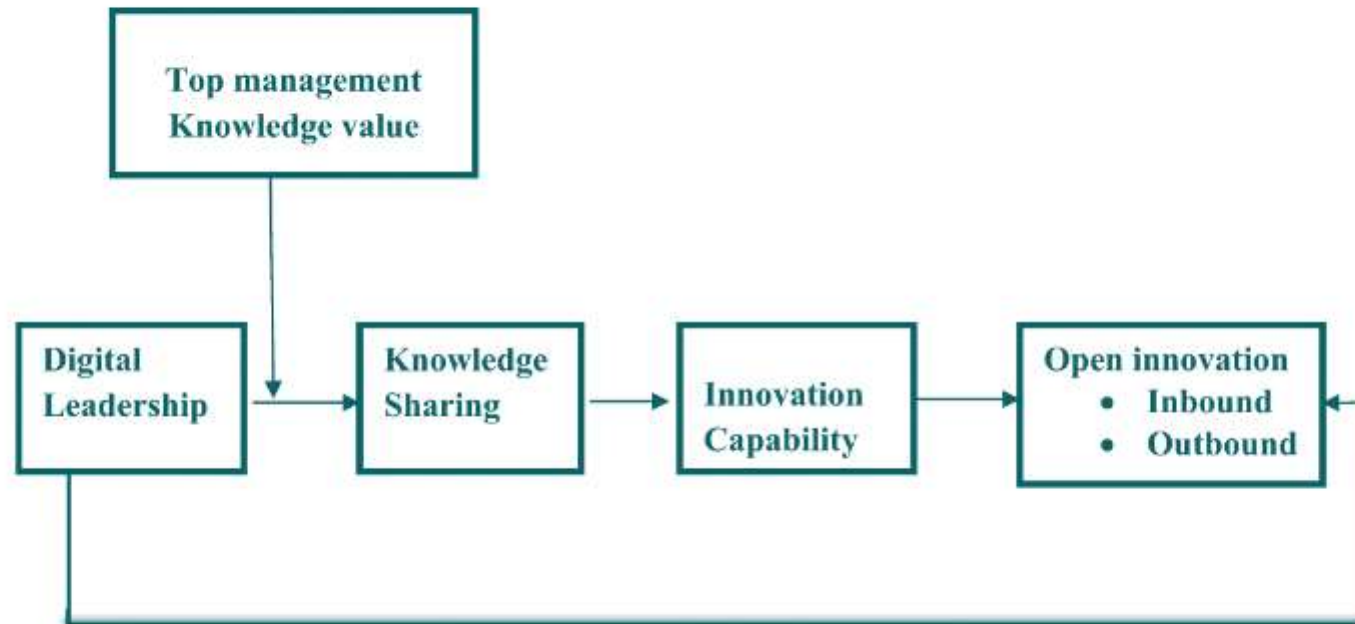
Methodological Choices:

- Determined by the research question and conceptual framework.
- Theoretical frameworks guide the focus on specific concepts.
- Influenced by researcher's preferred approach and intended research output.

Table 3.1 Pre-operational structure of quantitative and qualitative research

Quantitative research	Qualitative research
Topic of interest	Topic of interest
Literature review	Literature review
Theoretical framework	Theoretical framework
Conceptual framework	Conceptual framework
Define variables	Identify a tentative research question
Define hypothesis <i>or</i> aim and objectives	Define aims and objectives (mutable subject to investigation)

Figure 1 Hypothesized research model: a moderating serial mediation model of digital leadership and open innovation



Source: This model has been proposed and developed by the authors of this paper

H1	Digital leadership is positively associated with open innovation
H2	Digital leadership is positively associated with knowledge sharing
H3	Digital leadership is positively associated with innovation capability
H4	Knowledge sharing is positively associated with innovation capability
H5	Knowledge sharing is positively associated with open innovation

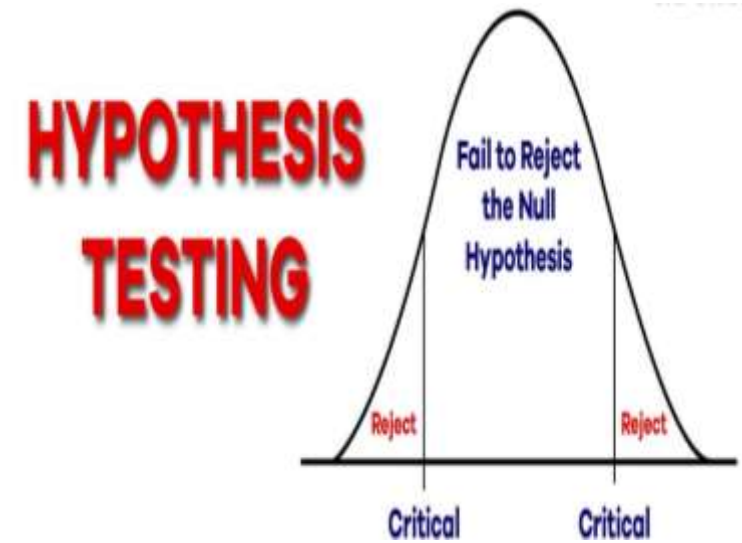
The Research Hypothesis in Quantitative Research

Hypothesis Testing in Research

- Primarily used in quantitative or positivist research.
- In qualitative or interpretivist research, hypotheses may emerge during the study but are not central to the research design.

Role of Hypotheses

- Essential for statistical inference in quantitative research.
- Hypothesis testing investigates relationships between variables.
- Hypothesis: A 'scientific guess' about the relationship, based on the theoretical framework.



Popper's View on Hypotheses

- Hypotheses arise from researchers' interests and theoretical knowledge.
- Proving a hypothesis is nearly impossible in social research.
- More valuable to falsify a hypothesis, as falsification is definitive.

Challenges and Considerations in Hypothesis Testing

- Proving relationships between variables is difficult in social research.
- Experimental research provides the closest approach but still has limitations.
- According to Schwartz and Ogilvy (1979), it is impossible to separate a subject from its environment.
- **Heisenberg Indeterminacy Principle**: Experimentation itself affects the subject being studied.
- Data from empirical investigations may be influenced by the research process. Hypothesis testing must consider these influences to make realistic claims.

Steps and Criteria for Effective Hypothesis Testing

Burns' Steps for Scientific Discovery

- Propose a hypothesis to explain a phenomenon.
- Deduce expected observations from the hypothesis.
- Check the deduction through observation.



Criteria for a Testable Hypothesis

- Must imply a relationship between two or more concepts.
- Should be less abstract and more specific than the theory.
- Must be transformable into testable, empirical terms.

Identifying and Defining Variables

From Theoretical to Operational

- Identify concepts from the theoretical framework.
- Translate these concepts into operational variables.
- “A variable is an operationalized concept” (Corbetta, 2003, 68).

Constructing Your Hypothesis

- Start with a research question and list of potential variables.
- Determine potential relationships between variables.
- Consider practical limitations and resources available.

Types of Variables and Hypothesis Testing

- **Nominal Variables:** Classified by categories (e.g., gender, color).
- **Ordinal Variables:** Order of data points can be determined (e.g., education level, social background).
- **Interval Variables:** Order and distance between data points can be determined (e.g., percentage scores).

Nominal and Ordinal Data

NOMINAL DATA

Unordered Categories

NOMINAL DATA

Unordered Categories

HAIR COLOR

GENDER



ORDINAL DATA

Ordered Categories

ORDINAL DATA

Ordered Categories

EDUCATION LEVEL



SOCIOECONOMIC STATUS





Implications for Research

- Choice of variables influences data collection and analysis.
- Avoid selecting variables that do not lend themselves to practical data collection.

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Why Writing Academic Research Proposals

- Necessary for dissertations and academic projects.
- May be part of a taught course or dissertation module.
- General elements of a research proposal:
 - What needs to be said?
 - Why it needs to be said?
 - How to best say it?

Structure of a Research Proposal

Formal Document

- A research proposal follows a specific format or formula.
- This formula ensures that all necessary areas are covered.

Consistency Across Requirements

- Although different funding bodies or academic institutions may have slightly different requirements, there is a generally accepted list of contents.
- Pay close attention to specific instructions from your target audience (e.g., funding bodies, academic supervisors, line managers).

Word Count and Character Limits

- Research proposals often have strict word or character limits for each section.
- Ensure that you can effectively communicate your ideas within these limits.

Essential Components of a Research Proposal

Title and Introduction

- Clearly defined and concise.
- Sets the stage for your proposed research.

Aims and Objectives or Hypothesis

- Clearly state the research aims and objectives.
- Alternatively, present a hypothesis to be tested.



Literature Review

- Review of existing literature relevant to your research.
- Establishes the context and significance of your study.

Research Design

- Detailed description of the methodology.
- Explains how the research will be conducted.

Intended Sample

- Description of the sample population.
- Justification for sample selection.

Data Processing and Analysis Procedures

- List of procedures for data collection and analysis.
- Ensures transparency and replicability.

Anticipated Research Outputs

- Definition of expected results and contributions to the field.

Anticipated Constraints

- Statement of potential limitations and challenges.
- Strategies for addressing these constraints.

Ethical Considerations

- Discussion of ethical issues and how they will be handled.

Project Timetable

- Detailed schedule of the research timeline.
- Helps in planning and managing the research process.

Clearly Defined Title and Introduction

- Importance of a Clear Title
- First Impression: The title is the first element reviewed.
- Accuracy and Clarity: Must reflect the essence of the proposed research.
- Conciseness: Keep it brief but descriptive.
- Working Title: It can evolve as the research progresses, but clarity is essential from the start.

Crafting the Introduction

Brief Rationale

- Explain the origin of the research idea. Provide initial evidence from the literature indicating a need for the investigation.

Setting the Scene

- Give a short background that explains the context of the research. Highlight the potential contribution to the existing body of knowledge.

Contribution to Knowledge

- Emphasize how the research will add to existing knowledge. Acknowledge that most contributions are incremental but valuable.

Statement of Aims and Objectives, or a Hypothesis

- Clearly state what you intend to achieve with your research.
- Reflect your understanding of the problem or question.
- Clearly state the hypothesis or hypotheses you intend to test.
- Ensure that your aims, objectives, or hypotheses are realistic and achievable.

Review of the literature

- Acquaint yourself with current thinking in your subject area.
- Understand methods and research processes used by others.
- Nobody expects you to know everything published on your topic.
- Provide a broad overview of the topic area.
- Identify major theories and prominent researchers in the field.
- Highlight what is already known.
- Identify gaps or neglected areas in empirical research.

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Content and Focus of the Literature Review

- Review contents depend on your research topic.
- Extensive literature may exist, or the topic may be less explored.
- Undergraduate research is likely not completely new.
- Doctoral research requires an element of novelty and contribution to knowledge.
- Small-scale studies focus on the local setting and current thinking on a phenomenon.

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Key Themes and Structure of the Literature Review

- Provide an overview of current thinking.
- Describe how theories have evolved.
- Highlight significant published studies.
- Identify unresolved issues and gaps in the literature.
- Follow the conventions of a detailed literature review.
- Ensure your review is clear, concise, and shows your understanding of the field.



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Research Design Overview

- Present the major processes and procedures for your research.
- Applicable to both quantitative and qualitative designs.
- Begin with a broad design but remain responsive to field discoveries.
- Explain and justify your choices using appropriate research methods literature.
- Reference your sources to demonstrate understanding and background reading.

Structured Approach to Research Design

Hierarchy of Research Design

Methodology

Broad approach guiding the research (e.g., qualitative, quantitative, mixed methods).

Methods

Specific strategies or techniques used to gather data (e.g., surveys, interviews, experiments).

Data Collection Techniques

Tools and procedures for gathering data (e.g., questionnaires, observation protocols).

Referencing and Justification

Reference Your Sources

- Not as extensive as the literature review but necessary.
- Show you have read and understood the relevant methodology literature.

Justify Your Research Design

- Every choice must be supported by published research.
- Ensure your plan is robust and credible.

Methodology

- Begin by stating your methodological position; the questions you should be answering are:
- Is this study qualitative, quantitative or mixed methodology?
- Why have you made this decision?
- Why is this the most appropriate decision?
- What are your research methods?

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- Once you have discussed your methodological choices you can then go on to state which research method(s) you will be applying to this investigation. The questions you should be answering are:
- What research method(s) are you applying to the study?
- Why have you made this choice?
- How do you intend to structure the method(s) for your investigation?

Data collection techniques

- Defining your method(s) may well imply you will use a particular data collection technique but, whether this is the case or not, it is necessary to explain how you intend to collect the data you need for your investigation. The questions you should be answering here are:
- What data collection techniques will you be using?
- Why have you decided to use these techniques?

Research Instruments

- Research instruments are tools used for data collection.
- They ensure the effective application of your chosen techniques.

Types of Research Instruments

- **Questionnaires:** Pencil and paper or online.

Explain how they will be distributed and collected.

- **Interviews:** Formal interview schedule or open-ended interviews.

In open-ended interviews, the researcher becomes the primary instrument.

Justifying Your Choices

- Ensure your instrument choices are directly related to your research question.
- Clearly explain why these instruments are suitable.
- Demonstrate understanding of your choices and their implications.
- Back up your choices with relevant research literature.
- Show thorough understanding of the instruments and their application.

Procedures for Data Processing and Analysis

- Explain how data processing and analysis will be conducted.
- Relate procedures directly to the type of data collected.
- Specify statistical tests to be performed (t-test, regression analysis etc).
- Highlight major variables and how they will be tested.
- Acknowledge the complexity of analyzing descriptive data.
- Mention specific qualitative analysis methods (e.g., thematic analysis, coding).

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Tools and Software for Analysis



- Discuss any software planned for use (e.g., SPSS for quantitative, NVivo for qualitative).
- Explain why the chosen software is appropriate for your analysis.
- Show a clear understanding of data processing techniques.
- Justify your choices with references to relevant literature.

Anticipated Research Outputs

- Often overlooked by students who see research as just an academic exercise.
- Good research makes a contribution, no matter how small.
- Clearly state the potential contribution in your proposal.
- Highlight what you realistically hope to achieve.
- Ensure honesty in stating your expected outcomes.
- Outputs should directly relate back to the research aims.
- Clarify intended outputs by referring to the original research purpose.

Anticipated constraints

- All research is restricted to some degree by constraints, and these constraints fall into two major categories: limitations of the study based on design, and potential problems relating to logistics.
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- It is important to state any potential constraints in the proposal;
- it is highly likely that other things may occur during the course of your investigation but at this stage it is still possible to highlight constraints that you know will in some way impact on the overall output of the investigation

Limitations Based on Design

Common Limitations

- Sample size may be smaller than ideal.
- Research method may not be perfect but is the best under the circumstances.

Impact on Data

- Explain why limitations exist.
- Discuss the potential impact on data collection and analysis.
- Show awareness of these limitations.
- Plan to address and adapt to these constraints during the research process.

Problems relating to logistics

- Problems with the research design are related to the actual logistics of the research.
- It may not be possible to foresee every problem at this stage but you need to highlight the obvious ones and suggest possible ways of minimizing the impact they will have.
- Usually problems relate to difficulties in contacting research participants, gaining access to data and the quantity of data that is collected

Ethical Considerations

- Essential for all research involving human participants.
- Ensures the rights and well-being of participants are protected.
- Universities and organizations have specific ethics policies.
- Understand and adhere to these regulations.
- Demonstrate awareness of relevant ethical standards.
- Show that your study is designed to conform to these standards.

Project Timetable

Creating an Effective Timetable

- Provide a clear, organized schedule of work.
- Include all key elements and phases of the research.

Realism and Practicality

- Schedule activities realistically to avoid overestimating capabilities.
- Ensure all critical milestones are highlighted.

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Benefits

- Helps manage time effectively.
- Provides a clear roadmap for the research process.
- Ensures all tasks are completed within the proposed timeline.





Thank You