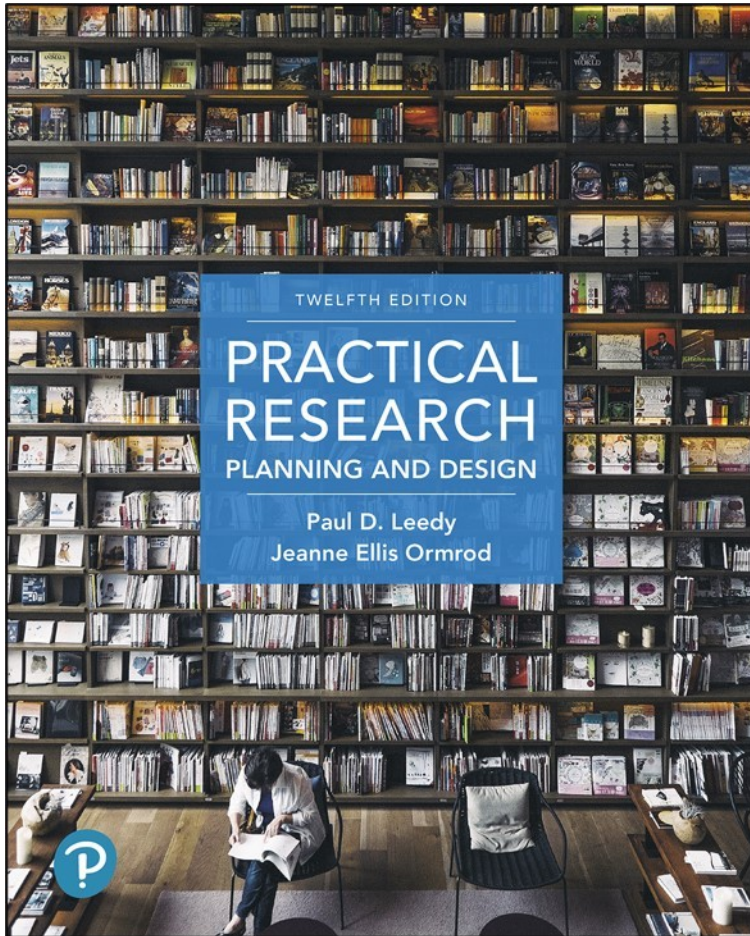


Practical Research: Planning and Design

Twelfth Edition



Chapter 4

Planning Your Research Project

Research Design

- When we talk about research design, we are referring to a general strategy for addressing a research problem or question. This includes:
 - The procedures the researcher follows
 - The data the researcher collect
 - The data analyses the researcher conducts
- Simply put, research design is **planning!**

Planning a General Approach (1 of 2)

- Think broadly about the problem as arising out of a particular area
- Are you studying
 - People
 - Things
 - Records
 - Thoughts & ideas
 - Dynamics & energy
 - Each of these is a potential **unit of analysis**

Planning a General Approach (2 of 2)

- Think about the kinds of data you need to address your problem
 - Do you need/can you find participants
 - Do you have the right equipment and skills
 - Do you know how to interpret the data and draw conclusions from them

Research Planning: Selecting a Particular Research Methodology

- Planning
 - Determining the general approach to a study
 - May be similar across disciplines
- Methodology
 - The techniques one uses to collect and analyze data
 - May be specific to a particular academic discipline

The Nature and Role of Data in Research (1 of 2)

- Data are pieces of information that help form a bigger picture
- Data are transient — what is true at any point in time may not be true at another point in time

The Nature and Role of Data in Research (2 of 2)

- Data may be primary or secondary
 - Primary data are closest to the truth (the source)
 - Secondary data are derived from primary data
 - Distorted by interpretations and communication

Planning for Data Collection

1. What data are needed?
2. Where are the data located?
3. How will the data be obtained?
4. What limits will be placed on the nature of acceptable data?
5. How will the data be interpreted?

Linking Data and Methodology

- Quantitative methods
 - Involve collecting numerical data
- Qualitative methods
 - Involve collecting textual or image-based data
- Mixed methods
 - Use both quantitative and qualitative methods in the same study

To Determine an Approach, First Ask Yourself These Questions

- What is my purpose?
- What is the nature of the process?
- What are the data like/how are they collected?
- How are data analyzed?
- How are the findings communicated?

Also Consider These Issues (1 of 2)

- Your comfort with the assumptions of the qualitative tradition
- The audience for your study
- The nature of the research question
- The extensiveness of the related literature
- The depth of what you want to discover
- The amount of time you have available for conducting the study

Also Consider These Issues (2 of 2)

- The extent to which you are willing to interact with the people in your study
- The extent to which you feel comfortable working without much structure
- Your ability to organize and draw inferences from a large body of information
- Your writing skills

Quantitative Vs. Qualitative (1 of 3)

- Purpose
 - Quant: Pursuit of explanations and predictions that, in most cases, will generalize to other persons or places
 - Qual: Seek to better understand complex situations and is often exploratory in nature
- Process
 - Quant: Methods allow the research to objectively measure the variable(s) of interest
 - Qual: Holistic and emergent, with specific focus, design, data-collection techniques, and interpretations developing and possibly changing along the way

Quantitative Vs. Qualitative (2 of 3)

- Data Collection
 - Quant: Identify a few variables to study and then collect data specifically related to those variables.
 - Qual: Qualitative research operate under the assumption that reality isn't easily divided into discrete, measureable variables.
- Data Analysis
 - Quant: Rely on deductive reasoning, beginning with certain premises and then drawing logical conclusions from them.
 - Qual: Make considerable use of inductive reasoning.

Quantitative Vs. Qualitative (3 of 3)

- Reporting Findings
 - Quant: Typically reduce their data to summarizing statistics.
 - Qual: Often construct interpretive narratives from their data and try to capture the complexity of a particular phenomenon.

Deciding between Quant and Qual (1 of 2)

1. Consider your own comfort level with the assumptions of the qualitative tradition.
2. Consider the nature of your research question.
3. Consider the extensiveness of the related literature.
4. Consider the depth of what you wish to discover.
5. Consider the amount of time you have available for conducting the study.
6. If applicable, consider the extent to which you are willing to interact with the people in your study.

Deciding between Quant and Qual (2 of 2)

7. Consider the extent to which you feel comfortable working without much structure.
8. Consider your ability to organize and draw inferences from a large body of information.
9. Consider your writing skills.

Select a Research Methodology

- Action research
- Case study
- Content analysis
- Correlational research
- Design-based research
- Developmental research
- Ethnography
- Experimental research
- Ex post facto research
- Grounded theory research
- Historical research
- Observation study
- Phenomenological research
- Quasi-experimental research
- Survey research

Enhancing the Credibility of Your Findings (1 of 2)

- A research study has credibility to the extent that other people:
 - agree that its design and methods are being appropriate for the research problem or question
 - judge its results as being reasonably accurate and trustworthy
 - find the researcher's interpretations of the data to be plausible.

Enhancing the Credibility of Your Findings (2 of 2)

- Quantitative researchers often use the term **internal validity** when evaluating credibility.
- Qualitative researchers use a variety of terms such as:
 - trustworthiness
 - confirmability
 - interpretative rigor

Strategies to Enhance Confirmability (1 of 2)

- Triangulation
 - Multiple sources of data are collected with the hope that they will all converge to support a particular assertion, hypothesis, theory, or conclusion
- A controlled laboratory study
- Extensive time in the field
- Unobtrusive measures
 - Gathering data about people's behaviors when those people don't know their actions are being recorded
- Thick description

Strategies to Enhance Confirmability (2 of 2)

- Respondent validation
 - Confirming conclusions with participants
- Analysis of contradictory data, such as discrepant perspectives or quantitative outliers
- Follow-up studies specifically designed to eliminate alternative explanations for findings

Enhancing the Generalizability of Your Findings

- **Generalizability** is the extent to which results obtained and conclusions drawn can be applied to other people, situations, or contexts
- Quantitative researchers usually use the term **external validity**
- Qualitative researchers use terms such as:
 - transferability
 - particularizability
 - replicability
 - confirmability

Strategies for Enhancing Generalizability

- A naturalistic, real-world setting
- Obtaining a representative sample
- Replication in a different context

Choosing Appropriate Assessment Strategies

- Many methodologies require one or more assessment strategies.
 - Researchers must in some way capture and evaluate the nature of important characteristics, behaviors, or other variables under investigation.
- Assessment often involves measurement, in other words, it imposes a range of numbers on an entity being assessed.

Measurement (1 of 3)

- Limiting the data of any phenomenon—substantial or intangible— so that those data may be interpreted and, ultimately, compared to a particular qualitative or quantitative standard

Measurement (2 of 3)

- Limiting the data **of any phenomenon—substantial or intangible—**so that those data may be interpreted and ultimately, compared to a particular qualitative or quantitative standard
 - **Substantial = have physical substance.**
 - **Intangible = exist only as concepts, ideas, opinions, feelings, or other intangible entities.**

Measurement (3 of 3)

- Limiting the data of any phenomenon—substantial or intangible—so that those data may be interpreted and, ultimately, **compared to a particular qualitative or quantitative standard**
 - **transformed into new discoveries, revelations, and enlightenments.**

Assessing Intangible Phenomena: An Example

Measuring interpersonal dynamics in a small group

- Ask each person: Who do you like most, who do you like least, and who evokes neutral feelings
- Allow the researcher to identify patterns and draw conclusions
- Create a **sociogram**, or a chart of interpersonal reactions

Scales of Measurement

- A scale specifies the categories of measurement
- Scales ultimately dictate the statistical procedures (if any) that can be used in processing numerical data

Nominal Scale

- Measures data by assigning names or dividing into discrete categories
 - Boys, girls
 - North of Main Street, South of Main Street
- Statistical procedures
 - Mode
 - Percentage
 - Chi-square test

Ordinal Scale

- Rank-order data as more/higher or less/lower
- Think in terms of greater or less than
- Elementary, high school, college, or graduate education
- Unskilled, semiskilled, or skilled labor
- Statistical procedures = median, percentile rank, Spearman's rank-order correlation

Interval Scale

- Equal units of measurement
- Zero point established arbitrarily
- Fahrenheit (F) and Celsius (C) scales
- Rating scales, such as surveys, assumed to fall on interval scales
- Statistical procedures = means, standard deviations, Pearson product moment correlations

Ratio Scale

- Equal measurement units (similar to interval scale)
- Absolute zero point (0 = total absence of the quality being measured)
- Distance
- Ratio = can express values in terms of multiples and fractional parts

Summary & Comparison

- Nominal scale: One object is different from another
- Ordinal scale: One object is bigger or better or more of anything than another
- Interval scale: One object is so many units (e.g., degrees, inches) more than another
- Ratio scale: One object is so many times as big or bright or tall or heavy as another

Validity & Reliability of Measurement

- Validity
 - the extent to which a measurement instrument measures what it is intended to measure
- Reliability
 - the consistency with which a measurement instrument yields a certain result when the entity being measured hasn't changed

Validity of Measurement Instruments (1 of 2)

- Face Validity
 - Is extent to which an instrument looks like it measures a characteristic
 - Relies on subjective judgment
- Content Validity
 - Is extent to which a measurement instrument is a representative sample of the content area being measured

Validity of Measurement Instruments (2 of 2)

- Criterion Validity
 - The extent to which the results of an assessment correlate with another, related measure
- Construct Validity
 - The extent to which an instrument measures a characteristic that cannot be directly observed but is assumed to exist (such as intelligence)

Determining Validity (1 of 2)

- Table of specifications
 - The researcher constructs a two-dimensional grid listing the specific topics and behaviors that reflect achievement in the domain.
- Multitrait-multimethod approach
 - Two or more different characteristics are each measured using two or more different approaches. The two measures of the same characteristic should be highly related.
- Strive for consistency with a particular conceptual framework

Determining Validity (2 of 2)

- Conduct one or more pilot tests of your assessment strategy
- Judgment by a panel of experts
 - Several experts in a particular area are asked to scrutinize an instrument to ascertain its validity for measuring the characteristic in question

Reliability

- Reliability is the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed.
- Instruments designed to measure social and psychological characteristics (insubstantial phenomena) tend to be even less reliable than those designed to measure physical (substantial) phenomena.

Determining the Reliability of a Measurement Instrument (1 of 2)

- Interrater reliability
 - the extent to which two or more individuals evaluating the same product or performance give identical judgments
- Test-retest reliability
 - the extent to which a single instrument yields the same results for the same people on two different occasions

Determining the Reliability of a Measurement Instrument (2 of 2)

- Equivalent forms reliability
 - The extent to which two different versions of the same instrument yield similar results
- Internal consistency reliability
 - The extent to which all of the items within a single instrument yield similar results

Enhancing Reliability

- Identify specific, concrete criteria to be used in categorizing or rating a characteristic, behavior, or other variable.
- When an assessment involves a structured paper-and-pencil or performance-based instrument, use the instrument in a consistent manner for all participants or other entities under investigation.
 - Quantitative researchers call this strategy **standardization**.
- Explicitly train raters to apply criteria in a similar manner.

Ethical Issues (1 of 6)

- Participants must be protected from harm
 - Benefits to participants must outweigh risks
 - Participants should be debriefed

Ethical Issues (2 of 6)

- Participation must be voluntary and informed
 - Individuals know what they are being asked to do
 - Individuals can decline without penalty
 - Individuals know they can withdraw at any time without penalty

Ethical Issues (3 of 6)

- Participants have a right to privacy
 - Data and information about participants are confidential
 - Identifiable data should not be shared (even in class) without written consent
 - Names should be coded to ensure anonymity

Ethical Issues (4 of 6)

- Researchers must be honest
 - Data should be trustworthy
 - Reports should be complete and accurate
 - Contributors should be credited

Ethical Issues (5 of 6)

- Research must be reviewed before data collection begins
 - Institutions maintain an IRB (review board) and sometimes IACUC
 - Scholars and researchers across disciplines
 - Review proposals to assess risks and ensure that participants' rights are honored

Ethical Issues (6 of 6)

- Researchers are expected to adhere to professional code of conduct within their field
- Visit the homepage of your own professional organization to learn more

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