

The Research Problem: The Heart of the Research Process

Prof. Peter Fong

1

Finding Research Projects

Research projects can be one of two types:

- 1. Basic research – intended to enhance basic knowledge about the physical, biological, psychological, or social world or to shed light on historical, cultural, or aesthetic phenomena.**
- 2. Applied research – intended to address issues that have immediate relevance to current practices, procedures, and policies; intended to human decision making about practical problems; occasionally address questions in one's immediate work environment (action research).**

2

Criteria for Identification of a Suitable Research Problem

1. The research problem should address an important question so that the answer will make a difference.
2. The research problem should advance the frontiers of knowledge by leading to new ways of thinking, suggesting possible applications, or paving the way for further research in the field.

Leedy & Ormrod
Practical Research: Planning and Design, 10e
© 2013 Pearson Education, Inc. All rights reserved.

2-3

3

A good problem statement

- **Research objective:** *why* of the research
- Research objective applied research:
 - to solve a specific problem in a work setting;
 - to change something.
- Example:
 - *To determine factors that increase employee commitment to the organization;*
- Allows manager to increase commitment and hence to decrease turnover, absenteeism and increase performance levels.

4

Example

The purpose of this study is twofold:

1. to identify the factors that influence the passenger's waiting experience, and
2. to investigate the possible impact of waiting on customer satisfaction and service evaluations.

5

A good problem statement

- **Research questions:**
 - what of the research (what do you want to learn?)
 - Translates problem into a specific need for information
- **Research questions:**
 - Are related to the objective
 - If objective is unclear we will not be able to formulate research questions
- **Example:**
 - What are the factors that affect the perceived waiting experience of airline passengers
 - To what extent do these factors affect the perception of waiting times?
 - What are the affective consequences of waiting
 - How does affect mediate the relationship between waiting and service evaluations?
 - How do situational variables (such as filled time) influence customer reactions to the waiting experience?

6

Good problem statement

- **Relevant**

- for the organization

- **Feasible**

- you are able to answer the research questions within the restrictions of the research project.

- **Interesting**

- to you!

7

Situations to Avoid When Considering A Research Problem

- Research projects should not be a ruse (trick) for achieving self-enlightenment.
- A problem whose sole purpose is to compare two sets of data is not a suitable research problem.
- Calculating a correlation coefficient between two sets of data to show a relationship between them is not acceptable as a problem for research.
- Problems that result in a yes or no answer are not suitable problems for research.

Leedy & Ormrod
Practical Research: Planning and Design, 10e
© 2013 Pearson Education, Inc. All rights reserved.

2-8

8

Finding a Legitimate Research Problem

- 1. Look around you.**
- 1. Read the literature.**
- 2. Attend professional conferences.**
- 3. Seek the advice of experts.**
- 4. Choose a topic that intrigues and motivates you.**
- 5. Choose a topic that others will find interesting and worthy of attention.**

2-9

9

Guidelines: Stating the Research Problem

- 1. State the problem clearly and completely.**
- 2. Think through the feasibility of the project that the problem implies.**
- 3. Say precisely what you mean.**
 - Absolute honesty and integrity are the rule!**
- 4. State the problem in a way that reflects an open mind about its solution.**
- 5. Edit your work.**

2-10

10

Dividing the Research Problem Into Sub-problems

Sub-problem: the subparts of the main problem that are an integral part of the main problem

Pseudo-sub-problems: procedural issues that involve decisions that must be made before resolving the research problem and its sub-problems

2-
11

11

Characteristics of Sub-problems

- 1. Each sub-problem should be a completely researchable unit.**
- 2. Each sub-problem must be clearly tied to the interpretation of the data.**
- 3. The sub-problems must add up to the totality of the problem.**
- 4. Sub-problems should be small in number.**

2-12

12

Identifying Sub-problems

- Take a paper-and-pencil approach
- Use brainstorming software, such as:
 - Inspiration
 - Brain Storm
 - Mind Jet

2-13

13

Paper-and-Pencil Approach to Identifying Sub-problems

1. Copy the problem onto a sheet of paper, leaving considerable space between the lines.
2. Read the problem to discover the areas that require in-depth treatment before the problem can be resolved.
3. Make sure every sub-problem contains a word that indicates the necessity to interpret the data within that particular sub-problem (e.g., *analyze, discover, compare*). Underline this word.
4. Arrange the entire problem in a graphic organizer that will serve as a structure of the whole research design.

2-14

14

Using Brainstorming Software to Identify Subproblems

- Computer programs such as Inspiration, Brain Storm, and Mind Jet allow you to brainstorm research ideas and construct graphic networks of interrelated concepts, terms, and principles.
- Convert, save, and print your final diagram (graphic organizer) as an outline that lists major topics and various levels of subtopics.

2-15

15

Further Delineation of the Problem

- State the hypotheses and/or research questions.
- Delimit the research.
- Define the terms.
- State the assumptions.

2-16

16

State the Hypothesis and/or Research Questions

- Hypotheses are essential to experimental research; research questions are more common in qualitative research.
- Both hypotheses and research questions provide guidance for the kind of data that should be collected.
- Both hypotheses and research questions suggest how data should be analyzed and interpreted.
- Hypotheses and research questions may originate in the subproblems.
- Hypotheses and research questions provide a position from which the researcher may initiate an exploration of the problem.
- Hypotheses and research questions act as checkpoints against which to test the findings that the data reveal.

2-17

17

Distinguishing Null Hypotheses from Research Hypotheses

- **Null hypothesis:** A statement that there will be no differences between groups, no consistent relationships between variables, or, more generally, no patterns in the data.
- Null hypotheses are used primarily during statistical analyses
 - we support a research hypothesis by showing, statistically, that its opposite—the null hypothesis—is probably not true.

2-18

18

Identifying the Variables Under Investigation

- A **variable** is any quality or characteristic in a research investigation that has two or more possible values.
 - **Independent variable** -- variable that the researcher studies as a possible cause of something else; this is one that the researcher directly manipulates.
 - **Dependent variable** -- variable that is potentially influenced by the independent variable, or *depends* on the independent variable.

2-19

19

Mediating Variables

- A **mediating variable** (an *intervening variable*) comes to the stage when the independent variable influences the dependent variable indirectly.
 - The mediator is influenced by the independent variable, which in turn influences the dependent variable.
- Its presence helps to explain why a certain independent variable has an effect on a dependent variable.

2-20

20

Moderating Variables

- A moderating variable is a variable that, while not intervening between the independent and dependent variables, influences the nature and strength of their relationship.
- It may reduce or increase the cause-and-effect relationship between variables.

2-21

21

Moderating vs. Mediating

- Difference: An independent variable may potentially influence a mediating variable, but it does *not*, in and of itself, influence a moderating variable.
- Moderating variables provide potential *contexts or conditions* that alter—that is, they *moderate*—an independent variable's effects.
- *Discussions of risk factors or protective factors* in research reports often refer to moderating variables—variables that affect the likelihood that certain cause-and-effect relationships will come into play.

2-22

22

Why Identify Variables?

- **Identification is helpful in choosing**
 - (a) an appropriate research design
 - (b) an appropriate statistical analysis

Note: identifying independent and dependent variables does **not** guarantee that the research data will support the existence of a cause-and-effect relationship.

2-23

23

Delimiting the Research

- **Delimitations of the research are statements about what the researcher is not going to do.**
- **What the researcher will not do is to become involved in data extraneous to the research problem.**
- **The researcher must distinguish between what is and is not relevant to the problem.**

2-24

24

Define the Terms

- The researcher must precisely define the terms in the problem and the sub-problems.
- Each term should be defined as it will be used in the researcher's project.
- In defining a term, the researcher makes the term mean whatever he or she wishes it to mean within the context of the problem and its sub-problems.

Operational definition = the definition of a characteristic or variable in terms of how it will be measured in the study.

2-25

25

State the Assumptions

- Assumptions are basic to the research problem.
- All assumptions that have a material bearing on the problem should be openly and unreservedly set forth.
- A statement of the assumptions is necessary for others to evaluate the conclusions of the study.
- A statement of the assumptions reveals what the researcher may be taking for granted with respect to the problem.

2-26

26

Importance of the Study

- Discuss reasons for undertaking the study.
- Studies should not go far beyond any relationship to the practical world; they must have a practical value.

2-27

27

Ordering the Topics in a Research Proposal

In the first part of the proposal, you should outline:

- The problem and its setting.
- Sub-problems, hypotheses, and questions presented in a logical order.
- A statement of delimitations, definitions of terms, and assumptions.
- The importance of the study should be discussed either in early paragraphs that introduce the research problem or in its own section.

2-28

28

Checklist: Evaluating Your Proposed Research Project

1. Have you conducted a thorough literature search to justify the time and effort expended on your research project?
2. Have you looked at your research problem from all angles to minimize unwanted surprises?
3. What research procedures will you follow?
4. What research tools are available for you to use?
5. Can others read and understand your proposal?

2-29

29

Guidelines: Fine-Tuning Your Research Problem

1. Conduct a thorough literature review.
2. Try to see the problem from all sides.
3. Think through the process.
4. Use all available tools and resources at your disposal.
5. Discuss your research problem with others.
6. Hold up your proposed project for others to examine and critique.
7. Remember that your project will take a great deal of time.
8. Remember that the first draft of your proposal will almost certainly not be your last one.

2-30

30