

#### Research Methodology

(Lecture 3)

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#### Previous Lecture

- Applications of Research
- Research Process
- Research Tools
- Research Objectives
- Research Characteristics



#### Outline

- Research Process
- Formulate Research Problem
  - Considerations in selecting a research problem
  - Steps in formulation of a research problem



#### **Research Process**

- The research process is <u>like undertaking a journey</u>. For a research journey, there are <u>two important decisions</u> to make:
  - What you want to find out about OR what research questions (problems) you want to find answers to.
  - How to go about finding their answers





#### **Research Process**

 There are <u>practical steps</u> through which you must pass in your research journey in order <u>to find answers</u> to your research questions.

- The path to finding answers to your research questions constitutes <u>research methodology</u>.



#### **Research Process**

- Typical Steps of research process:

Define research problem

literature Review

Developing the objectives

Preparing the research design

Data collection

Data analysis

**Generalization and Interpretation** 

Writing Report



#### – Define Research Problem:

- It is the first and <u>most crucial step</u> in the research process
- Main function is to decide <u>what you want</u> to find out about.
- The way you <u>formulate a problem</u> (problem statement) determines almost every step that follows.

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# Research Problem

#### - Define Research Problem:

- Given an initial idea, need to determine: -
  - Has this work been done previously?
  - What similar work has been done leading up to this point?
  - How is any previous work distinguished from what I'm planning to do?



- Tools:
  - Literature Review using library resources (e.g. online databases such as ASCE and SCOPUS, popular magazines).



#### – Define Research Problem:

- Research problem formulation varies <u>based on the</u> <u>field</u> of research
- For example, Research in <u>social sciences</u> revolves around <u>4 Ps</u>:
  - 1. <u>People</u>: a group of individuals
  - 2. <u>Problems</u>: examine the existence of <u>certain issues</u> or problems relating to their lives
  - 3. **Programs:** to evaluate the effectiveness of an intervention
  - 4. **Phenomena:** to establish the existence of a regularity
- In practice most research studies are based upon at least a combination of two Ps.



#### **Define Research Problem:**

- Every research study has **<u>two aspects</u>**:

#### 1. Study population

**People**: individuals, organizations, groups, communities They provide you with the information or you collect information about them

#### 2. Subject area

Problems: issues, situations, associations, needs, profiles

**Program** : content, structure, outcomes, attributes, consumers, Service providers, etc.

**Phenomena** : cause-and-effect relationships, the study of a phenomenon itself.



#### **Define Research Problem:**

- Research problem formulation in applied research considers the "empirical" nature of the research questions
  - Such research is conducted to test to a hypothesis based on experimentation or observation (evidence)".
  - The word empirical means information gained by experience, observation, or experiment.
  - In scientific method, the word "empirical" refers to the use of working hypothesis that can be tested using observation and experiment.



#### - Define Research Problem:

- Considerations in selecting a research problem:
  These helps to ensure that your study will remain manageable and that you will remain motivated:
  - 1. Interest:
    - a research endeavor is usually time consuming, and involves hard work and possibly unforeseen problems.
    - If you select a topic which does <u>not greatly interest</u> you, it could become extremely difficult to sustain the required motivation and hence its completion as well as the amount of time taken could be affected.



- Define Research Problem:
- Considerations in selecting a research problem:
  - 2. Magnitude:
    - It is extremely important to select a topic that you can manage within the <u>time and resources</u> at your disposal
    - Even if you are undertaking a descriptive study, you need to carefully consider its magnitude.
    - Narrow the topic down to something manageable, specific and clear.



- Define Research Problem:
- Considerations in selecting a research problem:
- 3. Measurement of concepts :
  - Make sure that you are clear about the indicators and measurement of concepts (if used) in your study.





- Define Research Problem:
- Considerations in selecting a research problem:
- 4. Level of expertise:
  - Make sure that you have adequate level of expertise for the task you are proposing
  - Also allow for the fact of learning during the study and help from supervisor.



- But you need to do the work yourself.



- Define Research Problem:
- Considerations in selecting a research problem:
- 5. Relevance:
  - Ensure that your study adds to the existing body of knowledge, bridges current gaps and is useful in policy formulation.
  - This will help you to sustain interest in the study.





- Define Research Problem:
  - Considerations in selecting a research problem:
  - 6. Availability of data :
    - If your topic entails
      collection of information
      from secondary sources.
    - Before finalizing the topic, make sure that data are available.





- Define Research Problem:
- Considerations in selecting a research problem:
- 7. Ethical issues:
  - How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem
  - Examples:
    - Adverse effects of direct or indirect information.
    - Expectation to share sensitive or private information.





- Define Research Problem:
- Steps in formulation of a research problem:

Identify a broad field or subject area of interest to you

Dissect the broad area into subareas

Select what is of most interest to you

Raise research questions

**Formulate Objectives** 

Assess your objectives

**Double Check** 



- Define Research Problem:
- Steps in formulation of a research problem:

1 Identify a broad field or subject area of interest to you

- Identify a broad field or subject area of interest to you
- This will help you find an interesting topic and one which may be of use to you in the future.



- Define Research Problem:
- Steps in formulation of a research problem:

2 Dissect the broad area into subareas

- You will realize that all the broad areas have <u>many aspects</u>
- In preparing this list of <u>subareas</u> you should also consult others who have knowledge of the area and the literature in your subject area
- Once you have developed an exhaustive list of the subareas from various sources,



- Define Research Problem:
- Steps in formulation of a research problem:
  - 3 Select what is of most interest to you
    - It is neither advisable nor feasible to study all subareas.
    - Out of this list, select issues or subareas about which you are passionate.
    - One way to decide what interest you most is to start with the process of elimination.



- Define Research Problem:
- Steps in formulation of a research problem:

4 Raise research questions

- What is it that I want to find out about in this subarea?
- List down questions and then choose the best one.



- Define Research Problem:
  - Steps in formulation of a research problem:
    - 5 Formulate Objectives
      - Formulate your main objectives and sub objectives from your question.
      - The main difference between objectives and research questions is the way in which they are written.
        - To find out
        - To determine



- Define Research Problem:
- Steps in formulation of a research problem:
  - 6 Assess your objectives
    - Now examine your objectives to ascertain the feasibility of <u>achieving them</u> through your research endeavor.



- Define Research Problem:
  - Steps in formulation of a research problem:

6 Double Check

- Go back and give final consideration to whether or not you are sufficiently interested in the study and have adequate resources to undertake it.



#### Questions & Answers





