

A General Overview of Contemporary Research Methods: Efficient Research Design, Effective Data Collection Instruments and Attendant Modalities

**Prof. Jospeter Mbuba
Department of Public Policy
Indiana University-Purdue University Fort Wayne
USA**

What is Research?

Research Defined...

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- Merriam-Webster Dictionary: **Careful** study and investigation for the purpose of discovering and explaining new knowledge
- The **systematic** investigation into and study of materials and sources in order to establish facts and reach new conclusions
- Performing a **methodical** study in order to prove a hypothesis or answer a specific question
- **Research** must be **systematic** and follow a series of steps and a **rigid standard protocol**.

Purposes of Research

Why Do We Do Research?

Purposes of Research...

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1. Exploratory Research – research in which the primary purpose is to examine a little-understood issue to develop new ideas and move towards redefined research questions

Researchers may need to first use Exploratory Research in order to compose a more extensive follow up study.

Purposes of Research...

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- 2. Descriptive Research** main aim is to “paint” a picture using words or numbers and to present a **profile**, a classification or an outline of steps to answer the questions such as **who, what, when, where, or how (but not why)**.
- 3. Explanatory Research** – main aim is to explain **why** events occur and to build or test theory. It looks for **causes** and **reasons**.

Purposes of Research...

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4. **Evaluation Research** – main aim is to assess the **effectiveness** of a program or policy, and to provide recommendations for improvement
- Evaluation research takes two forms: **formative** evaluation and **summative** evaluation
 - Formative evaluation provides information for **program improvement**
 - Summative evaluation provides information on whether to **continue** or discontinue a program.

Research Categories

Research takes two main categories:

1. **Quantitative** research uses numerical data
2. **Qualitative** research uses text and visually-based data

Example of Quantitative Research

Attitude towards the police (On a Likert scale of 1-5; 1 being the lowest and 5 highest)	N	Mean	SD
High crime rate is due to police incompetence	99	2.09	1.031
Most people shout for help, not call police	98	2.02	1.201
Police enforce the law differentially	99	2.23	1.086
Risky to get too close to police	99	1.54	.501
Risky to report crime to police	99	1.46	.501
Police use excessive force most of the time	100	1.86	.899
Police arrest only poor people	100	2.41	1.164
Police provide an important service to community	98	2.27	1.051
Overall you are satisfied with police in crime fighting	99	3.06	1.391
Overall you are satisfied with police response to distress	100	3.75	1.282
Never volunteer any info to police; crime is their duty	95	3.03	1.666

Example of Qualitative Research

“once you are in prison, it doesn’t matter what you did; you are controlled until you almost feel like a little kid; you have to be told when to eat, when to go to the toilet, what to wear, when to go to sleep, and you miss everything; you miss eating ice cream, holding a TV remote, taking a shower, all those matter a lot.”

Most Common Research Methods

Survey and Interview

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- These methods use a written questionnaire or formal interviews to gather information from a large number of respondents
- Difference is in **administration** (face-to-face and remote)
- What are the advantages and disadvantages of each over the other?

Experiments & Surveys

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What's the difference?

- Survey research records many answers to the same questions
- Experimental research manipulates a situation to record different reactions

Nonreactive Research

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- This is the **unobtrusive** collection of data that have usually been left behind by others

- Two main types of nonreactive research:
 1. Existing Documents/Statistics Research
 2. Content Analysis

Existing Documents/Statistics Research

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- Involves collection and reanalysis of existing quantitative data
 - Examining public records such as health records, economic data, enrollment statistics, etc.
- Problem is, data may be old and outdated
- Extensive examination of statistics can be overwhelming

CONTENT ANALYSIS

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- A nonreactive method used to examine the content, or **information** and **symbols**, contained in written documents or other media
- Can be either **quantitative or qualitative**
- Allows researchers to examine specific details in certain materials that are overlooked.

Ethnographic Field Research

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- Researcher engages the **natural environment** of the subjects for a close, personal, and **highly detailed** understanding of the subjects' culture
- Researcher joins the subject group and learns everything about the subjects by **observations and interviews**
- *In situ* research yields a “*thick description*” of the reality

Sampling

**What's a Sample and how
do you draw it?**

The Vocabulary of Sampling

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- **Sample:** A small set of cases that are randomly or non-randomly selected from a large pool for generalization to the entire population
- **Sample Case:** A single unit from a sample
- **Population:** The **abstract** idea of a large group of cases from which a sample is drawn and to which results from a sample are generalized

The Vocabulary of Sampling Cont.

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- **Target Population:** The **concretely** specified large group of cases from which a sample is drawn for purposes of generalization
- **Sampling Frame:** A specific list within a population from which a sample is chosen (eg. telephone directory, driving license records, voter registration).

Random Samples

- **Random sample:** A sample that utilizes a random number table or other random process so that each element in the population has an equal probability of being selected
- **Simple Random Sample:** A random sample that utilizes a sampling frame and a pure random process to select cases so that each element in the population has an equal chance of being selected.

Common Types of Sampling

- **Systematic Sampling**: A random sample in which every k th case in the sample frame is selected using a sampling interval
- **Stratified Sampling**: A random sample in which the researcher first identifies a set of **mutually exclusive** and **exhaustive** categories and then selects cases in numbers that are proportional to the size of each category.

Haphazard and Quota Sampling

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- **Haphazard Sampling:** A nonrandom sample in which the researcher selects anyone who happens to come across.
- **Quota Sampling:** A nonrandom sample in which the researcher first identifies general categories into which cases will be selected, and then selects cases to reach a predetermined number in each category.

Purposive and Snowball Sampling

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- **Purposive Sampling**: A nonrandom sample in which the researcher uses a wide range of methods to locate all possible cases of a highly specific and **difficult-to-reach population**
- **Snowball Sampling**: A nonrandom sample where researcher begins with one case, and then, based on information about interrelationships from that case, identifies other cases, and repeats the process again and again.

Hidden Populations & Mixed Sampling

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- **Hidden Populations:** A population of people who engage in clandestine, socially disapproved, or concealed activities and who are difficult to locate and study (e.g., drug dealers, prostitutes, homosexuals, etc.).

Case Study

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- A focus on a selected case
- **In-depth** understanding of a case
- Draws heavily on qualitative methods but can be mixed method
- Is one of the most frequently used designs in research

Focus Group Discussion

- Involves unstructured collective interviews on a group of about 12 respondents sitting together
- Researcher facilitates discussion by posing questions to the group
- Notes are taken and later transcribed for coding and eventual analysis

Mixed Methods Research

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- A mixture of quantitative and qualitative techniques, surveys and interviews, focus group discussions, and so forth, in a single study or series of studies on the same topic.

SCIENTIFIC RESEARCH AND TIME

Cross-sectional and Longitudinal Studies

Cross-Sectional Research

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- Study that examines information on many cases at one point in time.
 - Advantage: it is simple and inexpensive
 - Disadvantage: it cannot illustrate change

Longitudinal Research

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- Examines data across more than one time point
 - ▣ Usually more complex and expensive
 - ▣ Better at showing trends and cause & effect

Literature Review

What is it and why do we do it?

Literature Review...

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- Involves reviewing of previous studies in order to:
 - ▣ Better understand the object of study
 - ▣ Refine our research question
 - ▣ Suggest the most successful research method
- What materials do we review?

Sources of Relevant Literature

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- Periodicals - Newspapers and magazines
- Scholarly Journals – peer-reviewed research works
- Scholarly Books – Edited Books/Readers
- Original research for Masters and PhD degrees
- Government Documents – reports and hearings
- Policy Reports, conference presentations, etc.

Locating Relevant Materials

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- Google: www.google.com
- Google Scholar: www.scholar.google.com
- Library shelves
- Library website

After Assembling Your Reading, What Next?

Evaluate suitability of the articles for citation

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- After you locate published studies, read and evaluate them
- First, look at the **title** carefully
- A good title is specific and indicates nature of research without describing results

Evaluate suitability of the articles...

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- Next, read the **abstract**
- A good abstract summarizes critical information about a study
- Abstract gives the study's **purpose**, tells **methods used**, and highlights **major findings**
- Use the title and abstract to determine initial relevance of the study for your purpose

What Does a Good Lit Review Look Like?

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- A good literature review requires **planning** and **clear writing**
- **Wrong way** to write a review is to **list a series** of research reports with a summary of the findings of each
- **Right way** to write a review is to **organize common findings** or arguments together.

Data Collection

Data Collection Instruments

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- Most common data-collection instruments are **interviews** and **surveys** - they both use questionnaires
- How do you create an effective questionnaire?

Be Clear and Precise

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- Bad QN: Tell me what you think about devolved government?
- Good QN: On a scale of 1 to 10, 1 being the lowest and 10 highest, how much do you think devolution has succeeded?

Avoid Ambiguity

- Ambiguous question: How many cups of coffee or tea do you drink per a day?

- Solution - Separate the question into two
 - ▣ (1) How many cups of coffee do you drink per day?
 - ▣ (2) How many cups of tea do you drink per day?

Accommodate all possible responses

- Bad question: What car do you own?
 - (i) Nissan
 - (ii) Toyota
 - (iii) Honda

- Solution: Add all possible responses.
 1. Do you own a car (yes/no)
 2. If yes, what make?(Circle all that apply)
 - (i) Nissan
 - (ii) Toyota
 - (iii) Honda
 - (iv) Chevy
 - (v) Other

Match Question with Answer Options

- Question: Have you had pain in the last week?
(i) Never (ii) Seldom (iii) Often (iv) Very often

- Solution: Reword either question or answer to match.
 - ▣ Have you had pain in the last week? (Yes/No)
 - ▣ How often have you had pain in the last week?
(i) Never (ii) Seldom (iii) Often (iv) Very Often

Things to Avoid

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- Avoid jargon (Discombobulated = twisted, disfigured)
- Emotional language (Do you support introduction of welfare for terminally ill destitute children?)
- Double-barreled questions: (Do you like the taste and the feel of this brand?)
- Leading questions (You don't smoke, do you?)

Things to Avoid...

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- Overlapping response categories
Example - Age: 1-10, 10-20, 20-30

Things to Keep in Mind

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- Be sure to **introduce** the study to the respondent
- Begin with the **simplest and least intrusive** questions
- **Move steadily** towards the more demanding questions
- End with the most challenging questions
- Remember to thank the respondent at the end
- Think of what you will do with the answer to your Qn

Types of Questions

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- OPEN-ENDED QUESTION: Research question in which respondents are free to offer any answer they wish.
 - What are your views about devolved government?

- CLOSE-ENDED QUESTION: Research question in which respondents must choose from a fixed set of answers
 - On a scale of 1 to 5, how do you rank the success of devolution?

Research Variables

What are they?

Finally..... Research Variables

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- **VARIABLE:** A concept that varies, or an empirical measure that can take on multiple values (e.g. gender, religion, occupation)
- **ATTRIBUTES:** Categories of a variable (e.g. male, Islam, nurse)
- **INDEPENDENT VARIABLE:** A cause variable that produces an effect on a dependent variable in a causal hypothesis.
- **DEPENDENT VARIABLE:** The effect variable that is impacted by an independent variable in a causal hypothesis.
- **INTERVENING VARIABLE:** A variable that comes between the independent and dependent variables and shows the link or causal mechanism between them.

End

Thank You

mbubaj@ipfw.edu