# RAD 412

# The Research Process

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# The Sequence of Research Execution

- Identify a research problem
- Do a literature review
- Formulate research questions and hypothesis
- Design the research
- Data collection
- Organization of data
- Data analysis

# The Sequence of Research Execution

- Interpretation of data
- Conclusion
- Publication

# Identifying a research problem

- Identifying a problem helps one to choose a research topic
- A problem is anything that hinders progress or realization of an objective
- An average person should be able to identify a problem in his environment or occupational area
- The ability to identify a problem differ from person to person

# Do a literature review

- This follows immediately the identification of a problem in order to form the bases of the research
- It is often not taken seriously by many students even though they know research can take place without a review of literature in the subject area

# Research questions and hypotheses

- Formulate the research questions
- Research questions are structured and constructed to guide the research in providing solutions to the problem identified
- Formulate the research hypotheses
- Hypotheses are intelligent guesses regarding the variables under study
- They guide the research in providing solutions to the identified problem

# Designing the research

- **Research design** is a comprehensive strategy adopted by a researcher to answer the research questions
- Included as part of design are sample size, sampling technique, data collection etc
- Research design is a very diverse issue is forms a recognised specialty in statistics

# Sampling technique

- **Probability Sampling Technique**
- **Simple Random Sampling:** In this type of sampling every member of the population has an equal and independent chance of being selected.
- **Stratified Random Sampling**: In this method of sampling, the population from which samples are to be taken is divided into groups called strata on the bases of common characteristics among each group.
- After the allocation of elements to the individual strata in stratified random sampling, the elements from each stratum are randomly picked.

# Sampling technique

- **Systematic sampling**
- In this technique an **$n^{th}$** element of the population is selected
- The list of elements are made and the $n^{th}$ element is selected randomly and then systematically until an adequate sample is selected

# Sampling technique

➢ **Cluster Sampling:**

- It is used in situations where the population members are naturally grouped into clusters
- The target population is divided into clusters which contain two or more members of the population
- Select the cluster to be studied randomly from the clusters

# Sampling technique

- **Non Probability Samples**
  - **Quota sampling**
    - It implies that there is an already predetermined number to be included according some criteria usually decided by the researcher
  - **Proportionate sampling**
    - Similar to quota sampling except that the number selected in each quota is determined by the population in each quota

# Sampling technique

- **Judgmental or purposeful sampling**
- The researcher selects elements from the population on the basis of his having a characteristic suitable for the study.
- It is very useful in research situations where generalization of findings is not required.

# Sampling technique

- **Convenience sampling**
- Members of the population are selected according to the researcher's convenience
- Representativeness of the population from which the sample is drawn is sacrificed

# Sampling technique

- **Accidental sampling**
- Members that the researcher can reach are included in the sample
- Possession of a specific characteristics is not a requirement
- Example is a roving journalist interviewing anyone he sees

# Data collection

- There are generally two sources of data in research namely:

✓ Secondary sources or documented data

✓ Primary source (original data) .

# Some things to take care of in data collection

- The **reliability** and **validity** of an instrument for data collection
- The reliability of an instrument is the consistency of the instrument in measuring the attribute that is designed to measure.
- The validity of an instrument is the appropriateness of an instrument to measure what it is intended to measure

# Some things to take care of in data collection

- **Sampling error**: The difference between the results obtained from a sample and the result that would have been obtained from the population

# Data organization, analysis and interpretation

- Organization of data
- **Data analysis** is a process of **inspecting**, **cleansing**, **transforming** and **modelling** data with the goal of discovering useful information, informing conclusions and supporting decision-making.
- Interpretation of data

# End

**Thank you for listening**