

RESEARCH METHODOLOGY

An Introduction

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RESEARCH METHODOLOGY

An Introduction to RM

Department of Computer Science and Engineering

Introduction to Research Methodology



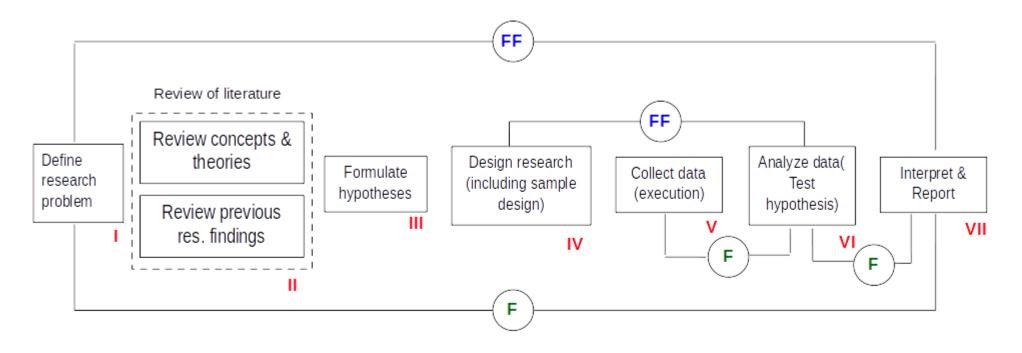
Contents:

- I. Research Process
- II. Criteria for Good Research

Research Process



RESEARCH PROCESS IN FLOW CHART



- F = feed back (Helps in controlling the sub-system to which it is transmitted
- (FF) = feed forward (Serves the vital function of providing criteria for evaluation

Research Process

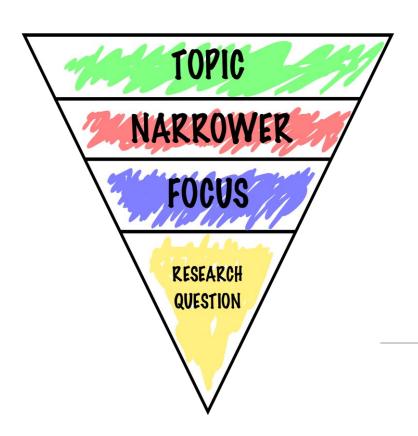


The order concerning various steps provides a useful procedural guideline regarding the research process:

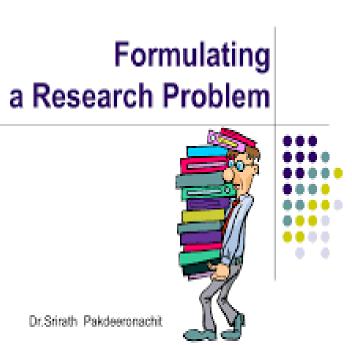
- 1) Formulating the research problem;
- 2) Extensive literature survey;
- Developing the hypothesis;
- 4) Preparing the research design;
- 5) Determining sample design;
- 6) Collecting the data;
- 7) Execution of the project;
- 8) Analysis of data;
- 9) Hypothesis testing;
- 10) Generalizations and interpretation, and
- 11) Preparation of the report or presentation of the results, i.e., format write-up of conclusions reached.

1) Formulating Research Problem

- 2 steps for formulating research problem
- Understanding the research problem thoroughly
- Re-phrasing same in meaningful terms.







2) Extensive Literature Survey

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- Abstracting and indexing journals and published / unpublished biographies.
- Academic journals, conference proceedings, government reports, books, etc..
- Earlier studies similar to research topic in hand.
- Good Library.
- Internet to search articles.
- Search Engines Google / Google Scholar
- <u>http://scholar.google.com</u>

3) Development of Working Hypothesis



- Working Hypothesis Temporary assumption made in order to draw out and test its logical consequences.
- They affect the manner in which tests are conducted.
- Process to go about developing Hypothesis.
- Discussion with colleagues and experts about problem.
- Examination of data and records concerning to the problem.
- Review of similar studies in the area.
- Exploratory personal investigation which involves field interviews.

4) Preparing the Research Design

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- Preparation of research design involves following consideration.
 - Obtaining Information
 - Availability and skills of researcher and his staff Explanation
 - Time available for research
 - Cost Factor relating to research – finance available.













of Research Design





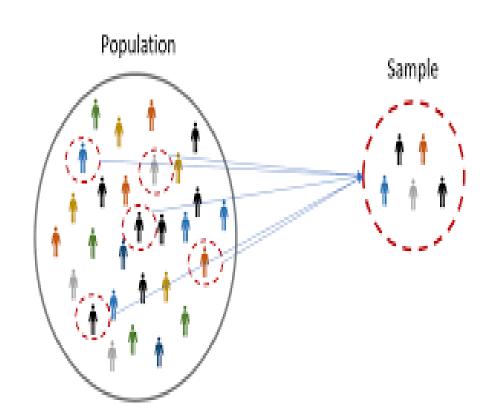


Analysis Method

5) Determining the Sample Design

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- Simple random sampling.
- Systematic sampling.
- Stratified sampling.
- Quota sampling.
- Cluster sampling and area sampling.
- Multi stage sampling.
- Sequential sampling.



6) Collection of Data

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- Data in hand is inadequate. So need to collect appropriate data
- Ways to collect data
- Primary Data Observation and Surveys
 - Observation
 - Personal Interview
 - Telephonic interview
 - Mailing of questionnaires
 - Through Schedules.

Collection of Data





7) Analysis of Data

- Coding
- Editing
- Tabulation
- Computation of percentage coefficients
- Statistical tests
- Statistical measures





Hypothesis -- Meaning

hupothesis

foundation

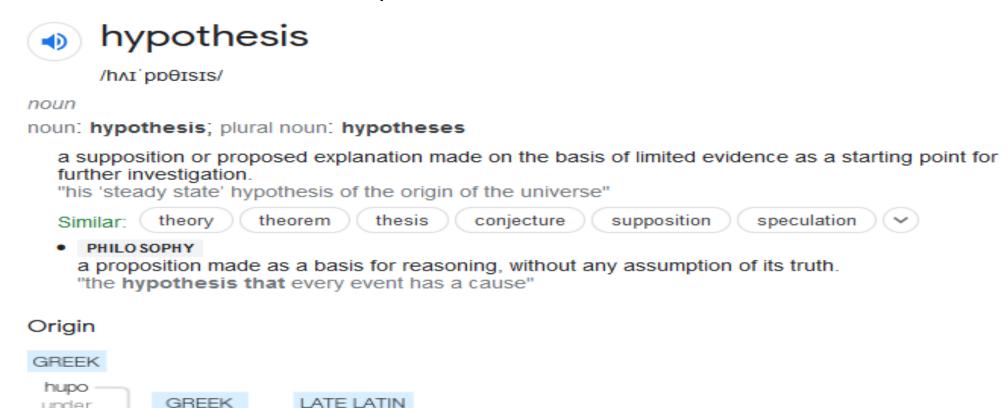
under

GREEK

thesis placing

A hypothesis is a proposed explanation for a phenomenon. For a hypothesis to be a scientific hypothesis, the scientific method requires that one can test it. Scientists generally base scientific hypotheses on previous observations that cannot satisfactorily be explained with the available scientific theories. ~ Wikipedia





hypothesis

late 16th century

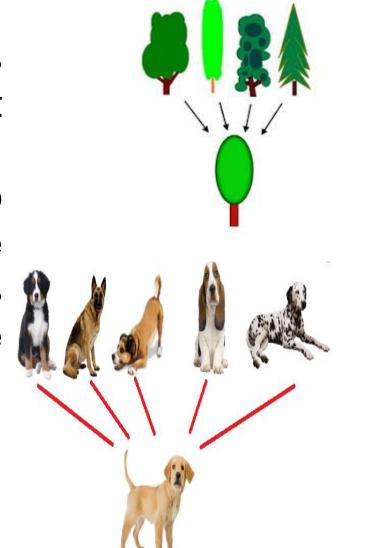
8) Hypothesis Testing



- Various tests like Chi-square, t-test, f-test have been developed by statisticians.
- Hypothesis may be tested through use of one or more such tests depending on nature and object of research.
- Result either accepted or rejected.

9) Generalization and Interpretation

- Real value of research lies in its ability to arrive at certain generalization.
- If researcher had no hypothesis to start with, he might seek to explain his findings on basis of some theory – Interpretation.

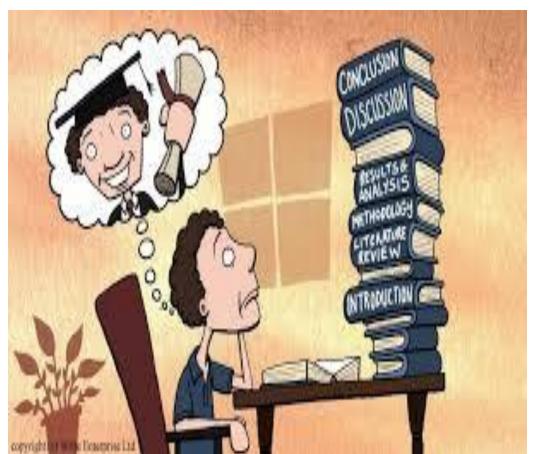






10) Preparation of Report / Thesis

- Preliminary pages date, acknowledgement, foreword.
- Main text introduction, summary of findings, main report, conclusion.
- End appendices,
 bibliography list of books,
 journals, reports, etc...
- Report should be concise.
- Charts and illustrations clearly and forcibly







Criteria for a Good Research

Criteria for a Good Research



- 1) Purpose should be clearly defined.
- 2) Procedure used should be described in sufficient detail.
- 3) Design of research should be carefully planned to yield result as objective.
- 4) Report complete frankness, flaws in procedural design.
- 5) Analysis should be sufficiently adequate, method of analysis should be appropriate.
- 6) Conclusion should be confined to those justified by data of research.

Criteria for a Good Research



- Good research is systematic
 - Research should be structured with specified steps to be taken in specified sequence.
- Good research is logical
 - Research is guided by rules of logical reasoning and logical procedure of induction and deduction.
- Good research is empirical
 - Research related to basically to one or more aspect of real situation and deals with concrete data.
- Good research is replicable
 - Allows research results to be verified by replicating the study and thereby building on sound basis of decision.

Problems Encountered by Researchers in India



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THANK YOU



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