RESEARCH METHODOLOGY

TYPES OF RESEARCH

CLASSIFICATIONS OF RESEARCH

- Research can either be classified as
  - Qualitative Research Vs Quantitative Research.
  - Classification by purpose
    - Basic (Fundamental) Research Vs Applied Research.
    - Action Research Vs Evaluation Research
  - Classification by methods of analysis
    - Descriptive Research Vs Analytical Research.
  - Conceptual Research Vs Empirical Research.
  - Other Types of Research: Survey, ethnography, Case studies, historical, observational and experimental research.

QUANTITATIVE VS QUALITATIVE METHODS

Quantitative Methods

Positivistic, Empirical

Experimental Falsification

Correlational

Surveys

Structured Interview

Postal Questionnaires

Tests of Performance

Attitude Intervention

Nomothetic

Qualitative Methods

Interpretive

Construction of Reality

Ethnographic

Case Studies

Unstructured Interview

Participant Observation

Diary Keeping

Narratives

Ideographic, Hermeneutic

QUANTITATIVE VS QUALITATIVE METHODS

Qualitative	Quantitative
❖ "All research ultimately has a qualitative grounding" - Donald Campbell	❖ "There's no such thing as qualitative data. Everything is either 1 or 0" - Fred Kerlinger
❖ The aim is a complete, detailed description.	❖ The aim is to classify features, count them, and construct statistical models in an attempt to explain what is observed.
❖ Researcher may only know roughly in advance what he/she is looking for.	❖ Researcher knows clearly in advance what he/she is looking for.

QUANTITATIVE VS QUALITATIVE METHODS

Qualitative	Quantitative
❖ Recommended during earlier phases of research projects.	❖ Recommended during latter phases of research projects.
❖ The design emerges as the study unfolds.	❖ All aspects of the study are carefully designed before data is collected.
❖ Researcher is the data gathering instrument.	❖ Researcher uses tools, such as questionnaires or equipment to collect numerical data.
❖ Data is in the form of words, pictures or objects.	❖ Data is in the form of numbers and statistics.

QUANTITATIVE VS QUALITATIVE METHODS

Qualitative	Quantitative
❖ Subjective - individuals' interpretation of events is important ,e.g., uses participant observation, in-depth interviews etc.	❖ Objective – seeks precise measurement & analysis of target concepts, e.g., uses surveys, questionnaires etc.
❖ Qualitative data is more 'rich', time consuming, and less able to be generalized.	❖ Quantitative data is more efficient, able to test hypotheses, but may miss contextual detail.
❖ Researcher tends to become subjectively immersed in the subject matter.	❖ Researcher tends to remain objectively separated from the subject matter.

QUANTITATIVE RESEARCH

- Include designs, techniques and measures that produce discrete numerical or quantifiable data. Random sampling is done to ensure representativeness of the sample.

- Some of the research designs which may be categorized as quantitative research are experimental designs, causal-comparatives research and correlational research.

QUALITATIVE RESEARCH

- Qualitative research includes design techniques and measures that do not produce discrete numerical data.
- More often the data are in the form of words rather than numbers and these words are often grouped into categories.
- Qualitative data is colleted using either of the method of data collection: observation, interview, questionnaire or a combination of any of them.
- It is advantageous in that it permits research to go beyond the statistical results usually reported in quantitative research.
- Human behavior is also explained using qualitative research,e.g. human phenomena that can not be investigated by direct observation are best studied using qualitative method.

ADVANTAGES OF USING BOTH QUALITATIVE AND QUANTITATIVE METHODS

- In many cases, a researcher has several objectives of the study. Some of these objectives are better assessed using qualitative methods while others are better assessed using quantitative methods.
- Both methods supplement each other in that qualitative methods provide the in-depth explanations while quantitative methods provide the hard data needed to meet required objectives and to test hypothesis.
- Since both methods have some bias, using both types of research helps to avoid such bias in that each method can be used to check the other.

DISADVANTAGES OF USING BOTH METHODS

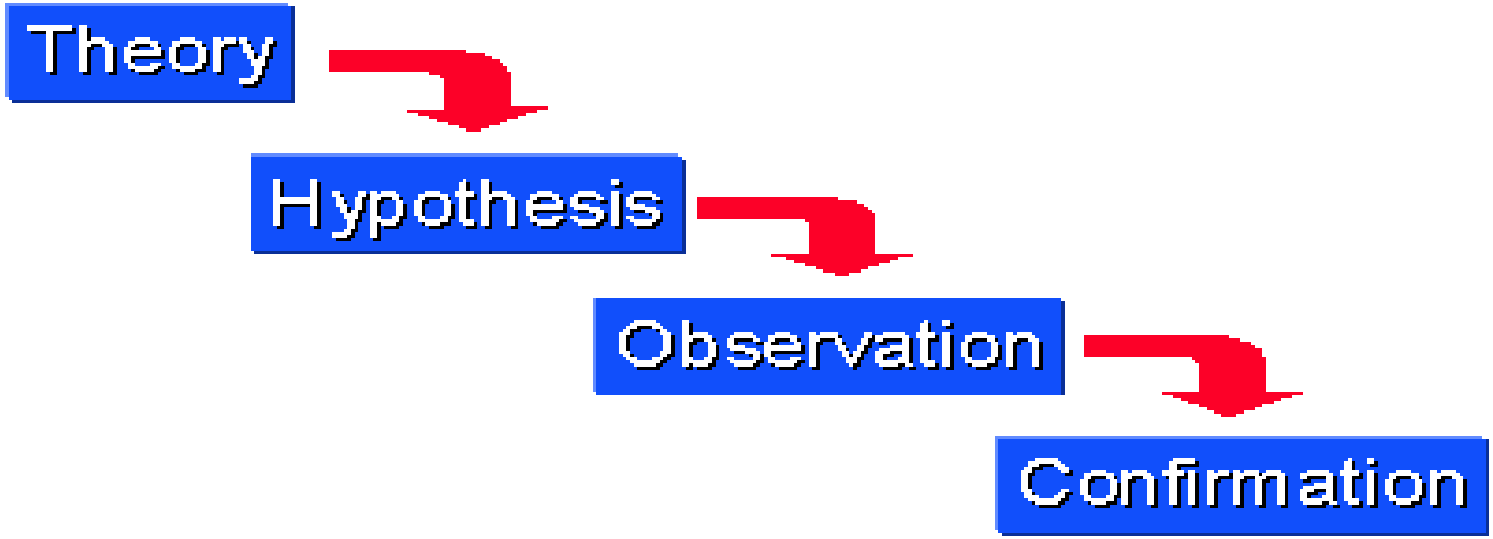
- Combining both methods can be prohibitively expensive . E.g. using the survey method as well as case studies increases the cost in terms of time, energy and money.
- Researchers may not have sufficient training in both methods to be able to use them effectively.

CLASSIFICATION FROM THE THEORETICAL PERSPECTIVE

- This is the way in which the researcher engages with the theory during the research process
- Yields two approaches
  - Inductive research
  - Deductive research

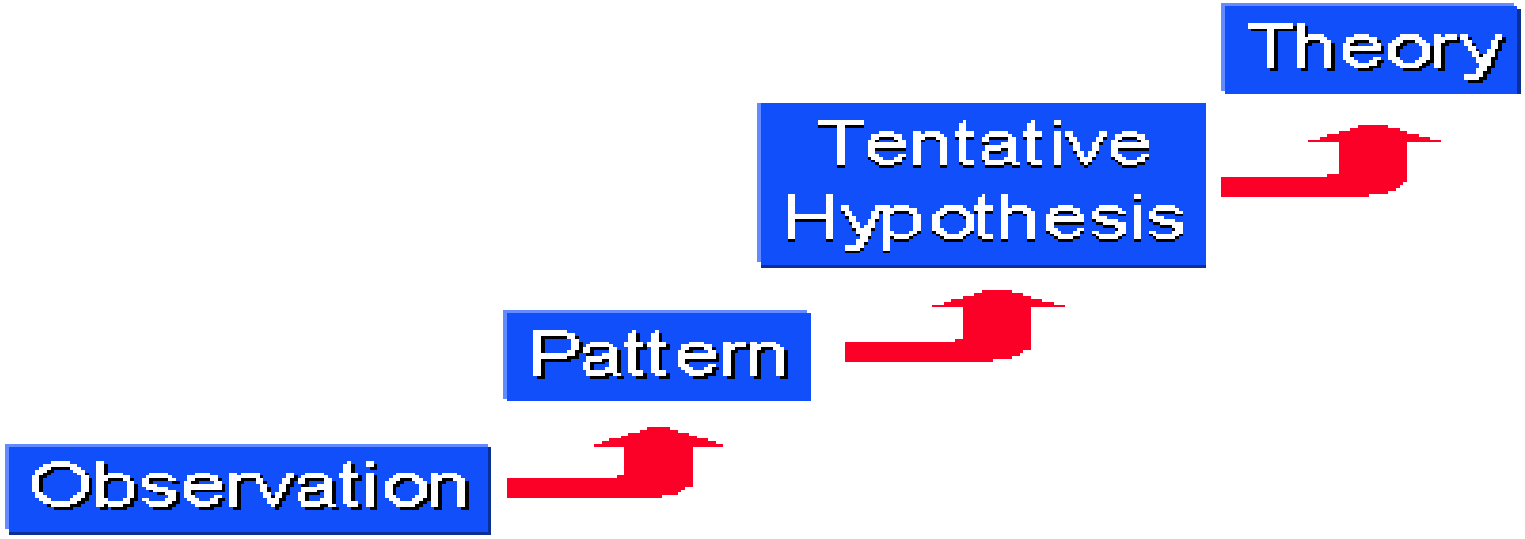
DEDUCTIVE RESEARCH

- Deductive reasoning works from the more general to the more specific. Sometimes this is informally called a "top-down" approach.



INDUCTIVE RESEARCH

- Inductive reasoning works the other way, moving from specific observations to broader generalizations and theories. Informally, we sometimes call this a "bottom up" approach



CLASSIFICATION BY PURPOSE

- Under this category we have:
  - Basic (Fundamental) Research Vs Applied Research.
  - Action Research Vs Evaluation Research

BASIC RESEARCH

- Basic research is also called pure research or fundamental research.
- **Definition**: It focuses on fundamental structures and processes with goal of understanding them.
- The primary concern of basic research is to add the universe of scientific knowledge.
- It is normally motivated by intellectual curiosity and need to come up with a particular solution.

BASIC RESEARCH contd.

- Another focus of basic research is to generate new knowledge in order to refine or expand existing theories.
- It is usually but not always, conducted in controlled laboratory situations and often uses animals as subjects
- In basic research, there is no consideration of the practical application of the findings to the actual problems or situations

APPLIED RESEARCH

- It is conducted for the purpose of applying or testing theory and evaluating its usefulness in solving problems.
- It provides data to support theory, guide theory revision, or suggest the development of new theory.
- It focuses on developing knowledge that is directly useful to practitioners.

ACTION RESEARCH

- It is conducted with primary intention of solving a specific, immediate and concrete problem in a local setting. E.g. a researcher could investigate ways of overcoming water shortage in a given geographical area.
- It is not concerned with whether the results are generalized to any other setting since its major goal is to seek a solution to a given problem.
- It is limited in its contribution to theory but it is useful because it provides answers to problems that cannot wait for theoretical solutions.

EVALUATION RESEARCH

- It is the systematic process of collecting and analyzing data in order to make decisions.
- It is therefore a process of determining whether the intended results were realized.
- The purpose of evaluation research is to collect data that will facilitate decision making.

EVALUATION RESEARCH contd.

- Evaluation research should should satisfy four important criteria outlined by Borg and Gall (19??) as follows:

1. **Utility-** an evaluation has utility if it is informative, timely and useful to the affected persons.
2. **Feasibility-** an evaluation design is feasible if it is appropriate to the setting in which the study will be conducted. An evaluation design is also feasible if it is cost-effective, i.e. if the study is worth the cost
3. **Propriety**- an evaluation has propriety if the rights of the persons affected by the evaluation are protected.
4. **Accuracy-** this refers to the extent to which an evaluation study produces valid, reliable and comprehensive information about the phenomenon being evaluated.

EVALUATION MODELS

- There are various evaluation models:
  1. **Model I-** Evaluation is to assess the worth or usefulness of programme or project.
  2. **Model II-** Evaluation of performance relative to the objective. The main assumption of this model is that the success of a programme are achieved by users.
  3. **Model III-** Evaluation to assist decision-making. The model assumes programmes need evaluation as they are being developed and carried out in order to help in decision-making.
  4. **Model IV-** Evaluation to identify issues and concerns among the audience being evaluated.

TYPES OF EVALUATION RESEARCH

1. **Needs Assessment-** a need assessment is a discrepancy between an existing set of conditions and desired set of conditions. Research can be done to assess needs in a systematic way.

2. **Formative Evaluation-** its main purpose e.g in education to collect data about educational programmes while they are still being developed. The results can then be used by education authorities to modify the programmes.

3. **Summative Evaluation-** it occurs after the programme has been fully developed. It is conducted to evaluate how worth while the final programmes has been, especially as compared to similar programmes

CLASSIFICATION BY METHODS OF ANALYSIS

- In this category there are two broad ways of classifying research
  - Descriptive Research
  - Causal-Comparative Research

DESCRIPTIVE RESEARCH

- **Definition:** it is a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subjects in the study.

- The purpose of descriptive research is to determine and report the way things are. It attempts to describe such things as possible behavior,attitudes, values, and characteristics.

- Steps involved in descriptive research :
  1. Formulating the objectives of a study
  2. Designing the methods of data collection
  3. Selecting the sample.
  4. Data collection.
  5. Analyzing the results.

DESCRIPTIVE RESEARCH

- Thus, descriptive research cannot be used to create a *casual relationship*, where one variable affects another.
- The description is used for frequencies, averages and other statistical calculations.
- Often the best approach, prior to writing descriptive research, is to conduct a survey investigation.
- Qualitative research often has the aim of *description* and researchers may follow-up with examinations of why the observations exist and what the implications of the findings are

ANALYTICAL RESEARCH

- Reading assignment: read and make short notes on analytical research.
- **Analytical Research-** Continuation of descriptive research.
- The researcher go beyond merely analyzing and explaining why or how it is happening.
- It a measure the casual relationship

CAUSAL-COMPARATIVE RESEARCH

- **Causal-comparative Research**- is used to explore relationships between variables.
- Its main purpose is to determine reasons or causes for the current status of the phenomenon understudy.
- This method is often used instead of the experimental design because many of the cause-and-effect relationships that we wish to study do not permit experimental manipulation.
- The main difference between causal-comparative and experimental research is that in experimental research the researcher is able to manipulate one or more variables to determine their effects on another variable.

STEPS IN CAUSAL-COMPARATIVE RESEARCH

1. Define the research question. The question will based on previous research findings and theory or on the researcher's own observations. Testable hypotheses may also be formed.

2. Select a group that possess the characteristics which the researcher wants to study. This group must be homogenous in certain critical variables that the researcher needs to study.

3. Select a comparison group which does not display the characteristics under study, in order to permit comparison but which is similar to the study. The group in other respects.

STEPS IN CAUSAL-COMPARATIVE RESEARCH contd.

4. Data on the relevant variables are then collected from both the experimental and control group.

5. Data analysis. The following are steps in data analysis:
   i. The first step in analyzing causal-comparative data is to compute descriptive statistics for each comparison group in the study.
   ii. The second step is carry out tests which will show whether the groups are different.

- NB:The T-test and and analysis of variance are the most commonly used to test hypothesis in causal-comparative studies.

ADVANTAGES AND DISADVANTAGES CAUSAL-COMPARATIVE RESEARCH

Advantages:

1. It allows a comparison of groups without having to manipulate the independent variables
2. Causal-comparative studies can be done solely to identify variables worthy of experimental investigation.
3. These studies are relatively cheap.

Disadvantages

1. Interpretations are limited because the researcher does not know whether a particular variable is a cause or result of a behavior being studied.
2. There may be a third variable which could be affecting the established relationship in a causal-comparative study but which may not be established.

CORRELATIONAL METHODS

- Correlational method describes in quantitative terms the degree to which variables are related.
- Correlational research involves collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables.
- The degree of relationship is expressed as a correlation coefficient (*r*).
- If variables are found not to be significantly correlated, these are removed from further observation.

CORRELATIONAL METHODS contd.

- If variables are highly correlated, they are used as a basis on which to carry out causal-comparative or experimental studies to determine if the relationship is causal.
- Causal-comparative research serves to two purposes.
  i. To explore relationships between variables.
  ii. To predict a subject's score on the variable given his/her score on another variable.

STEPS IN CORRELATIONAL RESEARCH

- Problem statement
- Selection of subject
- Data collection
- Data analysis

ADVANTAGES OF CORRELATIONAL STUDIES.

i. This method permits one to analyze inter-relationships among a large number of variables in a single study.

ii. This method also allows one to analyze how several variables either singly or in combination might affect a particular phenomenon being studied.

iii. The method provides information concerning the degree of relationship between the variables being studied.

DISADVANTAGES OF CORRELATIONAL STUDIES

1. Correlation between two variables does not necessarily imply causation although researchers often tend to interpret such a relationship to mean causation.

2. A correlation coefficient is an index and therefore any two variables will always show a relationship even when common sense dictates that such variables are not related.

3. The correlation coefficient is very sensitive to the size of the sample. If the data is collected from two subjects only, the absolute value of the correlation coefficient will be exactly equal to 1.0. As sample size increases, the correlation drops and then stabilizes when the sample size is big enough. Therefore, small samples in correlational studies yield erroneous results.

CONCEPTUAL VS EMPIRICAL RESEARCH

EMPIRICAL RESEARCH

- Empirical research is conducted in both the natural and social sciences, and refers to means the use of working hypotheses that are testable using observation or experiment.

OTHER TYPES OF RESEARCH

1. Survey research
2. Historical research
3. Observational research
4. Ethnography
5. Case studies
6. Experimental methods

SURVEY RESEARCH

- **Definition: A Survey** is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables.
- It is therefore a self-report study which requires the collection of quantifiable information from the sample.
- It could be descriptive, exploratory or involving advanced statistical analysis.

PURPOSES OF SURVEY RESEARCH

- It seeks to obtain information that describes existing phenomena by asking individuals about their perceptions, attitudes, behaviors or values.
  - Survey research is therefore a type of descriptive research.

CASE STUDIES

- A **Case Study** is one of several ways of doing research whether it is social science related or even socially related.
- It is an intensive study of a single group, incident, or community.
- Other ways include experiments, surveys, multiple histories, and analysis of archival information.
- Rather than using samples and following a rigid protocol to examine limited number of variables, case study methods involve an in-depth, longitudinal examination of a single instance or event: a **case**.

CASE STUDIES

- They provide a systematic way of looking at events, collecting data, analyzing information, and reporting the results.
- As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research.
- Case studies lend themselves to both generating and testing.

EXPERIMENTAL RESEARCH

- An experimental design is where one or more variables are manipulated to measure changes in behaviour or other phenomenon.
- Experimental research design: The researcher has control over the experiment in terms of sample selection, treatment, environment, etc.
- Experimental designs are typical in psychology, medicine, education, etc.
- **Quasi-experiments:** The researcher does not have control over the experiment, rather the experiment occurs in a “natural” setting.
- Quasi-experimental design are typical in economics, sociology, public administration, urban planning, political sciences, etc.

HISTORICAL RESEARCH

- The historical method comprises the techniques and guidelines by which historians use historical sources and other evidence to research and then to write history.

- There are various history guidelines commonly used by historians in their work, under the headings of external criticism, internal criticism, and synthesis. This includes higher criticism and textual criticism.

HISTORICAL RESEARCH

- Though items may vary depending on the subject matter and researcher, the following concepts are usually part of most formal historical research:
  - Identification of origin date
  - Evidence of localization
  - Recognition of authorship
  - Analysis of data
  - Identification of integrity
  - Attribution of credibility

HISTORICAL RESEARCH

- The **historical method** comprises the techniques and guidelines by which historians use primary sources and other evidence to research and then to write history.
- The question of the nature, and indeed the possibility, of sound historical method is raised in the philosophy of history, as a question of epistemology.
- The following summarizes the history guidelines commonly used by historians in their work, under the headings of external criticism, internal criticism, and synthesis