RESEARCH METHODOLOGY

- Research in common parlance refers to a search for knowledge.
- Once can also define research as a scientific and systematic search for pertinent information on a specific topic.
- Research is an art of scientific investigation
- rechercher (French word):search closely
- Chercher: to search

- **Redman and Mory**

"systematized effort to gain new knowledge"

- **Clifford Woody**

" Research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis"

Objectives of Research

Search for hidden truth….

- To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as *exploratory* or *formulative* research studies);
- To portray accurately the characteristics of a particular individual, situation or a group(studies with this object in view are known as *descriptive* research studies)
- To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as *diagnostic* research studies);
- To test a hypothesis of a causal relationship between variables (such studies are known as *hypothesis-testing* research studies).

Motivation in Research

1. Desire to get a research degree along with its consequential benefits;
2. Desire to face the challenge in solving the unsolved problems, i.e., concern over practical problems initiates research;
3. Desire to get intellectual joy of doing some creative work;
4. Desire to be of service to society;
5. Desire to get respectability.

Research Approaches

1. Quantitative Approach
    a) Inferential : Database (Survey) relationship of population.
    b) Experimental : Control over research environment, variables manipulated to observe their effect on other variables
    c) Simulation : Artificial controlled environment – dynamic behaviour of the system by giving the values of initial conditions, parameters and exogenous variables

Research Approaches

2. Qualitative Approach

- assessment of attitudes, opinions and behaviour
- function of researcher's insights and impressions
- generates results either in non-quantitative form or in the form which are not subjected to rigorous quantitative analysis.
- Group interviews, projective techniques and depth interviews are used.

Significance of research

- “All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry, and inquiry leads to invention” -Hudson Maxim

Significance of Research

- *Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organisation*
- *Research provides the basis for nearly all government policies in our economic system*
  - (i) investigation of economic structure through continual compilation of facts;
  - (ii) diagnosis of events that are taking place and the analysis of the forces underlying them; and
  - (iii) the prognosis, i.e., the prediction of future developments.
- *Individuals*
  - To those students who are to write a master's or Ph.D. thesis, research may mean a careerism or a way to attain a high position in the social structure;
  - To professionals in research methodology, research may mean a source of livelihood;
  - To philosophers and thinkers, research may mean the outlet for new ideas and insights;
  - To literary men and women, research may mean the development of new styles and creative work;
  - To analysts and intellectuals, research may mean the generalisations of new theories.

Scientific method

(Characteristic features)

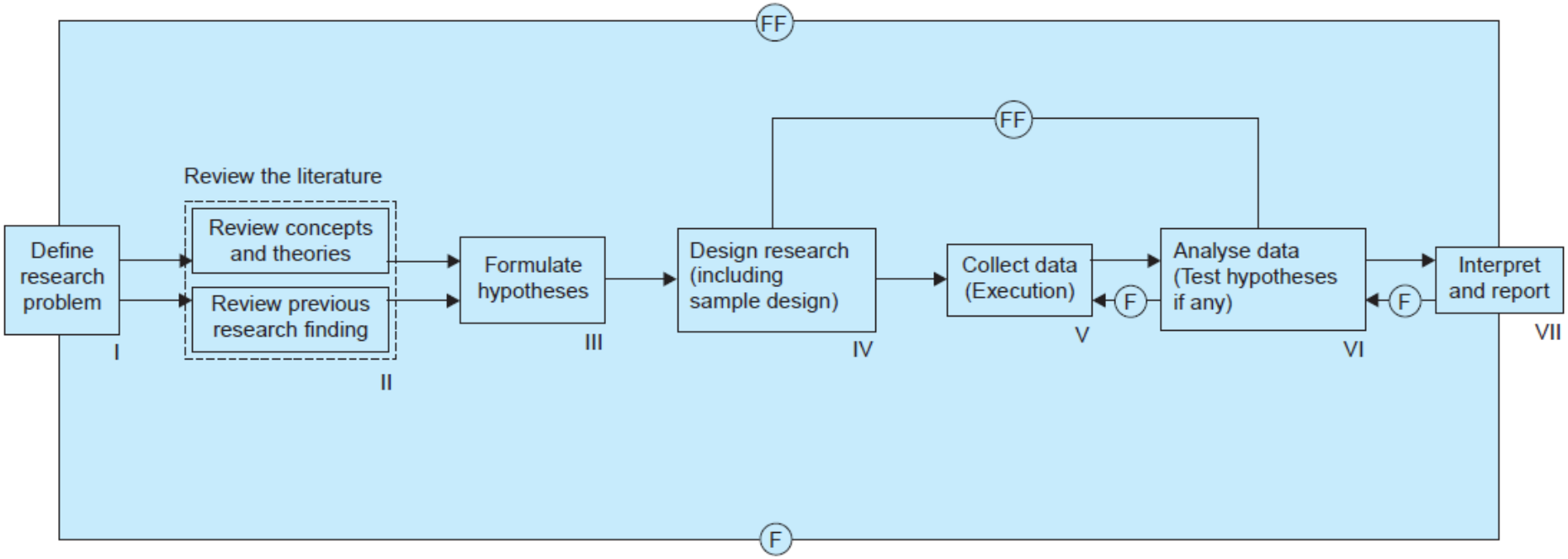
1. It relies on empirical evidence;
2. It utilizes relevant concepts;
3. It is committed to only objective considerations;
4. It presupposes ethical neutrality, i.e., it aims at nothing but making only adequate and correct statements about population objects;
5. It results into probabilistic predictions;
6. Its methodology is made known to all concerned for critical scrutiny are for use in testing the conclusions through replication;
7. It aims at formulating most general axioms or what can be termed as scientific theories.

Characteristics of Research

1. **Objectivity**
2. **Reliability**
3. **Validity**
4. **Verifiability**
5. **Definiteness**
6. **Generality**
7. **Control and predictability**

Different methods of research

- Case study method
- Experimental method
- Survey method
- Statistical method
- Historical method



Where (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)

Steps of Research Process

- Field of interest
- Problem definition
- Extensive literature survey
- Primary synopsis
- Identification and labelling of variables
- Development of hypothesis
- Preparing a research design
- Determining a sample design
- Data collection
- Execution of project
- Processing and analysis of data
- Hypothesis-testing
- Preparation of report

Steps of Research Process

- Formulating a research problem
- Extensive literature review
- Development of working hypothesis
- Preparing research design
- Determining sample design
- Collecting data
- Execution of the project
- Analysis of data
- Hypothesis testing
- Generalisations and interpretations
- Preparation of the report or the thesis

Criteria of good research

1. The purpose of the research should be clearly defined and common concepts be used.
2. The research procedure used should be described in sufficient detail to permit another researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.
3. The procedural design of the research should be carefully planned to yield results that are as objective as possible.
4. The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.
5. The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.
6. Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.
7. Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

Good research is : Systematic, Logical, Emperical, replicable

Features for selecting a problem

Research guide can help to choose the subject

- Subject which is overdone should not be chosen
- Controversial subject should not be
- Too vague or too narrow problem should be avoided
- Subject should be familiar
- Qualification and training of a researcher, cost, time should be considered
- Problem selection should be preceded by preliminary study.

Scientific research in India

- Lack of scientific training in the methodology of research
- Insufficient interaction btw uty and research dept.
- Confidence on data/information obtained
- Code of conduct of researchers
- Adequate and timely secretarial assistance
- Library management and functioning not satisfactory
- Many of libraries unable to get copies of old act/rules, results etc.
- Timely unavailability of published data
- Problem of conceptualisation & relating process of data collection and relating things