

Research Process

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1. **Formulating the research problem:** There are two types of research problem viz (a) those which relates to states of nature, and (b) those which relates to relationship between variables. The researcher must single out the problem he wants to study.
2. **Review of Related Literature:** Once the problem is formulated the researcher should undertake extensive literature survey connected with the problem. For this purpose the abstracting and indexing journals and published or unpublished bibliographies are the first place to go to. In this process, it should be remembered that one source will lead to another.
3. **Development of working hypotheses:** After literature survey the researcher should state the working hypothesis or hypotheses. Hypothesis is a tentative assumption made in order to draw out and test its logical and empirical consequences. The role of hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track.
4. **Preparing the research design:** The researcher is to prepare a research design i.e. He will have to state the conceptual structure within which research would be constructed. The function of research design is to provide for the collection of relevant evidence with optimum effort, time and expenditure.
5. **Determining sample design:** The researcher must decide a way of selecting a sample or what is popularly known as sample design. It is a definite plan determined before any data is actually collected for obtaining a sample from a given population. All items under consideration in any field of inquiry constitute a 'universe' or 'population'.
Samples can be either probability samples or non-probability samples. With probability samples each element has a known probability of being included in the sample but the non-probability samples does not allow the researcher to determine this probability. Probability sampling are those based on simple random sampling, systematic sampling, stratified sampling, cluster/ area sampling whereas non-probability sampling are those based on convenience sampling, judgment sampling and quota sampling techniques.
6. **Collecting the data:** Data collection is a process of gathering information from all the relevant sources to find a solution to the research problem. It helps to evaluate the outcome of the problem. The data collection methods allow a person to conclude an answer to the relevant question. Data collection methods can be used to make assumptions about future probabilities and trends.
Depending on the type of data, the data collection method is divided into two categories namely,
 - o **Primary Data Collection methods:** Primary data or raw data is a type of information that is obtained directly from the first-hand source through experiments, surveys or observations. The primary data collection method is further classified into two types i.e. quantitative and qualitative.
 - i. **Quantitative Data Collection Methods:** It is based on mathematical calculations using various formats like close-ended questions, correlation and regression methods, mean, median or mode measures.
 - ii. **Qualitative Data Collection Methods:** It does not involve any mathematical calculations. This method is closely associated with elements that are not quantifiable. This qualitative data collection method includes interviews, questionnaires, observations, case studies, etc.
 - **Secondary Data Collection methods:** Secondary data is data collected by someone other than the actual user. It means that the information is already available, and someone analyses it. The secondary data includes magazines, newspapers, books, journals, etc. It may be either published data or unpublished data.
7. **Execution of the Project:** If the execution of project proceeds on correct lines, the data to be collected would be adequate and dependable. The researcher should take care that the project is executed in a systematic manner and on time.
8. **Analysis of data:** After the data has been collected, the researcher should analyse them. Coding operation is used at this stage to transform data into symbols which may be tabulated and counted. Editing takes place to improve the quality of data for coding. Tabulation classifies data and is put in the form of tables. The researcher can analyse the data with the help of various statistical measures.
9. **Hypothesis testing:** After analysing the data, the researcher is in a position to test the hypothesis, if any he has formulated earlier. Various tests such as Chi square test, t-test, f-test have been developed by statistician for that purpose. Hypothesis testing will result in either accepting the hypothesis or rejecting it.
10. **Generalisations and interpretation:** If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalisation i.e. To build a theory. If the researcher has no hypothesis then he might seek to explain his findings on the basis of some theory. It is known as interpretation.
11. **Preparation of the report or the thesis:** finally the researcher has to prepare a report of what has been done by him.