RESEARCH METHODS AND RESEARCHMETHODOLOGY:

- Research methods are the methods or techniques employed by researchers in conducting research operations.
- Research methodology is scientific and systematic way to solve research problems. A researcher has to design his methodology, i.e., in addition to the knowledge of methods or techniques, he has to apply the methodology as well . The methodology may differ from problem to problem. Thus the scope of research methodology is wider than research methods. In a way, research methodology deals with the research methods and takes into consideration the logic behind the methods, we use.

NEED FOR RESEARCH:

In the present context research has occupied a prominent place in all sectors. Government department, industrial establishments and business organisations have started giving priority to the research and at the same time lot of concerns is shown to establish the research and developments wings in these institutions to evaluate the programmes and to find out the solutions to the new problems and further initiating to make new discoveries. With the changing environment the societal problems are getting more and more complicated. As a problem solving method the research will adopt multipronged approach to solve the problems posed. Therefore research is considered as basic ingredient for development and serves as means for rapid socio-economic development of the country.

The role of research in several fields of applied economics, whether related to business or to the economy as a whole, has greatly increased in modern times. The increasing complex nature of business and government has focused attention on the use of research in solving operational problems. Research assumes significant role in the formulation of economic policy, both for business and government. It provides the base for almost all the government policies of an economic system. Government budget formulation, for example, depends particularly on analysis of needs and desire of people, and the availability of revenue, which requires research. Research also facilitates the decision making of the policy makers, although in itself it is not a part of research. In the process, research also helps in the proper allocation of a country's scare resources. Research is also necessary for collecting information on the social and economic structure of an economy to understand the process of

change occurring in the country. Research assumes a significant role in solving various operational and planning problems associated with business and industry. In several ways, operations research, market research, and motivational research are vital and their results assist in taking business decisions.

Research is equally important to the social scientist for analyzing social relationships and seeking explanation to various social problems. It gives intellectual satisfaction of knowing things for the sake of knowledge. It also possesses practical utility for the social scientist to gain knowledge so as to be able to do something better or in a more efficient manner.

RESEARCH PROCESS:

Research process comprises a series of steps or actions required for effectively conducting research and for the sequencing of these steps. The following are the various steps that provide useful procedural guideline regarding the conduct of research.

(1) Problem Definition

(2) Review the Literature

(3) Development of working hypothesis

(4) Research Design

(5) Data Collection

(6) Data Analysis

(7) Hypothesis-testing

(8) Data Interpretation

(9) Preparation of the Report

They are now explained.

Problem Definition

The first and foremost step in the research process consists of problem or opportunity identification. The research problem must be identified and defined without any ambiguity. There are two types of research problems, viz., those which relate to state of nature and those which relate to relationships between variables. At the very outset the researcher must single

out the problem he wants to study, i.e., he/she must decide the general area of interest or aspect of a subject- matter that he/she would like to inquire into.

There may be situation in which the researcher is fully aware of the symptoms relating to certain deficiency in achieving an organizational goal. But, he/she may not be in a position to clearly spell out the problem which is causing such deficiency. Unless it is clearly identified, it will not be possible to proceed further to carry out the project. If a researcher proceeds with ill-defined problems, he/she may end up with misleading conclusions or aborting the research project in the middle due to poor pay-off identified through interim evaluation of the research. Hence, the research problem should be clearly defined.

Review the Literature

Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem. This step provides foundational knowledge about the problem area. The review of literature also educates the researcher about what studies have been conducted in the past, how these studies were conducted, and the conclusions in the problem area. 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. The earlier studies, if any, which are similar to the study in hand, should be carefully studied.

Development of working Hypothesis

After extensive literature survey, researcher should state in clear terms the working hypothesis or hypotheses. A hypothesis is an assumption or suggested explanation about how two or more variables are related. It is a crucial step in the scientific method and, therefore, a vital aspect of all scientific research. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. As such the manner in which research hypotheses are developed is particularly important since they provide the focal point for research. Hypothesis should be very specific and limited to the piece of research in hand because it has to be tested. The role of the hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track.

Research Design

The next step in research process is to design research. The research design provides a complete guideline for data collection. It is the plan, structure and strategy of investigation

conceived so as to obtain answers to research questions and to control variance. Following are the essence of research design:

- Design of sampling plan
- Design of experiment
- Design of questionnaire

Design of Sampling Plan

A sampling plan is mechanism by which the sampling units of a study are selected from the sampling frame of the population. The selection of the sampling plan in a study in turn affects the cost and time to conduct the study, and the reliability of interference of the study. Hence, it should be selected with utmost care. The sampling plan can be classified into probability sampling plans and non-probability sampling plans. Different sampling plans in each of these categories are listed as follows:

Probability Sampling Plans:

- Simple Random Sampling
- Systematic sampling
- Stratified random sampling
- Cluster sampling
- Multi-stage sampling

Non-probability Sampling plans:

- Convenience sampling
- Judgment sampling
- Quota sampling

Design of experiment

A study involves different response variables. Each response variable may be affected by several factors. To test the effect of these factors on a response variable, a suitable experiment is to be designed such that the necessary data for testing the significance of the effects of the factors on the response variable are collected and the interference of the test are highly reliable. There are two main steps of designing the experiment:

- Identify the response variables of the study.
- For each response variable, repeat the following steps.
    - Identify the factors affecting the response variable.
    - Decide on the type of each of the factors (a factor may be either fixed factor or random factor).
    - Fix the number of levels (treatments) of each factor.

Design of questionnaire

The data can be classified into primary and secondary data. The data which is collected for the first time by direct observation is primary data. The data which is obtained from existing records, publications, etc., is known as secondary one. The different methods of primary data collection are observation method, personal interview, telephone interview and mail survey. The success of survey methods depends on the strength of the questionnaire used. A questionnaire consists of a set of well-formulated questions to probe and obtain responses from respondents. The questionnaire must contain provisions to collect all the data items which are required for testing different hypotheses of the experiment as well as for testing the hypotheses of other tests relating to various research issues.

Data Collection

Data is the basic input to any decision making process. The collection of data is a critical step in providing the information needed to answer the research question. Every study includes the collection of some type of data—whether it is from the literature or from subjects—to answer the research question. Data can be collected in the form of words on a survey, with a questionnaire, through observations, or from the literature.

The different methods which are used for primary data collection are observation method, personal interview, telephone interview and mail survey. In an observation method, the investigator will collect data through personal observations. Personal interview can be classified into door-to-door interview, executive interview, mail intercept surveys, self-administered questionnaires and purchase intercept technique. Telephonic interview is considered to be a cost effective and dominant data collection method. Mail survey is a data collection method in which questionnaires are mailed to potential respondents who in turn fill and return them at their convenience.

The secondary data can be obtained from internal sources and external sources. The internal sources of secondary data for marketing applications are sales records, cost information, distributor reports and customer feedback. The different external sources of secondary data are government publications, journals, books, magazines, newspapers, annual reports, etc.

Data Analysis

After the data has been collected, the researcher turns to the task of analyzing them. Proper tools and techniques should be used for classification and analysis of data.

The tools of classification of data are frequency distribution, cumulative frequency distribution, relative distribution and charts. Charts are graphical representation of data. Different types of charts are pie chart, bar chart, histogram, frequency polygon and ogive curves. The classification tools serve as data presentation techniques for clear interpretation.

Hypothesis-Testing

After analysing the data as stated above, the researcher is in a position to test the hypotheses, if any, he had formulated earlier. Do this facts support the hypotheses or they happen to be contrary? This is the usual question which should be answered while testing hypotheses. Various tests, such as Chi square test, t-test, F-test, have been developed by statisticians for the purpose. Hypothesis-testing will result in either accepting the hypothesis or in rejecting it. If the researcher had no hypotheses to start with, generalisations established on the basis of data may be stated as hypotheses to be tested by subsequent researches in time to come.

Data Interpretation

The researcher must infer the results of the original research issues from the results obtained through data analysis. if a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalisation. The real value of research lies in its ability to arrive at certain generalizations. If the researcher had no hypothesis to start with, he might seek to explain his findings on the basis of some theory. It is known as interpretation. The process of interpretation may quite often trigger off new questions which in turn may lead to further researches

Preparation of the Report

Research task remains incomplete till the report has been presented and/ or written. Preparation of report is the last step in a research process and requires a set of skills somewhat different from those called for in respect of the earlier stages of research. This task should be accomplished by utmost care, researcher may seek the assistance and guidance of experts for the purpose.