STUDY MATERIAL FOR B.COM
RESEARCH METHODOLOGY
SEMESTER - V, ACADEMIC YEAR 2020-21

UNIT - I
RESEARCH METHODOLOGY

Research Definition

According to the American sociologist Earl Robert Babbie, "Research is a systematic inquiry to describe, explain, predict and control the observed phenomenon. Research involves inductive and deductive methods."

Difference between research methods and research methodology

Research methods include all those techniques/methods that are adopted for conducting research. Thus, research techniques or methods are the methods that the researchers adopt for conducting the research studies. Research methodology is the way in which research problems are solved systematically. It is a science of studying how research is conducted scientifically. Under it, the researcher acquaints himself/herself with the various steps generally adopted to study a research problem, along with the underlying logic behind them. Hence, it is not only important for the researcher to know the research techniques/ methods, but also the scientific approach called methodology.

Types of Research:

1. **Applied research:**

   It aims at finding a solution for an immediate problem faced by the society or a business organization. Example to study the causes of Dengue fever in a particular area is applied research**.**

2. **Analytical research:**

   In this type of research the available information are thoroughly analyzed and critical evaluations are made to solve the problems.

3. **Descriptive research:**

   This type of research aims at highlighting the state of affairs of existing problems. It is a simple report of happenings both past and present. Descriptive research consists of surveys and fact-finding enquiries of different types. The term 'ex post facto research' is quite often used for descriptive research studies in social sciences and business research.

4. **Exploratory research:**

   The main aim of this research is to generate new ideas or to increase the researcher's familiarity with the problem or to make a precise formulation of the problem. It is do development of hypotheses rather than their testing.

5. **Experimental research:**

   It involves a laboratory experiment whichis the basic tool of analysis in the natural and physical sciences. It is help to know the cause and effort relationship under the controlled experiments.

6. **Fundamental research:**

   The research relating to natural phenomenon or pure mathematics or human behavior is called fundamental research. It main aim is finding information from existing organized body of scientific knowledge that has a broad base of applications.

7. **Historical research:**

   Proper and prompt use of historical sources such as documents, remains, sculptures, coins and like for the study of events of the past, trends makes a historical research.

8. **Quantitative Versus Qualitative research:**

   Quantitative research relates to aspects that can be quantified or can be expressed in terms of quantity. It involves the measurement of quantity or amount. Various available statistical and econometric methods are adopted for analysis in such research. Which includes correlation, regressions and time series analysis etc.,

   On the other hand, Qualitative research is concerned with qualitative phenomena, or more specifically, the aspects related to or involving quality or kind. For example, an important type of qualitative research is 'Motivation Research', which investigates into the reasons for certain human behavior. The main aim of this type of research is discovering the underlying motives and desires of human beings by usingin-depth interviews.

RESEARCH PROCESS

Selection of Research Problem

The selection of topic for research is a difficult job. When we select a title or research statement, then other activities would be easy to perform. So, for the understanding thoroughly the problem it must have to discuss with colleagues, friend, experts and teachers. The research topic or problem should be practical, relatively important, feasible, ethically and politically acceptable.

Literature Review or Extensive Literature Survey

After the selection of research problem, the second step is that of literature mostly connected with the topics. The availability of the literature may bring ease in the research. For this purpose academic journals, conference and govt. reports and library must be studied.

Making Hypothesis

The development of hypothesis is a technical work depends on the researcher experience. The hypothesis is to draw the positive & negative cause and effect aspects of a problem. Hypothesis narrows down the area of a research and keep a researcher on the right path.

Preparing the Research Design

After the formulation of the problem and creating hypothesis for it, research Design is to prepare by the researcher. It may draw the conceptual structure of the problem. Any type of research design may be made, depend on the nature and purpose of the study.

Sampling

The researcher must design a sample. It is a plan for taking its respondents from a specific areas or universe.

The sample may be of two types:

1. Probability Sampling
2. Non-probability Sampling

Data collection

Data collection is the most important work, is researcher. The collection of information must be containing on facts which is from the following two types of researcher.

Primary Data Collection:

Primary data may be from the following:

1. Experiment
2. Questionnaire
3. Observation
4. Interview

Secondary data collection:

It has the following categories:

1. Review of literature
2. Official and non-official reports
3. Library approach

Data Analysis

When data is collected, it is forwarded for analysis which is the most technical job.

Hypothesis Testing

Research data is then forwarded to test the hypothesis. Do the hypothesis are related to the facts or not? To find the answer the process of testing hypothesis is undertaken which may result in accepting or rejecting the hypothesis.

Generalization and Interpretation

The acceptable hypothesis is possible for researcher to arrival at the process of generalization or to make & theory. Some types of research has no hypothesis for which researcher depends upon on theory which is known as interpretation.

Preparation of Report

A researcher should prepare a report for which he has done is his work. He must keep in his mind the following points:

Report Design in Primary Stage

The report should carry a title, brief introduction of the problem and background followed by acknowledgement. There should be a table of contents, grapes and charts.

Main Text of the Report

It should contain objectives, hypothesis, explanations and methodology of the research. It must be divided into chapters and every chapter explains separate title in which summary of the findings should be enlisted. The last section would be clearly of conclusions to show the main theme of the Research study.

Closing the Report

After the preparation of report, the last step in business research process contains of bibliography, references, appendices, index and maps or charts for illustration. For this purpose the information should more clearer.

Criteria of a Good Research:

1. One of the important characteristics of a good research is that the purpose of the research is clearly defined. A research study with clearly defined purpose finds a wider acceptance and acknowledgement within the research community.

2. Second important characteristic of a good research is that the research method should be defined in a clear manner with sufficient detail. This will allow the repetition of the study in future for further advancement, while maintaining the continuity of what has been done in the past.

3. The third thing to remember is that any limitations and assumptions made by the researcher during the course of the study should be clearly highlighted in the research. This will support the findings of the research study, in case someone tries to validate the study findings.

4. The fourth thing to remember is that, as far as possible, the research design should be planned in a way that the results generated are as objective as possible. This will provide an easier understanding about the findings of the research.

5. Another thing to be considered by the researcher is that there should be sufficient data to investigate the research topic. And the researcher should carefully check the reliability and validity of the data.

6. Further, in order to deliver a good research, a researcher should confine the conclusions to those justified by the data.

7. Lastly, a good research depends a great deal on the integrity and commitment of the researcher.

UNIT - II
RESEARCH DESIGN

Research Design

Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance.

Need for Research Design

Research design is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. Research design has a significant impact on the reliability of the results obtained. It thus acts as a firm foundation for the entire research.Research design stands for advance planning of the methods to

What are the features of a good Research Design?

The features of good research designs often characterized by adjectives like flexible, appropriate, efficient, economical and so on. Generally, the design which minimizes bias and maximises the reliability of the data collected and analyzed is considered a good design. The design which gives the smallest experimental error is supposed to be the best design in many investigations. Similarly, a design which yields maximal information and provides an opportunity for considering many different aspects of a problem is considered most appropriate and efficient design in respect of many research problems. Thus, the question of good design is related to the purpose or objective of the research problem and also with the nature of the problem to be studied. A design may be quite suitable in one case, but may be found wanting in one respect or the other in the context of some other research problem.One single design cannot serve the purpose of all types of research problems.

Types of Research Design

1. **Descriptive Research Design:**

    In a descriptive research design, a researcher is solely interested in describing the situation or case under his/her research study. It is a theory-based research design which is created by gather, analyzes and presents collected data. By implementing an in-depth research design such as this, a researcher can provide insights into the why and how of research.

2. **Experimental Research Design:**

    Experimental research design is used to establish a relationship between the cause and effect of a situation. It is a causal research design where the effect caused by the independent variable on the dependent variable is observed. For example, the effect of an independent variable such as price on a dependent variable such as customer satisfaction or brand loyalty is monitored. It is a highly practical research design method as it contributes towards solving a problem at hand. The independent variables are manipulated to monitor the change it has on the dependent variable. It is often used in social sciences to observe human behavior by analyzing two groups – affect of one group on the other.

3. **Diagnostic Research Design:**

In the diagnostic research design, a researcher is inclined towards evaluating the root cause of a specific topic. Elements that contribute towards a troublesome situation are evaluated in this research design method.There are three parts of diagnostic research design.

They are as follows:
   a)   Inception of the issue
   b)   Diagnosis of the issue
   c)   Solution for the issue

4. **Explanatory Research Design:**

In exploratory research design, the researcher's ideas and thoughts are key as it is primarily dependent on their personal inclination about a particular topic. Explanation about unexplored aspects of a subject is provided along with details about what, how and why related to the research questions.

UNIT - III
SAMPLE

Sample:

A sample is defined as a smaller set of data that is chosen and/or selected from a larger population by using a predefined selection method.

Definition of Census

A well-organised procedure of gathering, recording and analysing information regarding the members of the population is called a census. It is an official and complete count of the universe, wherein each and every unit of the universe is included in the collection of data. Here universe implies any region (city or country), a group of people, through which the data can be acquired.

Under this technique, the enumeration is conducted about the population by considering the entire population. Hence this method requires huge finance, time and labour for gathering information. This method is useful, to find out the ratio of male to female, the ratio of literate to illiterate people, the ratio of people living in urban areas to the people in rural areas.

Definition of Sampling

We define sampling as the process in which the fraction of the population, so selected to represent the characteristics of the larger group. This method is used for statistical testing, where it is not possible to consider all members or observations, as the population size is very large. As statistical inferences are based on the sampling observations, the selection of the appropriate representative sample is of utmost importance. So, the sample selected should indicate the entire universe and not exhibit a particular section. On the basis of the data collected from the representative samples, the conclusion is drawn from the whole population. **For instance**: A company places an order for raw material by simply checking out the sample

BASISFOR COMPARISON	CENSUS	SAMPLING
Meaning	A systematic method that collects and records the data about the members of the population is called Census.	Sampling refers to a portion of the population selected to represent the entire group, in all its characteristics.
Enumeration	Complete	Partial
Study of	Each and every unit of the population.	Only a handful of units of the population.
Time required	It is a time consuming process.	It is a fast process.
Cost	Expensive method	Economical method
Results	Reliable and accurate	Less reliable and accurate, due to the margin of error in the data collected.
Error	Not present.	Depends on the size of the population
Appropriate for	Population of heterogeneous nature.	Population of homogeneous nature.

PROBABILITY SAMPLING:

Definition

Probability Sampling is a sampling technique in which sample from a larger population are chosen using a method based on the theory of probability. For a participant to be considered as a probability sample, he/she must be selected using a random selection.

The most important requirement of probability sampling is that everyone in your population has a known and an equal chance of getting selected. For example, if you have a population of 100 people every person would have odds of 1 in 100 for getting selected. Probability sampling gives you the best chance to create a sample that is truly representative of the population.

Probability sampling uses statistical theory to select randomly, a small group of people (sample) from an existing large population and then predict that all their responses together will match the overall population.

Types of Probability Sampling:

Simple random sampling

As the name suggests is a completely random method of selecting the sample. This sampling method is as easy as assigning numbers to the individuals (sample) and then randomly choosing from those numbers through an automated process. Finally, the numbers that are chosen are the members that are included in the sample.

There are two ways in which the samples are chosen in this method of sampling: Lottery system and using number generating software/ random number table. This sampling technique usually works around large population and has its fair share of advantages and disadvantages.

Stratified Random sampling

It involves a method where a larger population can be divided into smaller groups, that usually don't overlap but represent the entire population together. While sampling these groups can be organized and then draw a sample from each group separately.

A common method is to arrange or classify by sex, age, ethnicity and similar ways. Splitting subjects into mutually exclusive groups and then using simple random sampling to choose members from groups.

Members in each of these groups should be distinct so that every member of all groups get equal opportunity to be selected using simple probability. This sampling method is also called "random quota sampling"

Cluster random sampling

It is a way to randomly select participants when they are geographically spread out. For example, if you wanted to choose 100 participants from the entire population of the U.S., it is likely impossible to get a complete list of everyone. Instead, the researcher randomly selects areas (i.e. cities or counties) and randomly selects from within those boundaries.

Cluster sampling usually analyzes a particular population in which the sample consists of more than a few elements, for example, city, family, university etc. The clusters are then selected by dividing the greater population into various smaller sections.

Systematic Sampling

It is when you choose every "nth" individual to be a part of the sample. For example, you can choose every 5th person to be in the sample. Systematic sampling is an extended implementation of the same old probability technique in which each member of the group is selected at regular periods to form a sample. There's an equal opportunity for every member of a population to be selected using this sampling technique.

Non-probability sampling

Itis a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected.

Types of Non-Probability Sampling

Convenience Sampling

Convenience sampling is probably the most common of all sampling techniques. With convenience sampling, the samples are selected because they are accessible to the researcher. Subjects are chosen simply because they are easy to recruit. This technique is considered easiest, cheapest and least time consuming.

Consecutive Sampling

Consecutive sampling is very similar to convenience sampling except that it seeks to include all accessible subjects as part of the sample. This non-probability sampling technique can be considered as the best of all non-probability samples because it includes all subjects that are available that makes the sample a better representation of the entire population.

Quota Sampling

Quota sampling is a non-probability sampling technique wherein the researcher ensures equal or proportionate representation of subjects depending on which trait is considered as basis of the quota.For example, if basis of the quota is college year level and the researcher needs equal representation, with a sample size of 100, he must select 25 I st year students, another 25 2nd year students, 25 3rd year and 25 4th year students. The bases of the quota are usually age, gender, education, race, religion and socioeconomic status.

Judgmental Sampling

Judgmental sampling is more commonly known as purposive sampling. In this type of sampling, subjects are chosen to be part of the sample with a specific purpose in mind. With judgmental sampling, the researcher believes that some subjects are fit for the research compared to other individuals. This is the reason why they are purposively chosen as subjects.

Snowball Sampling

Snowball sampling is usually done when there is a very small population size. In this type of sampling, the researcher asks the initial subject to identify another potential subject who also meets the criteria of the research. The downside of using a snowball sample is that it is hardly representative of the population.

What is complex random sampling design?

Complex random sampling design is a Probability sampling under restricted sampling techniques, as stated above, may result in complex random sampling designs. Thus, in systematic sampling only the first unit is selected randomly and the remaining units of the sample are selected at fixed intervals.

UNIT - IV
PRIMARY DATA

Primary data:

When the data is gathered directly by the researcher for the first time it is called primary data. By nature it is original and is pertinent to a research issue under study. A benefit of primary data is that researchers are gathering details for the particular purposes of their study. Here, the researchers gather the data by themselves, with the help of surveys, interviews and direct observations. Some of the methods for collecting primary data are as follows:

Interview method

This method is the most common method of primary data collection.

The interviewer can
1. Pose questions personally
2. Ask questions through e-mail
3. Get answers through telephonic conversation.

Questionnaire method

Questionnaires are also one of the most common methods of primary data collection. It consists of a set of questions pertaining to the research problem. This is more feasible if the data are to be gathered from a huge population. The questions in this method can be either open-ended or close-ended.

Focus group interview

This is also one of the common methods of primary data collection. Here, a small group of individuals join to talk about the problem.

Schedule method

Sometimes it so happens that the informants are not very much educated. Here the data cannot be gathered by mailed questionnaire method. Here, scheduled method is used to gather data. The enumerators send the questionnaires to collect information.

Observation method

This method lets one to assess the dynamics of a situation. This is a systematic way of data collection. Researchers make use of all their senses to evaluate people in naturally occurring situations.

SECONDARY DATE COLLECTION METHODS

Definition:

When the data are collected by someone else for a purpose other than the researcher's current project and has already undergone the statistical analysis is called as Secondary Data. The secondary data are readily available from the other sources and as such, there are no specific collection methods. The researcher can obtain data from the sources both internal and external to the organization.

The internal sources of secondary data are:

➢ Sales Report
➢ Financial Statements
➢ Customer details, like name, age, contact details, etc.
➢ Company information
➢ Reports and feedback from a dealer, retailer, and distributor
➢ Management information system

There are several external sources from where the secondary data can be collected. These are:
➢ Government censuses, like the population census, agriculture census, etc.
➢ Information from other government departments, like social security, tax records, etc.
➢ Business journals
➢ Social Books
➢ Business magazines
➢ Libraries
➢ Internet, where wide knowledge about different areas is easily available.

The secondary data can be both qualitative and quantitative. The qualitative data can be obtained through newspapers, diaries, interviews, transcripts, etc., while the quantitative data can be obtained through a survey, financial statements and statistics.

One of the advantages of the secondary data is that it is easily available and hence less time is required to gather all the relevant information. Also, it is less expensive than the primary data. But however the data might not be specific to the researcher's needs and at the same time is incomplete to reach a conclusion. Also, the authenticity of the research results might be skeptical.

Guidelines for Constructing Questionnaire/Schedule

Researchers must pay attention to the following points in constructing an appropriate and effective Questionnaire or schedule:

➢ He is the researcher must pay close attention to study its problems provided a starting point Point to develop a questionnaire / schedule. He must be clear in all aspects His research questions dealing with the process of his research project.

➢ The nature of the information depends on the problem of proper form sought by the sampled And the respondents expect the kind of analysis. Researchers must decide whether to use Closed or open-ended questions. The problem should be simple, must be constructed they form a good view of the logical part of deliberate tabulation plan. The unit List should also be precisely defined, so that they can ensure accurate and adequate information.

➢ Preliminary Questionnaire / program preparation, appropriate to give due thought proposed order of questions. Prior to the drafting of a questionnaire or schedule (if available) wish to see at this stage.

➢ The researcher must invariably re-examine, and in case of need can be modified as a draft A better one. Technical defects, must consider every minute, and deleted.

➢ Preliminary studies should be pre-tested questionnaire. Questionnaire can In the light of the results of the pilot study for editing.

➢ The questionnaire must contain a simple and straightforward direction to make the respondents They may not feel any difficulty in answering questions

Definition of Questionnaire

Questionnaire as an instrument for research, which consists of a list of questions, along with the choice of answers, printed or typed in a sequence on a form used for acquiring specific information from the respondents. In general, questionnaires are delivered to the persons concerned either by post or mail, requesting them to answer the questions and return it. Informants are expected to read and understand the questions and reply in the space provided in the questionnaire itself.

The questionnaire is prepared in such a way that it translate the required information into a series of questions, that informants can and will answer. Further, it should be such that the respondent gets motivated and encouraged, to make him engaged in the interview and complete it.

The merits of questionnaires are discussed below:
> ➢ It is an inexpensive method, regardless of the size of the universe.
> ➢ Free from the bias of the interviewer, as the respondents answer the questions in his own words.
> ➢ Respondents have enough time to think and answer.
> ➢ Due its large coverage, respondents living in distant areas can also be reached conveniently.

Definition of Schedule

The schedule is a proforma which contains a list of questions filled by the research workers or enumerators, specially appointed for the purpose of data collection. Enumerators go to the informants with the schedule, and ask them the questions from the set, in the sequence and record the replies in the space provided. There are certain situations, where the schedule is distributed to the respondents, and the enumerators assist them in answering the questions.

Enumerators play a major role in the collection of data, through schedules. They explain the aims and objects of the research to the respondents and interpret the questions to them when required. This method is little expensive as the selection, appointment and training of the enumerators require a huge amount. It is used in case of extensive enquiries conducted by the government agencies, big organizations. Most common example of data collection through schedule is population census.

Key Differences between Questionnaire and Schedule

The important points of difference between questionnaire and schedule are as under:
1. Questionnaire refers to a technique of data collection which consist of a series of written questions along with alternative answers. The schedule is a formalised set of questions, statements, and spaces for answers, provided to the enumerators who ask questions to the respondents and note down the answers.
2. Questionnaires are delivered to the informants by post or mail and answered as specified in the cover letter. On the other hand, schedules are filled by the research workers, who interpret the questions to the respondents if necessary.
3. The response rate is low in case of questionnaires as many people do not respond and often return it without answering all the questions. On the contrary, the response rate is high, as they are filled study the enumerators, who can get answers to all the question.
4. The questionnaires can be distributed a large number of people at the same time, and even the respondents who are not approachable can also be reached easily. Conversely,

in schedule method, the reach is relatively small, as the enumerators cannot be sent to a large area.

5. Data collection by questionnaire method is comparatively cheaper and economical as the money is invested only in the preparation and posting of the questionnaire. As against this, a large amount is spent on the appointment and training of the enumerators and also on the preparation of schedules.

6. In questionnaire method, it is not known that who answers the question whereas, in the case of schedule, the respondent's identity is known.

7. The success of the questionnaire lies on the quality of the questionnaire while the honesty and competency of the enumerator determine the success of a schedule.

8. The questionnaire is usually employed only when the respondents literate and cooperative. Unlike schedule which can be used for data collection from all classes of people.

Data preparation entails editing, coding and tabulating. The information in this topic often refers to large-scale projects, since errors in data preparation generally cause their most dramatic inaccuracies in such projects. Data Preparation is the process of collecting, cleaning, and consolidating data into one file or data table, primarily for use in analysis.

- ➢ **Questionnaire checking**: Questionnaire checking involves eliminating unacceptable questionnaires. These questionnaires may be incomplete, instructions not followed, little variance, missing pages, past cutoff date or respondent not qualified.
- ➢ **Editing**: Editing looks to correct illegible, incomplete, inconsistent and ambiguous answers.
- ➢ **Coding**: Coding typically assigns alpha or numeric codes to answers that do not already have them so that statistical techniques can be applied.
- ➢ **Transcribing**: Transcribing data involves transferring data so as to make it accessible to people or applications for further processing.
- ➢ **Cleaning**: Cleaning reviews data for consistencies. Inconsistencies may arise from faulty logic, out of range or extreme values.
- ➢ **Statistical adjustments**: Statistical adjustments applies to data that requires weighting and scale transformations.
- ➢ **Analysis strategy selection**: Finally, selection of a data analysis strategy is based on earlier work in designing the research project but is finalized after consideration of the characteristics of the data that has been gathered.

UNIT -V
INTERPRETATION

Interpretation of data refers to the task of drawing inferences from the collected facts after an analytical and/or experimental study. In fact, it is a search for broader meaning of research findings.

What Is Data Interpretation?

Data interpretation refers to the implementation of processes through which data is reviewed for the purpose of arriving at an informed conclusion. The interpretation of data assigns a meaning to the information analyzed and determines its signification and implications.

The varying scales include:

➢ **Nominal Scale:** non-numeric categories that cannot be ranked or compared quantitatively. Variables are exclusive and exhaustive.

➢ **Ordinal Scale:** exclusive categories that are exclusive and exhaustive but with a logical order. Quality ratings and agreement ratings are examples of ordinal scales (i.e., good, very good, fair, etc., Or agree, strongly agree, disagree, etc.).

➢ **Interval:** a measurement scale where data is grouped into categories with orderly and equal distances between the categories. There is always an arbitrary zero point.

➢ **Ratio:** contains features of all three.

Interpretation Techniques

Liaison Interpretation

The interpreter translates a few of the speaker's sentences at a time; his counterpart replies and the interpreter translate these sentences back to the speaker. Liaison interpreters work both ways, so conversations take twice as long. Suitable for: business presentations, press conferences, guided tours, negotiations, interviews or executing deeds and contracts.

Consecutive Interpretation

Speakers talk for 6 to 8 minutes; the interpreter takes notes and then relays a true and accurate version of the speaker's narrative in the other language. Consecutive interpretation is time-intensive and is therefore not used very often. Suitable for: meetings with few attendees and business presentations for a small audience. Neither liaison nor consecutive interpreters use any special equipment.

Simultaneous Interpretation

This is one of the most intensive interpretation techniques and requires utmost concentration. That is why these interpreters work in sound-proof booths and listen to the speaker's voice by means of headphones. While the speaker addresses the audience, the interpreter converts his words into another language. The audience use wireless headphones. Simultaneous interpretation is most often used at conferences, which is why simultaneous interpreters are also known as conference interpreters. Simultaneous interpretation is very taxing. This is why two interpreters are required for each language, taking turns every 20-30 minutes. Built-in booths are common at conference venues, or mobile booths may be used at virtually every other location (even outdoors!). Many suppliers of sound equipment also provide specialized interpreting equipment.

Whispered Interpretation

Itis a lot like simultaneous interpretation, but the interpreter sits next to one or two audience members and translates the speaker's words, in whispers, during the speech. Whispered interpretation requires the undivided attention of the interpreter, because he or she can be easily distracted. Moreover, other guests may be bothered by the interpreter whispering in another language. Whispered interpretation can also be done by means of a 'tour guide system', a mobile and wireless system with headphones for several members of the audience and a sensitive microphone for the interpreter. Whispered interpretation is taxing primarily because the interpreter has to rely on unamplified, unfiltered ambient sound. This is why two interpreters take turns during long presentations, to guarantee the quality of your presentation in the target language.

Report Writing

Report writing is the creation of a structured document that precisely describes, and examines an event or occurrence. A report is a document that is short, sharp and specially written for a particular audience and purpose. This article looks into the various features of a report, reasons for writing a report, common mistakes to avoid when writing a report and stages involved in <u>writing a compelling report</u>.

Features of a report

Being that reports provide factual information based on decisions that were made, various guidelines are followed to ensure that a report has the essentials of an effective report.

Here are the features of a satisfying report:
  ➢ Has an abstract or summary that provides a brief synopsis of the contents.
  ➢ Has a specific purpose and target audience.
  ➢ Has clearly labeled sections and headings.
  ➢ May contain data presented in for example graphs or tables.
  ➢ Often the text is broken up-bullet points, lists: is not always continuous prose.
  ➢ Written concisely and to the point.
  ➢ Written formally and objectively.

Significance of Report Writing:

Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and/or written. As a matter of fact even the most brilliant hypothesis, highly well designed and conducted research study, and the most striking generalizations and findings are of little value unless they are effectively communicated to others. The purpose of research is not well served unless the findings are made known to others. Research results must invariably enter the general store of knowledge. All this explains the significance of writing research report. There are people who do not consider writing of report as an integral part of the research process. But the general opinion is in favour of treating the presentation of research results or the writing of report as part and parcel of the research project. Writing of report is the last step in a research study 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 the researcher with utmost care; he may seek the assistance and guidance of experts for the purpose.

Research report layout in Research Methodology

The Research report layout must necessarily be conveyed enough about the study so that he can place it in its general scientific context, judge the adequacy of its methods and thus form an opinion of how seriously the findings are to be taken. For this purpose there is the need of proper layout of the report. The layout of the report means as to what the research report should contain. A comprehensive layout of the research report should comprise preliminary pages, the main text and the end matter. Let us deal with them separately.

Preliminary Pages

In its preliminary pages the report should carry a title and date, followed by acknowledgements in the form of 'Preface' or 'Foreword'. Then there should be a table ofcontents *followed by* list of tables and illustrations so that the decision-maker or anybody interested in reading the report can easily locate the required information in the report.

Main Text

The main text provides the complete outline of the research report along with all details. Title of the research study is repeated at the top of the first page of the main text and then follows the other details on pages numbered consecutively, beginning with the second page. Each main section of the report should begin on a new page.

The main text of the report should have the following sections:
1. Introduction
2. Statement of findings and recommendations
3. The results
4. The implications drawn from the results; and
5. The summary.

1. **Introduction:**

The purpose of introduction is to introduce the research project to the readers. It should contain a clear statement of the objectives of research i.e., enough background should be given to make clear to the reader why the problem was considered worth investigating. A brief summary of other relevant research may also be stated so that the present study can be seen in that context. The hypotheses of study, if any, and the definitions of the major concepts employed in the study should be explicitly stated in the introduction of the report.

The methodology adopted in conducting the study must be fully explained. The scientific reader would like to know in detail about such thing: How was the study carried out? What was its basic design? If the study was an experimental one, then what were the experimental manipulations? If the data were collected by means of questionnaires or interviews, then exactly what questions were asked (The questionnaire or interview schedule is usually given in an appendix)? If measurements were based on observation, then what instructions were given to the observers? Regarding the sample used in the study the reader should be told: Who were the subjects? How many were there? How were they selected? All these questions are crucial for estimating the probable limits of generalizability of the findings. The statistical analysis adopted must also be clearly stated. In addition to all this, the scope of the study should be stated and the boundary lines be demarcated. The various limitations, under which the research project was completed, must also be narrated.

2. **Statement of findings and recommendations:**

After introduction, the research report must contain a statement of findings and recommendations in non-technical language so that it can be easily understood by all concerned. If the findings happen to be extensive, at this point they should be put in the summarised form.

3. **Results:**

A detailed presentation of the findings of the study, with supporting data in the form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of the report, extending over several chapters. The result section of the report should contain statistical summaries and reductions of the data rather than the raw data. All the results should be presented in logical sequence and spitted into readily identifiable sections. All relevant results must find a place in the report. But how one is to decide about what is relevant is the basic question. Quite often guidance comes primarily from the research problem and from the hypotheses, if any, with which the study was concerned. But ultimately the researcher must rely on his own judgment in deciding the outline of his report. "Nevertheless, it is still necessary that he states clearly the problem with which he was concerned, the procedure by which he worked on the problem, the conclusions at which he arrived, and the bases for his conclusions.

4. **Implications of the results:**

Toward the end of the main text, the researcher should again put down the results of his research clearly and precisely. He should, state the implications that flow from the results of the study, for the general reader is interested in the implications for understanding the human behavior.

Such implications may have three aspects as stated below:
 ➢ A statement of the inferences drawn from the present study which may be expected to apply in similar circumstances.
 ➢ The conditions of the present study which may limit the extent of legitimate generalizations of the inferences drawn from the study.
 ➢ The relevant questions that still remain unanswered or new questions raised by the study along with suggestions for the kind of research that would provide answers for them. It is considered a good practice to finish the report with a short conclusion which summarizes and recapitulates the main points of the study. The conclusion drawn from the study should be clearly related to the hypotheses that were stated in the introductory section. At the same time, a forecast of the probable future of the subject and an indication of the kind of research which needs to be done in that particular field is useful and desirable.

5. **Summary:**

It has become customary to conclude the research report with a very brief summary, resting in brief the research problem, the methodology, the major findings and the major conclusions drawn from the research results.

End Matter

At the end of the report, appendices should be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones. Bibliography of sources consulted should also be given. Index (an alphabetical listing of names, places and topics along with the numbers of the pages in a book or report on which they are mentioned or discussed) should invariably be given at the end of the report. The value of index lies in the fact that it works as a guide to the reader for the contents in the report.

Mechanics of Writing A Research Report

There are very definite and set rules which should be followed in the actual preparation of the research report or paper. Once the techniques are finally decided, they should be scrupulously adhered to, and no deviation permitted. The criteria of format should be decided as soon as the materials for the research paper have been assembled.

The following points deserve mention so far as the mechanics of writing a report are concerned:

1. **Size and physical design:** The manuscript should be written on unruled paper 81/2× 11in size. If it is to be written by hand, then black or blue-black ink should be used. A margin of at least one and one-half inches should be allowed at the left hand and of at least half an inch at the right hand of the paper. There should also be one-inch margins, top and bottom. The paper should be neat and legible. If the manuscript is to be typed, then all typing should be double-spaced on one side of the page only except for the insertion of the long quotations.

2. **Procedure:** Various steps in writing the report should be strictly adhered (All such steps have already been explained earlier in this chapter).

3. **Layout:** Keeping in view the objective and nature of the problem, the layout of the report should be thought of and decided and accordingly adopted (The layout of the research report and various types of reports have been described in this chapter earlier which should be taken as a guide for report-writing in case of a particular problem).

4. **Treatment of quotations:** Quotations should be placed in quotation marks and double spaced, forming an immediate part of the text. But if a quotation is of a considerable length (more than four or five type written lines) then it should be single-spaced and indented at least half an inch to the right of the normal text margin.

5. **The footnotes:**

   Regarding footnotes one should keep in view the followings:

   - The footnotes serve two purposes viz., the identification of materials used in quotations in the report and the notice of materials not immediately necessary to the body of the research text but still of supplemental value. In other words, footnotes are meant for cross references, citation of authorities and sources, acknowledgement and elucidation or explanation of a point of view. It should always be kept in view that footnote is neither an end nor a means of the display of scholarship. The modern tendency is to make the minimum use of footnotes for scholarship does not need to be displayed.

   - Footnotes are placed at the bottom of the page on which the reference or quotation which they identify or supplement ends. Footnotes are customarily separated from the textual material by a space of half an inch and a line about one and a half inches long.

- Footnotes should be numbered consecutively, usually beginning with 1 in each chapter separately. The number should be put slightly above the line, say at the end of a quotation. At the foot of the page, again, the footnote number should be indented and typed a little above the line. Thus, consecutive numbers must be used to correlate the reference in the text with its corresponding note at the bottom of the page, except in case of statistical tables and other numerical material, where symbols such as the asterisk (*) or the like one may be used to prevent confusion.
- Footnotes are always typed in single space though they are divided from one another by double space.

6. **Documentation style:**

Regarding documentation, the first footnote reference to any given work should be complete in its documentation, giving all the essential facts about the edition used. Such documentary footnotes follow a general sequence.

The Common order may be described as under:

Regarding the single-volume reference
- ➢ Author's name in normal order (and not beginning with the last name as in a bibliography) followed by a comma;
- ➢ Title of work, underlined to indicate italics;
- ➢ Place and date of publication;
- ➢ Pagination references (The page number).

Example:
John Gassner*, Masters of the Drama,* New York: Dover Publications, Inc. 1954, p. 315.

Regarding multivolume reference
- ➢ Author's name in the normal order;
- ➢ Title of work, underlined to indicate italics;
- ➢ Place and date of publication;
- ➢ Number of volume;
- ➢ Pagination references (The page number).

Regarding works arranged alphabetically

For works arranged alphabetically such as encyclopedias and dictionaries, no pagination reference isusually needed. In such cases the order is illustrated as under:

Example 1
"Salamanca" *EncyclopediaBritannica,*14thEdition.

Example 2

"Mary Wollstonecraft Godwin," *Dictionary of national biography.*But if there should be a detailed reference to a long encyclopedia article, volume and pagination reference may be found necessary.

Regarding periodicals reference
 ➢ Name of the author in normal order
 ➢ Title of article, in quotation marks
 ➢ Name of periodical, underlined to indicate italics
 ➢ Volume number
 ➢ Date of issuance
 ➢ Pagination

Regarding anthologies and collectionsreferenceQuotations from anthologies or collections of literary works must be acknowledged not only by author, but also by the name of the collector.

Regarding Second-hand quotations reference

In such cases the documentation should be handled as follows:

***Original autho*r and title;**
 1. "quoted or cited in,";

Second author and work
 Example
 J.F. Jones, *Life in Ploynesia,* p. 16, quoted in *History of the Pacific Ocean area,* by R.B. Abel, p. 191.

Case of multiple Authorship
 If there are more than two authors or editors, then in the documentation the name of only the first given and the multiple Authorship is indicated by "et al." or "and others". Subsequent references to the same work need not be so detailed as stated above. If the work is cited again without any other work intervening, it may be indicated as *ibid,* followed by a comma and the page number. A single page should be referred to as p., but more than one page be referred to as pp. If there are several pages referred to at a stretch, the practice is to use often the page number, for example, pp. 190ff, which means page number 190 and the following pages; but only for page 190 and the following page '190f'. Roman numerical is generally used to indicate the number of the volume of a book. Op. cit. (opera citato, in the work cited) or Loc. cit. (loco citato, in the place cited) are two of the very convenient abbreviations used in the footnotes. Op. cit. or Loc. cit. after the writer's name would suggest that the reference is to work by the writer which has been cited in detail in an earlier footnote but intervened by some other references.

Punctuation and abbreviations in footnotes:

The first item after the number in the footnote is the author's name, given in the normal signature order. This is followed by a comma. After the comma, the title of the book is given: the article (such as "A", "An", "The" etc.) is omitted and only the first word and proper nouns and adjectives are capitalized. The title is followed by a comma. Information concerning the edition is given next. This entry is followed by a comma. The place of publication is then stated; it may be mentioned in an abbreviated form, if the place happens to be a famous one such as Lond. for London, N.Y. for New York, N.D. for New Delhi and so on. This entry is followed by a comma. Then the name of the publisher is mentioned and this entry is closed by a comma. It is followed by the date of publication if the date is given on the title page. If the date appears in the copyright notice on the reverse side of the title page or elsewhere in the volume, the comma should be omitted and the date enclosed in square brackets [c 1978], [1978]. The entry is followed by a comma. Then follow the volume and page references and are separated by a comma if both are given. A period closes the complete documentary reference. But one should remember that the documentation regarding acknowledgements from magazine articles and periodical literature follow a different form as stated earlier while explaining the entries in the bibliography.Certain English and Latin abbreviations are quite often used in bibliographies and footnotes to eliminate tedious repetition.

Use of statistics, charts and graphs:

A judicious use of statistics in research reports is often considered a virtue for it contributes a great deal towards the clarification and simplification of the material and research results. One may well remember that a good picture is often worth more than thousand words. Statistics are usually presented in the form of tables, charts, bars and line-graphs and pictograms. Such presentation should be self-explanatory and complete in itself. It should be suitable and appropriate looking to the problem at hand. Finally, statistical presentation should be neat and attractive.

The final draft:

Revising and rewriting the rough draft of the report should be done with great care before writing the final draft. For the purpose, the researcher should put to himself questions like: Are the sentences written in the report clear? Are they grammatically correct? Do they say what is meant'? Do the various points incorporated in the report fit together logically? "Having at least one colleague read the report just before the final revision is extremely helpful. Sentences that seem crystal-clear to the writer may prove quite confusing to other people; a connection that had seemed self-evident may strike others as a *non-sequitur.* A friendly critic, by pointing out passages that seem unclear or illogical, and perhaps suggesting ways of remedying the difficulties, can be an invaluable aid in achieving the goal of adequate communication.

Bibliography:

Bibliography should be prepared and appended to the research report as discussed earlier.

Preparation of the index:

At the end of the report, an index should invariably be given, the value of which lies in the fact that it acts as a good guide, to the reader. Index may be prepared both as subject index and as author index. The former gives the names of the subject-topics or concepts along with the number of pages

on which they have appeared or discussed in the report, whereas the latter gives the similar information regarding the names of authors. The index should always be arranged alphabetically. Some people prefer to prepare only one index common for names of authors, subject-topics, concepts and the like ones.

Precautions for Writing Research Report

While determining the length of the report (since research reports vary greatly in length), one should keep in view the fact that it should be long enough to cover the subject but short enough to maintain interest. In fact, report-writing should not be a means to learning more and more about less and less.

1. A research report should not, if this can be avoided, be dull; it should be such as to sustain reader's interest.

2. Abstract terminology and technical jargon should be avoided in a research report. The report should be able to convey the matter as simply as possible. This, in other words, means that report should be written in an objective style in simple language, avoiding expressions such as "it seems," "there may be" and the like.

3. Readers are often interested in acquiring a quick knowledge of the main findings and as such the report must provide a ready availability of the findings. For this purpose, charts, graphs and the statistical tables may be used for the various results in the main report in addition to the summary of important findings.

4. The layout of the report should be well thought out and must be appropriate and in accordance with the objective of the research problem.

5. The reports should be free from grammatical mistakes and must be prepared strictly in accordance with the techniques of composition of report-writing such as the use of quotations, footnotes, documentation, proper punctuation and use of abbreviations in footnotes and the like.

6. The report must present the logical analysis of the subject matter. It must reflect a structure wherein the different pieces of analysis relating to the research problem fit well.

7. A research report should show originality and should necessarily be an attempt to solve some intellectual problem. It must contribute to the solution of a problem and must add to the store of knowledge.

8. Towards the end, the report must also state the policy implications relating to the problem under consideration. It is usually considered desirable if the report makes a forecast of the probable future of the subject concerned and indicates the kinds of research still needs to be done in that particular field.

9. Appendices should be enlisted in respect of all the technical data in the report.

10. Bibliography of sources consulted is a must for a good report and must necessarily be given.

11. Index is also considered an essential part of a good report and as such must be prepared and appended at the end.

12. Report must be attractive in appearance, neat and clean, whether typed or printed.

13. Calculated confidence limits must be mentioned and the various constraints experienced in conducting the research study may also be stated in the report.

14. Objective of the study, the nature of the problem, the methods employed and the analysis techniques adopted must all be clearly stated in the beginning of the report in the form of introduction.

Precautions in Interpretation

Researcher must pay attention to the following points for correct **interpretation**:
   a) The data are appropriate, trustworthy and adequate for drawing inferences.
   b) The data reflect good homogeneity and that
   c) Proper analysis has been done through statistical methods.

Steps in Report Writing In Research Methodology

Research reports are the product of slow, painstaking, accurate inductive work.

The usual steps involved in writing report are
   a) Logical analysis of the subject-matter.
   b) Preparation of the final outline.
   c) Preparation of the rough draft.
   d) Rewriting and polishing.
   e) Preparation of the final bibliography.
   f) Writing the final draft.

Though all these steps are self-explanatory, yet a brief mention of each one of these will be appropriate for better understanding.

Logical analysis of the subject matter:

It is the first step which is primarily concerned with the development of a subject.

There are two ways in which to develop a subject
   a. logically
   b. Chronologically

The logical development is made on the basis of mental connections and associations between the one thing and another by means of analysis. Logical treatment often consists in developing the material from the simple possible to the most complex structures. Chronological development is based on a connection or sequence in time or occurrence. The directions for doing or making something usually follow the chronological order.

Preparation of the final outline:

It is the next step in writing the research report "Outlines are the framework upon which long written works are constructed. They are an aid to the logical organization of the material and a reminder of the points to be stressed in the report."

Preparation of the rough draft:

This follows the logical analysis of the subject and the preparation of the final outline. Such a step is of utmost importance for the researcher now sits to write down what he has done in the context of his research study. He will write down the procedure adopted by him in collecting the material for his study along with various limitations faced by him, the technique of analysis adopted by him, the broad

findings and generalizations and the various suggestions he wants to offer regarding the problem concerned.

Rewriting and polishing of the rough draft:

This step happens to be most difficult part of all formal writing. Usually this step requires more time than the writing of the rough draft. The careful revision makes the difference between a mediocre and a good piece of writing. While rewriting and polishing, one should check the report for weaknesses in logical development or presentation. The researcher should also "see whether or not the material, as it is presented, has unity and cohesion; does the report stand upright and firm and exhibit a definite pattern, like a marble arch? Or does it resemble an old wall of moldering cement and loose brick." In addition the researcher should give due attention to the fact that in his rough draft he has been consistent or not. He should check the mechanics of writing—grammar, spelling and usage.

Preparation of the final bibliography:

Next in order comes the task of the preparation of the final bibliography. The bibliography, which is generally appended to the research report, is a list of books in some way pertinent to the research which has been done. It should contain all those works which the researcher has consulted. The bibliography should be arranged alphabetically and may be divided into two parts; the first part may contain the names of books and pamphlets, and the second part may contain the names of magazine and newspaper articles. Generally, this pattern of bibliography is considered convenient and satisfactory from the point of view of reader, though it is not the only way of presenting bibliography. The entries in bibliography should be made adopting the following order:

For books and pamphlets the order may be as under:
1. Name of author, last name first.
2. Title, underlined to indicate italics.
3. Place, publisher, and date of publication.
4. Number of volumes.

Example:
Kothari, C.R., Quantitative Techniques, New Delhi, Vikas Publishing House Pvt. Ltd., 1978.

For magazines and newspapers the order may be as under:
1. Name of the author, last name first.
2. Title of article, in quotation marks.
3. Name of periodical, underlined to indicate italics.
4. The volume or volume and number.
5. The date of the issue.
6. The pagination.

Example:

Robert V. Roosa, "Coping with Short-term International Money Flows", The Banker, London, September, 1971, p. 995.The above examples are just the samples for bibliography entries and may be used, but one should also remember that they are not the only acceptable forms. The only thing important is that, whatever method one selects, it must remain consistent.

Writing the final draft:

This constitutes the last step. The final draft should be written in a concise and objective style and in simple language, avoiding vague expressions such as "it seems", "there may be", and the like ones. While writing the final draft, the researcher must avoid abstract terminology and technical jargon. Illustrations and examples based on common experiences must be incorporated in the final draft as they happen to be most effective in communicating the research findings to others. A research report should not be dull, but must enthuse people and maintain interest and must show originality. It must be remembered that every report should be an attempt to solve some intellectual problem and must contribute to the solution of a problem and must add to the knowledge of both the researcher and the reader.