UNIT: 01
RESEARCH: MEANING, TYPES, SCOPE AND SIGNIFICANCE

Structure

1.1 INTRODUCTION

Research is an activity that leads us to finding new facts, information, assisting us in verifying the available knowledge and in making us question things that are difficult to understand as per existing data. ***To be successful manager it is important for you to know how to go about making the right decisions by being knowledgeable about the various steps involved in finding solutions to problematic issues*.**
It may be understood in following terms also:

- Research is a continuous activity in majority of disciplines and professions.
- It is helpful in critical assessment of the way we work, execute policies, and give instructions in our professions.
- It is systematic observation of processes to find better ways to do things and to reduce the effort being put in to achieve an objective and identifying the validity of the targets.
- In fact research is a subconscious activity that we are involved in at all times whether it is purchase of daily use articles , a car, an electronic good or planning a holiday.

1.2 OBJECTIVES

After studying this unit, you should be able to:

- Understand the meaning of research.
- Distinguish between different kinds of researches.
- Understand the importance, need and significance of the research.
- Understand research design and the process of research design.
- Formulate a research problem and state it as a hypothesis.

1.3 MEANING OF RESEARCH

Research is a process to discover new knowledge to find answers to a question. The word research has two parts re (again) and search (find) which denote that we are taking up an activity to look into an aspect once again or we want to look for some new information about something. E.g Front Office Executive has to learn about the facilities, timings, key features of products and services available at the hotel if one wants to become a wonderful sales professional other than being a host. "All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry, and inquiry leads to invention" is a famous Hudson Maxim in context of which the significance of research can well be understood.

Clifford Woody states that research comprises defining and redefining problems, formulation of hypothesis; collection, organizing and evaluation of data; and reaching conclusions. Here it is emphasized that all research has to be systematic and logical to arrive at expected outcome. D. Slesinger and M. Stephenson in the Encyclopedia of Social Sciences Research define research as "The manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art." The authors have a different view of research as they suggest that it can be taken up by modifying, challenging and changing; available knowledge either to prove a process being appropriate or to develop it in entirety.

E.g. A standard recipe to prepare a particular dish may be modified by an enterprising chef to introduce the dish in new taste, flavor or aroma by using a different method of cooking, or by twisting the combination of spices used in the original recipe, . At the same time the chef may create entirely new dish with the use of same ingredients. As per another school of thought research has to undertaken under defined parameters and it should satisfy the following conditions if you want to term the process as research activity. This ascertains adherence to three criteria that research:

i. **is undertaken by making a framework within certain philosophies;**
   Philosophy here means approach e.g. qualitative, quantitative and the academic discipline in which you have been trained. Assessing and finalizing the team size of a preopening hotel is quantitative but developing the pre-requisites, job specification and job descriptions to hire trained professionals may be termed as qualitative. Also, simply specifying number of participants and time constraints in

a cross country race is quantitative but defining winning criteria like fairness, completion of race, assisting a fellow participant in trouble, following the rules and regulations, not taking assistance on the way are qualitative aspects.

ii. **Makes use of procedures, methods and techniques that have been tested for their validity and reliability;**

Validity means that correct procedures have been applied to find answers to a question. If a large plot of land has to be measured the results should be same whether we use a meter scale or a measuring tape once we put the values obtained; in the **formula** being used to calculate the area.

Reliability refers to the quality of a measurement procedure that provides repeatability and accuracy. This is understood by the example of preparing the bill of purchase using a software which has inbuilt details of taxes and charges levied, the formulas to be used and a format in which it would be printed. This ensures that all the bills shall have values calculated as per standard set.

iii. **Has been planned to be unbiased and objective**

***Unbiased and objective* means** that you have taken each step in an unbiased manner and drawn each conclusion to the best of your ability and without introducing your own vested interest. *(Bias is a deliberate attempt to either conceal or highlight something).* The researcher does not change / attempt to change the procedure as per his/ her understanding of facts and information.

However, the degree to which these criteria are expected to be fulfilled varies from discipline to discipline and so the meaning of 'research' differs from one academic discipline to another.

1.4 DEFINITIONS OF RESEARCH

Research has been interpreted and defined by various scholars as per their fields of study and availability of resources at the given time. You will find out that the basic meaning and the context of these definitions are same. The difference between these definitions lies only in the way the author has undertaken research in his discipline.

According to (**Thyer, 2001**), "the word research is composed of two syllables, re and search. re is a prefix meaning again, anew or over again search is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles." [1]

As per the **Merriam-Webster Online Dictionary,** the word research is derived from the Middle French "recherche", which means "to go about seeking", the term itself being derived from the Old French term "recerchier" a compound word from "re-" + "cerchier", or "searcher", meaning 'search'. The earliest recorded use of the term was in 1577. Research is a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. (**Dawson, Catherine**)

According to (**Rocco, 2011**), "Research is a careful investigation or inquiry especially through search for new facts in any branch of knowledge." Research is a movement, a movement from the known to the unknown (Redman **and Mory, 2010**). Research is manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art (**Kothari, C.R.**) .According to (**Creswell, 2008**), "Research is systematic investigation to establish the facts." In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge. According to **Clifford woody**, "research comprises defining and redefining problems, formulating hypothesis or suggested solutions collecting, organizing and evaluating data, making deductions and reaching conclusions; to determine whether they fit the formulating hypothesis." According to Cambridge dictionary online, research is "a detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding." According to **Kara, H** (2012). "Research is an art of scientific investigation." **Cohen, N. & Arieli, T.** (2011), explain that research means "gathering and analyzing a body of information or data and extracting new meaning from it or developing unique solutions to problems or cases. This is "real" research and requires an open-ended question for which there is no ready answer. **Kumar, Ranjit**, (2005). said that "research is "a careful investigation or enquiry especially through search for new facts in any branch of knowledge." A broad definition of research is given by **Martyn Shuttleworth** – "In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge."Another definition of research is given by **Creswell** who states that – "Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue". It consists of three steps: Pose a question, collect data to answer the question, and present an answer to the question.

Research may have certain other qualities such as:

a) It is a prearranged / structured enquiry (a formal step by step method or sequence to take up research activity is developed to ensure correctness of data and validity of processes). Scientific methods consist of systematic observation, classification and interpretation of data. The degree of formality, rigorousness, verifiability and general validity of scientific methods establish the results obtained.

b) It utilizes acceptable scientific methodology to solve problems (the method used should be able to give repetitive results under similar conditions)

c) It should create new knowledge that is generally applicable. (The outcomes should be such that they are not specific to particular issue or a situation but need to be generalized for application to comparable issues).

d) It is creative process to develop better understanding of mankind, social and cultural and economical issues.

e) It should be useful to others who wish to apply the findings in developing new policies or applications of findings of a research in the benefit of public.

How to ensure a good quality Research?

1. Purpose should be clearly defined.
2. Common concepts should be used that can be understood by all.

3. Research procedures should be explained in detail.
4. Research design should be carefully planned.
5. Researcher should declare all the possible errors and their possible impact on findings.
6. Analysis of data should be sufficiently adequate to reveal significance.
7. The methods of analysis should be appropriate.
8. The validity and reliability of the data should be checked carefully.
9. The researcher should good command over research methodologies and should be intelligent and experienced.
10. Ethics in research refers to a code of conduct of behavior while conducting research. Ethical conduct applies to the organization and the members that sponsor the research, the researchers who undertake the research, and the respondents who provide them with the necessary data.

CHECK YOUR PROGRESS-I

1. Define research?

2. How you will ensure the quality in research?

1.5 CHARACTERISTICS OF RESEARCH:

Characteristics of research determine whether a research is free of biases, prejudices, and subjective errors or not. The terms are very commonly used in research and the success of any research depends on these terms. They can be summarised as:

1. Generalized.
2. Controlled.
3. Rigorous.
4. Empirical.
5. Systematic
6. Reliability.
7. Validity.
8. Employs hypothesis
9. Analytical & Accuracy.
10. Credibility.
11. Critical

1. Generalised: The researcher usually divides the identified population into smaller samples depending on the resource availability at the time of research being conducted. This sample is understood to be the appropriate representative of the identified population therefore the findings should also be applicable to and representative of the entire population. The analytical information obtained from studying these samples should be give a fair idea of total population of being follower of particular ideology, beliefs, social stigmas, driving force, etc.

E.g. A study to understand the occupancy statistics and patterns of small hotels and resorts in a given city would involve the researcher studying selected properties after the city is divided into zones (East, West, North, South and Central). He may also divide the properties on the basis of number of rooms for categorisation and selection for study purposes thus ensuring that the findings are representative of entire city.

2. Controlled: The concept of control implies that, in exploring causality in relation to two variables (factors), you set up your study in a way that minimizes the effects of other factors affecting the relationship. Some variables are classified as controlling factors and the other variables may be classified as possible effects of controlling factors. Laboratory experiments as in pure sciences like chemistry can be controlled but any study that involves societal issues cannot be controlled. E.g. Destination studies are not controllable as they have variables like geography, climate, accessibility, seasonality, etc but studying the effects of standard operating procedures in a hotel applied in a particular service can be controlled.

3. Rigorous: One must be careful in ensuring that the procedures followed to find answers to questions are *relevant, appropriate and justified.* Again, the degree of rigor varies markedly between the physical and social sciences and within the social sciences.

4. Empirical: The processes adopted should be tested for the accuracy and each step should be coherent in progression. This means that any conclusions drawn are based upon

firm data gathered from information collected from real life experiences or observations. Empirical nature of research means that the research has been conducted following rigorous scientific methods and procedures. Quantitative research is easier to prove scientifically than qualitative research. In qualitative research biases and prejudice are easy to occur.

5. Systematic: The procedure or process being developed to undertake a study should be carefully drafted to ensure that resources utilization is optimized. Chaotic or disorganized procedures would never yield expected outcomes. The steps should follow a logical sequence to get to the desired outcome. E.g The meal in a fine dine restaurant at a five star hotel cannot commence with dessert being served before the starter or soup course.

6. Reliability: This is a the degree to which the result of a measurement, calculation, or specification can be depended on to be accurate.It is difficult to be measured accurately, but now there are instruments which can *estimate* the reliability of a research. It is the extent to which an experiment, test, measuring procedure, research, research instrument, tool or procedure yields the same results on repeated trials. If any research yields similar results each time it is undertaken with similar population and with similar procedures, it is called to be a reliable research.

7. Validity & Verifiability: It is the extent to which a concept, conclusion or measurement is well-founded and likely corresponds accurately to the real world. The word "valid" is derived from the Latin **validus**, meaning strong. This should not be confused with notions of certainty nor necessity. The validity of a measurement tool (for example, a test in education) is considered to be the degree to which the tool measures what it claims to measure. Validity is based on the strength of a collection of different types of evidence. In terms of research validity is the strength with which we can make research conclusions, assumptions or propositions true or false. Validation refers to accuracy of measurement whether or not it measures what it is supposed to measure. It also ascertains the application of research in finding the solution to an issue in different conditions. This gives a clear direction to the research activity. The findings of a study should be verifiable by the researcher as well as anyone else who wants to conduct the study on similar guidelines/ under similar conditions.

8. Employs Hypothesis: Any research definitely begins with formulation of a hypothesis. It is a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation. A hypothesis can be defined as an educated guess about the relationship between two or more variables. In simple words a hypothesis is an idea around which one starts working before it is actually converted to research. A question is what forms the base and is later termed as hypothesis and it may or may not draw a logical outcome. Hypothesis may prove to be wrong or null or void after the study is conducted.

A hypothesis is an informed and educated prediction or explanation about something. Part of the research process involves testing the hypothesis, and then examining the results of these tests as they relate to both the hypothesis and the world around you. When a

researcher forms a hypothesis, this acts like a map through the research study. It tells the researcher which factors are important to study and how they might be related to each other or caused by a manipulation that the researcher introduces (e.g. a program, treatment or change in the environment). With this map, the researcher can interpret the information he/she collects and can make sound conclusions about the results.

9. Analytical & Accurate : A research should be focussed not only about what is happening but also on how and why a particular phenomenon, process draws certain conclusions. Any data collected if does not yield results or is unsuitable to be used for further studies or applications disrupts the purpose of research. Therefore, data collected should be reasonable and free of errors to be easily analysed.

Accuracy is also the degree to which each research process, instrument, and tool is related to each other. Accuracy also measures whether research tools have been selected in best possible manner and research procedures suits the research problem or not. Selection of appropriate data collection tools is essential for a research.

E.g. Guest Comments Card in hotels or Feedback Collection Card in a dining outlet gives the guest a chance to be honest in commenting about the standard of services in comparison to asking them to give a verbal feedback.

10. Credibility: The extent to which an analysis of finding can be treated to be trustworthy is tremed as credibility. This can only be assured by the use of the best source of information and best procedures in research. Researches based on secondary data are not reliable as such data may have been manipulated or distorted by earlier researchers to suit their work. The availability of secondary data from public domains is easy but cokes with lots of risks involved. The research study conducted based on primary data is always reliable and carries more credibility. A certain percentage of secondary data can be used if the primary source is not available but basing a research completely on secondary data when primary data can be gathered is least credible. When researcher gives accurate references in the research the credibility of the research increases but fake references also decrease the credibility of the research.

11. Critical: Critical scrutiny of the procedures used and the methods employed is crucial to a research enquiry. The process of investigation must be foolproof and free from drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

1.6 TYPES OF RESEARCH

Research can be classified into various categories depending on the perspective under which the research activity is initiated and conducted. The categorization depends on the following perspectives in general:

- Application of research study
- Objectives in undertaking the research

- Inquiry mode employed for research

1. **Classification based on Application:**
    a. **Pure / Basic / Fundamental Research:** As the term suggests a research activity taken up to look into some aspects of a problem or an issue for the first time is termed as basic or pure. It involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. The knowledge produced through pure research is sought in order to add to the existing body of research methods. Pure research is theoretical but has a universal nature. It is more focused on creating scientific knowledge and predictions for further studies.
    b. **Applied / Decisional Research:** Applied research is done on the basis of pure or fundamental research to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive. The purpose of doing such research is to find solutions to an immediate issue, solving a particular problem, developing new technology and look into future advancements etc. This involves forecasting and assumes that the variables shall not change.

Key Differences between Basic and Applied Research

a) Basic Research can be explained as research that tries to expand the already existing scientific knowledge base. On the contrary, applied research is used to mean the scientific study that is helpful in solving real-life problems.

b) While basic research is purely theoretical, applied research has a practical approach.

c) The applicability of basic research is greater than the applied research, in the sense that the former is universally applicable whereas the latter can be applied only to the specific problem, for which it was carried out.

d) The primary concern of the basic research is to develop scientific knowledge and predictions. On the other hand, applied research stresses on the development of technology and technique with the help of basic science.

e) The fundamental goal of the basic research is to add some knowledge to the already existing one. Conversely, applied research is directed towards finding a solution to the problem under consideration.

2. **Classification based on Objectives:**
    a. **Descriptive Research**: This attempts to explain a situation, problem, phenomenon, service or programme, or provides information viz. living condition of a community, or describes attitudes towards an issue but this is done systematically. It is used to answer questions of who, what, when, where, and how associated with a particular research question or problem. This type of research makes an attempt to collect any information that can be

expressed in quantifiable terms that can be used to statistically analyze a target audience or a particular subject. Descriptive research is used to observe and describe a research subject or problem without influencing or manipulating the variables in any way. Thus, such studies are usually correlation or observational. This type of research is conclusive in nature, rather than inquisitive. E.g. explaining details of budget allocation changes to departmental heads in a meeting to assure clarity and understanding for reasons to bring in a change.

b. **Co relational Research:** This is a type of non-experimental research method, in which a researcher measures two variables, understands and assesses the statistical relationship between them with no influence from any extraneous variable. This is undertaken to discover or establish the existence of a relationship/ interdependence between two or more aspects of a situation. For example, the mind can memorize the bell of an ice cream seller or sugar candy vendor. Louder the bell sound, closer is the vendor to us. We draw this inference based on our memory and the taste of these delicious food items. This is specifically what co relational research is, establishing a relationship between two variables, "bell sound" and "distance of the vendor" in this particular example. Co relational research is looking for variables that seem to interact with each other so that when you see one variable changing, you have a fair idea how the other variable will change.

c. **Explanatory**: is the **research** whose primary purpose is to explain why events occur, to build, elaborate, extend or test a theory. It is more concerned with showcasing, explaining and presenting what we already have. It is the process of turning over 100 rocks to find perhaps 1 or 2 precious gemstones. Explanatory survey research may look into the factors that contribute to customer satisfaction and determine the relative weight of each factor, or seek to model the variables that lead to people shifting to departmental stores from small shops from where they have been making purchases till now. An exploratory survey posted to a social networking site may uncover the fact that an organization's customers are unhappy thus helping the organization take up necessary corrective measures.

d. **Exploratory Research**: Exploration has been the human kind's passion since the time immemorial. Looking out for new things, new destinations, new food, and new cultures has been the basis of most tourist and travel journeys. In the subjective terms exploratory research is conducted to find a solution for a problem that has not been studied more clearly, intended to establish priorities, develop operational definitions and improve the final research design. Exploratory research helps determine the best research design, data-collection method and selection of subjects. For such a research, a researcher starts with a general idea and uses this research as a medium to identify issues that can be the hub for future research. An important aspect here is that the researcher should be willing to change his/her direction subject to the revelation of new data or insight. Such a research is

usually carried out when the problem is at a beginning stage. It is often referred to as grounded theory approach or interpretive research as it used to answer questions like what, why and how. For example: a fast food outlet owner feels that increasing the variety of snacks will enable increase in sales, however he is not sure and needs more information. Thus the owner starts studying local competition, talks to the existing customers, friends etc to find out what are their views about the current menu and what else do they wish to be included in the menu and also assess whether he would be able to generate higher revenues.

3. Classification based on Inquiry Mode:

a. Structured approach: The structured approach to inquiry is usually classified as quantitative research. Here everything that forms the research process- objectives, design, sample, and the questions that you plan to ask of respondents- is predetermined. It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation e.g. how many people have a particular problem? How many people hold a particular attitude? E.g. asking a guest to give feedback about the dishes served in a restaurant.

b. Unstructured approach: The unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process. It is more appropriate to explore the nature of a problem, issue or phenomenon without quantifying it. Main objective is to describe the variation in a phenomenon, situation or attitude e.g., description of an observed situation, the historical enumeration of events, an account of different opinions different people have about an issue, description of working condition in a particular industry. E.g. when guest is complaining about the room not being comfortable and is demanding a discount the staff has to verify the claims empathically.

In many studies you have to combine both qualitative and quantitative approaches. For example, suppose you have to find the types of cuisine / accommodation available in a city and the extent of their popularity. Types of cuisine are the qualitative aspect of the study as finding out about them entails description of the culture and cuisine. The extent of their popularity is the quantitative aspect as it involves estimating the number of people who visit restaurant serving such cuisine and calculating the other indicators that reflect the extent of popularity.

4. Other Types of Research:

(i) Descriptive v/s Analytical: Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at any given time. The term Ex ***post facto research*** is used in social sciences and business research for descriptive research studies. The researcher only reports about the factors identified and

cannot modify the details available thus it makes it clear that he does not have any control over such variables Most *ex post facto research* projects are used for descriptive studies in which the researcher strives to find out information about, for example, frequency of dining out, preferences of individuals, etc. *Ex post facto studies* also include attempts by researchers to discover causes even when they cannot control the variables. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and co relational methods. In ***analytical research***, on the other hand, the researcher has to use facts or information already available, and analyze these to make a critical evaluation of the material.

(ii) Applied v/s Fundamental: Research can either be **applied (or action) research** or **fundamental (to basic or pure) research**. ***Applied research*** aims at finding a solution for an immediate problem facing a society or an industrial/business organization, whereas ***fundamental research*** is mainly concerned with generalizations and with the formulation of a theory.

"Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research." Research concerning some natural phenomenon or relating to pure mathematics are examples of fundamental research. Similarly, research studies, concerning human behavior carried on with a view to make generalizations about human behavior, are also examples of fundamental research, but research aimed at certain conclusions (say, a solution) facing a concrete social or business problem is an example of applied research. Research to identify social, economic or political trends that may affect a particular institution or the copy research (research to find out whether certain communications will be read and understood) or the marketing research or evaluation research are examples of applied research. Thus, the central aim of applied research is to discover a solution for some pressing practical problem, whereas basic research is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge.

(iii) Quantitative v/s Qualitative: Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. E.g. Studying the number of enquiries received for room bookings through different modes like internet, emails, calls, letters, or different sources like travel and tours operators, companies and government organizations etc.

Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. E.g. studying the stress levels and reasons for variable performances of staff in different shifts in the same department of a hotel. The same individuals may perform differently with the change of shift timings. It can involve performing research about changing preferences of customers as per the change of season.

Another example is attitude or opinion research i.e. a research intended to find out how people feel or what they think about a particular subject or institution is also qualitative research. Through behavioral research we can evaluate the diverse factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing. It is therefore important that to be relevant in qualitative research in practice the researcher should seek guidance from qualified individuals from the field opted.

(iv) **Conceptual vs. Empirical: Conceptual research** is associated to some theoretical idea(s) or presupposition and is generally used by philosophers and thinkers to develop new concepts or to get a better understanding of an existing concept in practice. On the other hand, **Empirical research** draws together the data based on experience or observation alone, often without due regard for system and theory. It is data-based research, coming up with conclusions which are capable of being verified by observation or experiment. It is also known as experimental research as it is essential to get facts firsthand, at their source, and actively to go about doing certain things to stimulate the production of desired information. Here the researcher develops a hypothesis and assimilates certain outcomes to start with followed by efforts to get adequate facts (data) to prove or disprove his hypothesis. An experimental design is then developed based on variables that can modify or concur the results to prove that he has given a valid statement. This also affirms that he has a reasonable control over the variables and can get different results by giving different values to them. Empirical research is appropriate when proof is sought that certain variables affect other variables in some way. Evidence gathered through experiments or empirical studies is today considered to be the most powerful support possible for a given hypothesis.

CHECK YOUR PROGRESS-II

1. What are the characteristics of research?

2. What are the various types of research? Explain each in brief.

1.7 METHODOLOGY OF RESEARCH

"Method" plainly means a particular procedure for accomplishing or approaching something, especially a systematic or established one. Thus methodology can be understood as a set of specific procedures or techniques used to identify, select, process, and analyze information about a topic. It is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. The most important methodological choice researchers make is based on the distinction between qualitative and quantitative data i.e whether it would collect descriptive data or a quantifiable data.

Before the research begins it is important to decide the methods of data collection would be qualitative or quantitative. Verifying existing theories or hypothesis, questioning them or measurement of variables conveys that quantitative methods be adopted whereas any attempt to collect statistical data, numbers or relative data means that one has t adopt quantitative methods.

The process of research addresses two major questions i.e. what is to be found and how it is be found. It is like planning a journey where we first decide where we are going and then we decide how we shall be travelling. We have to identify important stopovers and routes, check points, modes available to reach the destination.

The steps involved in finding responses to the research questions comprise research methodology. At each operational step in the research process one is required to choose from a variety of methods, procedures and models of research methodology which help you to best achieve the objectives.

The following aspects need to be considered to determine the appropriate research process:

- Whether the research is being conducted to address a function within or an external one?
- What sorts of method/s are to be used to collect data?
- What method of analysis should be used?
- What are the objectives?
- Whether the methods used are appropriate to the research?

1.8 FORMULATING THE RESEARCH PROBLEM

According to Bryman, Alan. "The Research Question in Social Research: What is its Role?" *International Journal of Social Research Methodology* 10 (2007); A research problem is a definite or clear expression [statement] about an area of concern, a condition to be improved upon, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or within existing practice that points to a need for meaningful understanding and deliberate investigation. A research problem does not state how to do something, offer a vague or broad proposition, or present a value question. It is not always easy to formulate the research problem simply and clearly. It may take years to decide for some and just a few minutes for others to decide the research problem to be studied. The social issues may provide a broader prospect but it may not suggest a specific one. E.g. understanding economic background of society may not address the issues of unemployment in the same society therefore unemployment needs to studied differently and individually to assess the underlying problems. The availability of resources like money, time, manpower, etc also affects the selection of research problem.

Some sources of Research Problems may be identified as follows:

- **Personal Experiences.**
- **Media:** Documentation done on various issues, live coverage, panel discussions etc.
- **Resources**: Literature such as books, journals, news articles, periodicals etc may facilitate the researcher to identify a relevant problem based on the area of interest.
- **Government / Official Records**: The orders passed by government. The decisions given in various cases by courts, the petitions and surveys conducted become important sources to shortlist finer prints in abrader problem.
- **People**: A group of individuals may be studied to understand how they behave, how tiny respond to a particular situation do or what responses are generated when they are influenced from within or outside the group.
- **Discussions**: A researcher may be able to come to a conclusion to identify a research problem by discussing the perspectives with peers, colleagues, seniors in the field, guides etc.

- **Problems**: It may be decided to examine the existence of certain issues or problems relating to society, sciences or any subjects in reference.
- **Programs**: These may be used to evaluate the effectiveness of an interference, involvement or intrusions.
- **Phenomena**: To establish the existence of regularity and to understand if a procedure would yield similar results overtime when used repetitively. This includes causes and effects and relationships between variables.
- **Ideas from external sources**.
- **Interdisciplinary Perspectives.**

IMPORTANT CONSIDERATIONS IN SELECTING A RESEARCH PROBLEM: ***A good problem statement begins by introducing the broad area in which your research is centered, gradually leading the reader to the more specific issues you are investigating.*** The statement need not be lengthy, but a good research problem should incorporate the following features:

1. **Persuasive Topic:** The problem that is taken up for research should not only be of ample interest to the researcher but also the one that is continuously motivating to ensure consistent efforts to find a solution. The significance is greatly reduced if the idea is to just get some superficial knowledge about the problem and not to lead the researcher to resolve.

2. **Viability**: A problem that has been identified to be studied should be decide on the basis of whether it is actually possible to be resolved , or has some previous know how to guide the researcher to move ahead. A problem which has not been foreseen earlier may be selected but then the resources availability should be considered.

3. **The So What Test**: A research problem should be able to pass the "So What" test as in social researches, to ascertain the meaningfulness and relevance of studying a particular problem. If the problem does not a result which may lead to further study or analysis it has be avoided.

According to *Ranjit Kumar (RM – A step by step guide)* a few more considerations that assist a researcher to ensure that the study will remain manageable and that you will remain motivated are:

a. **Interest**: a research endeavor is usually time consuming, and involves hard work and possibly unforeseen problems. One should select topic of great interest to sustain the required motivation.
b. **Magnitude:** It is extremely important to select a topic that you can manage within the time and resources at your disposal. Narrow the topic down to something manageable, specific and clear.
c. **Measurement of concepts**: Make sure that you are clear about the indicators and measurement of concepts (if used) in your study.
d. **Level of expertise**: Make sure that you have adequate level of expertise for the task you are proposing since you need to do the work yourself.

e. **Relevance**: Ensure that your study adds to the existing body of knowledge, bridges current gaps and is useful in policy formulation. This will help you to sustain interest in the study.
f. **Availability of data**: Before finalizing the topic, make sure that data are available.
g. **Ethical issues**: How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem formulating stage.

A research problem needs a closer look into the following aspects:

1. Study population: The People i.e. individuals, organizations, groups, communities as they either provide the information required or help in collecting the information about them.

2. Subject area:

a) Problems: issues, situations, associations, needs, profiles etc.
b) Program: content, structure, outcomes, attributes satisfactions, consumers, Service providers, etc.
c) Phenomenon: cause-and-effect relationships, the study of a phenomenon itself i.e. Information that you need to collect to find answers to your research questions and anything that looks noteworthy.

Statement of Research Problem: A research problem statement has to be adequate as different people may interpret it in many ways and draw inferences that the researcher has not even thought of. It has to be established that this statement leads only in a single direction and leads only to where one wants to reach. This would also avoid new generalized issues arising out of the work.

For a problem statement to be effective it should have the characteristics listed below (Andrew & Hildebrand 1982):

1. The problem reflects felt needs
2. The problem is non-hypothetical, ie it must be based on factual evidence
3. It should suggest meaningful and testable hypotheses - to avoid answers that are of little or no use to the alleviation of the problem
4. The problems should be relevant and manageable

The problem statement is therefore a very important device for keeping you on track with your research. It is also one means by which your research will be evaluated - does the research address the problem as stated.

PROCESS OF FORMULATION OF A RESEARCH PROBLEM: An appropriate statement of research problem would need the researcher to follow the follow certain steps to be able to arrive at the expected outcome with an addition of reasonable new knowledge.

1. **Developing a Conceptual Framework:** The researcher has to conceptualize, identify and select a broad discipline before short listing the final aspects to be studied. Then it is to find out which of these aspects generate the maximum interest and lead one to work with enthusiasm and perseverance. Assimilate the set of questions that would address the problem adequately and formulate objectives that correspond to these questions. E.g. An upcoming hotel's project report would be inclusive of feasibility studies, market and competitor evaluation, budgetary and human resources requirements, approvals and licensing needed.

2. **Referring the available literature on the problem**: An extensive literature reference is necessary to find out the available information about the identified problem. It assists in understanding the earlier work done in the similar area and prevents the chances of doing a repetitive work. It is the study of available knowledge in the field and esp. in the perspective of problem stated by the researcher. It provides a description, summary, and critical evaluation of these works in relation to the research problem being investigated. To carry out review of literature, you need to locate, read and evaluate research documents, reports as well as thesis and other sources of academic materials. Review done for one particular research process must be extensive and thorough because it is aimed to obtain a detailed account of the problem being studied.

   E.g. when it comes to resolving customer issues in a hotel the individuals come up with and resolve them in different ways as per the situation thus for someone who is new to the field may discuss and understand the nitty-gritty's of developing his own ideas to handle such issue coping up in future. The reservation manager studies the historical occupancy patterns for the last two to three years to forecast the business volumes for the coming seasons.

   The reference to the available literature and the reviewing it has the following advantages:

a. **Brings clarity and focus to the research problem**;
   Available literature review also helps you to clearly understand the problem stated and issue that may need extra attention during actual process. It brings clarity and objectivity to the research problem and enables researcher to understand the relationship between the research problem and the body of knowledge in the area. Reviewing literature can be time-consuming, daunting and frustrating, but is also rewarding.

b. **Improves the methodology**:

   A review of literature enlightens us if others have used procedures and methods similar to the ones that are being proposed, which procedures and methods have yielded better results, and what problems they have come across in the process. This assures that the researcher would be in an advantageous position to pick a methodology capable of providing valid answers to the research questions.

c. **Expands knowledge base in the research area**:

This is step in the direction of the researcher becoming more aware and having in-depth knowledge in the area of research as expected once the study is completed. It prompts the researcher to read extensively about the subject area in which research study is being conducted. It develops the expertise of the individual to be able to effectively contribute at later stages when an opportunity is available. It also helps to understand how the findings of the study fit into the on hand body of knowledge.

d. **Contextualizes your findings**: It gives a base to add contexts to the question being raised and the problem being addressed. This clears the air around whatever is presented in form of findings by giving notations and references on how it has progressed from there, what contribution has the researcher made and how the findings differ from what has already been done.

Procedure for reviewing the literature:

a) Explore the existing literature in your area of study;
b) Review the literature selected;
c) Develop a theoretical framework;
d) Develop a conceptual framework.

a) **Explore the available literature:** To effectively search for literature in the field of enquiry, it is imperative that there is at least some idea of broad subject area and of the problem that is to be investigated in order to set parameters for your search. It is followed by compilation of a bibliography for this broad area via books, periodicals and journals.

BOOKS: The books encompass central part of any bibliography.

Advantage: material published generally is of good quality and the findings are integrated with other research to form a coherent body of knowledge.

Disadvantage: material is not completely up to date, as it can take a few years between the completion of a work and publication in the form of a book.

Researcher has to look for books in the area of interest, prepare a final list, locate these books in the libraries or borrow from other sources and has to examine their content. If the content is not relevant to the topic, it should be removed from the comprehension list.

JOURNALS: Journals provide the most up-to-date information, even though there may be a gap of few years between the completion of a research project and its publication in a journal. Similar to the referred books, you need to prepare a list of journals for identifying literature relevant to the study. This can be done by locating the hard copies of the journals appropriate to the study, using the internet and by looking at the index of research abstracts in the relevant field to identify and read the articles. The journals have to be carefully selected for relevance and appropriation to the field of study to save time and resources. The content page and the abstract of the paper would give a clear idea of

article or paper of being relevant to the issue. If it is so and it has to be used, get an online copy, a photocopy or prepare a summary and record it for reference for later use.

b) **Review the literature chosen:** The selected literature has to be critically studied and examines to derive associations between the problem being studied and themes discussed in the works done earlier. The researcher can write down the findings separately for each of the sub areas or sub topics that seem relevant to be complied later on. These findings may then be put into a table format based on these variables or themes for easier comparison and to ease to analyze them. As the reading and referencing progresses further, tabulate the information where it logically belongs under the premise so far developed. More themes or variables may be added as per need of study and availability of relevant information. It also helps identify areas of prior scholarship to prevent duplication and give credit to other researchers and to recognize inconstancies: gaps in research, conflicts in previous studies, open questions left from other research.

Read critically with particular reference to the following aspects:

- Note whether the knowledge relevant to your theoretical framework is confirmed beyond doubt.
- Note the theories put forward, the criticisms of these and their basis, the methodologies adopted and the criticisms of them.
- Examine to what extent the findings can be generalized to other situations. Ascertain the areas in which little or nothing is known-the *gaps* that exist in the body of knowledge.

c) **Develop a theoretical framework:** A theoretical framework consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for a particular study. This framework must demonstrate an understanding of theories and concepts that are relevant to the research study and that relate to the broader areas of knowledge being considered.

The theoretical framework is generally not found to be an integral part of the literature. Researcher must review course readings and significant research studies for theories and logical models that are pertinent to the research problem being investigated. The selection of a theory should depend on its appropriateness, ease of application, and explanatory power.

A strong theoretical framework has the following advantages:

1. The theoretical framework connects the researcher to existing knowledge
2. A clear statement of theoretical assumptions allows the reader to evaluate them critically.
3. A relevant theory provides a basis for the hypotheses and choice of research methods.
4. A theoretical framework specifies which key variables influence a phenomenon of interest.

5. It highlights the need to inspect how these key variables might be at variance and under what conditions.
6. It addresses the important questions of why and how.
7. It permits the researcher to intellectually switch from simply describing a phenomenon being observed to generalizing the varied aspects of that phenomenon.
8. Having a theory helps you identify the limits to the generalizations.

As researcher has limited time it is important to set parameters by reviewing the literature in relation to some main themes pertinent to your research topic. As one starts reading the literature, one realizes that it deals with a number of aspects that have a direct and indirect impact on the research topic. These can be used as a base for developing the theoretical framework.

Therefore, we can conclude that theoretical framework and review of literature are complementing each other. A theoretical framework cannot be developed if we do not look into the literature and inversely if we do not have a good theoretical framework; it is not possible to do an effective review of the literature.

Literature significant to your study may deal with two types of information:

- Universal : Generally available and applicable
- Specific : Applicable to issue / problem

Types of Literature:

Primary Literature: Primary sources means original study, based on direct observation, use of statistical records, interviews, or experimental methods, of actual practices or the actual impact of practices or policies. They are authored by researchers, contain original research data, and are usually published in a peer-reviewed journal. Primary literature may also include conference papers, pre-prints, or preliminary reports.

Printed Literature Sources:

- ✓ *Diaries*
- ✓ *Letters*
- ✓ *Speeches*
- ✓ *Patents*
- ✓ *Photographs*
- ✓ *Newspaper articles*
- ✓ *Journal articles*
- ✓ *Theses and dissertations*
- ✓ *Survey Research (e.g., market surveys, public opinion polls)*

- ✓ *Proceedings of Meetings, conferences and symposia*
- ✓ *Original Documents (i.e. birth certificates, wills, marriage licenses, trial transcripts)*
- ✓ Autobiographies
- ✓ Correspondence: email, letters
- ✓ Descriptions of travel
- ✓ Diaries,
- ✓ Eyewitnesses
- ✓ Oral histories
- ✓ Literary works
- ✓ Interviews
- ✓ Personal narratives
- ✓ First-hand newspaper and magazine accounts of events
- ✓ Legal cases, treaties
- ✓ Statistics, surveys, opinion polls,
- ✓ Scientific data, transcripts
- ✓ Journal articles
- ✓ Records of organizations and government agencies
- ✓ Original works of literature, art or music
- ✓ Cartoons, postcards, posters
- ✓ *Records of organizations, government agencies (e.g. annual reports, treaties, constitutions, government documents)*

Electronic Sources of Literature:

- ✓ Internet
- ✓ E-mail communication
- ✓ Interviews (e.g., telephone, e-mail)
- ✓ Video recordings (e.g. television programs)
- ✓ Audio recordings (e.g. radio programs)
- ✓ Web sites
- ✓ Communications through social networking applications (e.g. Face book, blogs, RSS, U-tube etc.)

Secondary Literature: Secondary literature consists of interpretations and evaluations that are derived from or refer to the primary source literature. Examples include review articles (such as meta-analysis and systematic reviews) and reference works. Professionals within each discipline take the primary literature and synthesize, generalize, and integrate new research. A secondary source of information is one that was created by someone who *did not* have first-hand experience or did not participate in the events or conditions being researched. They are generally accounts written after the fact with the benefit of hindsight. Secondary sources describe, analyze, interpret, evaluate, comment on and discuss the evidence provided by primary sources.

- ✓ Bibliographies (also considered tertiary)

- ✓ Biographical works
- ✓ Commentaries
- ✓ Criticisms
- ✓ Dictionaries
- ✓ Histories
- ✓ Journal articles (depending on the discipline, these can be primary)
- ✓ Magazine and newspaper articles (this distinction varies by discipline)
- ✓ Monographs, other than fiction and autobiography
- ✓ Textbooks (also considered tertiary)
- ✓ Websites (also considered primary)
- ✓ Biographies, Encyclopaedias, dictionaries, handbooks
- ✓ Textbooks & monographs on a topic
- ✓ Literary criticism & interpretation
- ✓ History & historical criticism
- ✓ Political analyses
- ✓ Reviews of law and legislation
- ✓ Essays on morals and ethics
- ✓ Analyses of social policy
- ✓ Study and teaching material
- ✓ Articles, such as literature reviews,
- ✓ Commentaries, research articles in all subject disciplines
- ✓ Criticism of works of literature, art and music

Tertiary Literature: Tertiary literature consists of a distillation and collection of primary and secondary sources such as textbooks, encyclopaedia articles, and guidebooks or handbooks. The purpose of tertiary literature is to provide an overview of key research findings and an introduction to principles and practices within the discipline.

In writing about such information you should start with the general information, gradually narrowing down to the specific.

- ✓ Chronologies
- ✓ Classifications
- ✓ Dictionaries
- ✓ Encyclopaedias
- ✓ Directories
- ✓ Guidebooks and manuals
- ✓ Population registers statistics
- ✓ Fact books
- ✓ Abstracts
- ✓ Indexes
- ✓ Bibliographies
- ✓ Manuals/Guide books

Writing up the literature reviewed: In order to comply with the first function of literature review i.e. to provide theoretical background to your study:

- Enlist the main themes and give them appropriate headings that are highlighted while going through the available literature.
- Change the main headings into subheadings that are precise, descriptive of the theme in question, and follow a logical progression.
- Record the significant findings under these subheading with respect to the theme in question, highlighting the reasons for and against an argument if they exist, and identify gaps and issues.

To conform to the second function of literature review of **contextualizing the findings** of the study the researcher should systematically compare the findings with those made by others. Quote from these studies to show how the results contradict, corroborate or add to them. It places your findings in the context of what others have found out. This function is useful when writing about your findings i.e. after analysis of your data.

THE BIBLIOGRAPHY: The etymology of this term can be semantically traced back to the New Latin ***bibliographia***. It is a Greek word meaning "copying of books."

bibli (books) *and* **graphia - graphy (writing)**

The concept was in practice by Greek writers in the first three centuries AD and was referred to as the copying of books by hand. By the turn of 12th Century, the concept took a literal form and was referred to as the intellectual practice of compiling books and materials. The modern day notion of bibliographies, however, only took off in the 17th Century.

A **bibliography** is a list of all of the sources you have used (whether referenced or not) in the process of researching your work. In general, a **bibliography** should include: the authors' names, the titles of the works, the names and locations of the companies that published the copies of sources. The bibliography should give a clear, complete description of the sources that were used while preparing the report. It is an alphabetical list as per the author's surname.

Standard Bibliography Format

Bibliography Format for a Book: A standard bibliography for a book typically consists of the following information:

a) Author(s)
b) Title
c) Publisher
d) Date of Publication

Example: Surname of author, name or two initials, Title taken from title page-underlined or in italics, Edition (if more than one), volume if more than one, place of publication, publishers, date on title page or copyright date. e.g. Kothari, C.R., *Research Methods-Methods and Techniques*,1989,New Delhi :Wiley Eastern Limited,4835/24 Ansari Road, Daryaganj, New Delhi 110 006.

Bibliography Format for a Periodical & Journal Article: An entry for a journal or periodical article contains the following information:

a) Author(s)
b) Article Title
c) Journal Title
d) Volume Number
e) Pages
f) Date of Publication

Bibliography Format for Internet Sources: Format for internet sources usually includes the following information:

a) Author (Website)
b) Article Title
c) Publication Information
d) Version
e) Date of Publication
f) Location (Digital Object Identifier – DOI or URL)

3. **The formulation of Objectives:** The objectives provide an accurate description of the specific actions you will take in order to reach the aim. An objective is measurable and operational. It tells specific things you will accomplish in your project. The objective should be as clearly and crisply stated as possible. Usually only one or at the most two objectives should be taken up in one study. If there are more than two objectives, then it may be appropriate to address the additional objectives through a separate study. Objectives are the goals set out to attain in a study.
    - They inform a reader what you want to attain through the study.
    - It is extremely important to word them clearly and specifically.

Characteristics of Objectives:

1. **Specific:** Precisely what you mean to achieve.
2. **Important:** Indicate the relevance/importance of study.
3. **Measurable:** What you would do/measure in terms of studying an issue.
4. **Practical:** They should offer a solution to a problem.
5. **Realistic:** Vague objectives should be avoided. Any objective that is not practically achievable should be ignored.
6. **Feasible:** Researcher should be able to practice and perform as per stated objectives.
7. **Evaluable:** These objectives set forth for study have to be such that they can be evaluated in different situations and using tools for research.

The objectives should be SMART.

- Specific
- Measurable
- Achievable
- Relevant
- Time bound

Objectives should be listed under two headings:

a) Main objectives (aims): The main objective is an overall statement or the driving force of a study.

It also states the main associations and relationships that you search for and to discover or establish the relationships.

b) Sub-objectives: The sub-objectives are the specific aspects of the problem or the issue that is to be investigated within the main framework of your study.

- They should be numerically listed.
- Wording should clearly, completely and specifically communicate the purpose and intention to the researcher.
- Each objective should contain only one facet of the Study.
- Use action oriented words or verbs when writing objectives.

The objectives should start with words such as:

'to determine',
'to find out',
'to ascertain',
'to measure',
'to explore' etc.

The wording of objectives also helps understand and identify the type of research (descriptive, co relational and experimental) and the type of research design you need to adopt to achieve them.

For Example:
Descriptive studies:

- To describe the types of incentives provides by Hotel XYZ to employees in Mumbai.
- To find out the opinion of the employees about the medical facilities provided by five star hotels in Mumbai.

Co relational studies:

- To ascertain the impact of training on employee retention.
- To compare the effectiveness of different loyalty programmes on repeat clientele.

Hypothesis –testing studies:

- To ascertain if an increase in working hours will increase the incidence of drug/alcohol abuse.
- To demonstrate that the provision of company accommodation to employees in Mumbai hotels will reduce staff turnover.

It is important to assure that variability of understanding of an issue by respondents is reduced to a minimum by being clear about what is being asked and what the probable

responses are. If the respondents are confused or have too many options to choose from the study shall become extensive and at time uncontrolled thus affecting the outcome.

When people communicate their views, feelings or preferences, it is usually on the basis of certain beliefs and guidelines preset in their minds. The conclusion is based upon indicators that lead them to develop and express a certain opinion. But all this needs clarity in understanding the pros and cons, the rights and wrongs, advantages or disadvantages so that the conclusion derived may be justified. Thus, variables that may affect a particular decision have to be measurable with being knowledgeable at the same time.

For example:

- 'Jet Airways' is a perfect example of *quality* cabin service.
- Food in this restaurant is *excellent.*
- The young generation in India is getting more *prosperous in shorter times.*

Defining a Variable: An image, perception or concept that can be measured; hence capable of taking on different values- is called a variable. A variable is also defined as anything that has a quantity or quality that varies.

Types of Variables:

- The dependent variable is the variable a researcher is interested in.
- An independent variable is a variable believed to affect the dependent variable.
- Confounding variables are defined as interference caused by another variable.

The difference between a concept and a variable: Concepts are mental images or perceptions and therefore everyone may develop a different view or perception about the same issue. A concept cannot be measured whereas a variable can be subjected to measurement by crude/refined or subjective/objective units of measurement. It is therefore important for the concept to be converted into variables. Concepts are highly subjective in nature and that makes it difficult to use them "**as they are"** in a research study. These subjective thoughts cannot be measured on a statistical scale. Kumar (2000) says that concepts are mental images and therefore their meanings vary markedly from individual to individual. Concepts are subjective impressions and their understanding will differ from person to person, which, if measured, would cause problems in comparing responses. Concepts should be converted into variables so that they can be measured, although on different scales same variable will have different precision.

If the researcher is using some concepts in his research he needs to find out some indicators that are reflective of these concepts. These indicators can be chosen subjectively by the researcher but they should have a logical link with the concept. The indicators can then be converted into variables.

Concepts, indicators and variables: If a concept has to be used in a study for inference we have to find out how will it be measured and what shall be the indicators used so that

the information can be converted into variables. The choice of indicators for a concept might vary with researchers, but those selected must have a logical link with the concept.

Measurement Scales: The greater the refinement in the unit of measurement of a variable, the greater the confidence, other things being equal, one can place in the findings.

S. S. Stevens has classified the different types of into four categories:

- Nominal or classificatory scale
- Ordinal or ranking scale
- Interval scale
- Ratio scale

The nominal or classificatory scale: A nominal scale enables the classification of individuals, objects or responses into subgroups based on a common/shared property or characteristic. A variable measured on a nominal scale may have one, two or more subcategories depending upon the extent of variation.

For example, the variable "gender" can be classified into two sub-categories: male and female. 'Hotels' can be classified into sub-categories like Luxury, Medium or Economical based on service offered by the hotel. The sequence in which subgroups are listed makes no difference as there is no relationship among subgroups.

The ordinal or ranking scale: Besides categorizing individuals, objects, responses or a property into subgroups on the basis of common characteristic, it ranks the subgroups in a certain order.

They are arranged either in ascending or descending order according to the extent a subcategory reflects the magnitude of variation in the variable. For example, 'income' can be measured either quantitatively (in rupees and paisa) or qualitatively using subcategories 'above average', 'average' and 'below average'. The 'distance' between these subcategories are not equal as there is no quantitative unit of measurement. 'Socioeconomic status' and 'attitude' are other variables that can be measured on ordinal scale.

The interval scale: An interval scale has all the characteristics of an ordinal scale. In addition, it uses a unit of measurement with an arbitrary starting and terminating points. For example: Measuring the temperatures:
Celsius scale: 0°C to 100°C
Fahrenheit scale: 32°F to 212°F
Attitudinal scales: 10-20 , 21-30, 31-40 etc

The ratio scale: A ratio scale has all the properties of nominal, ordinal and interval scales plus its own property: the zero point of a ratio scale is fixed, which means it has a fixed starting point. Since the difference between intervals is always measured from a zero point, this scale can be used for mathematical operations. The measurement of variables

like income, age, height and weight are examples of this scale. A person who is 40 year old is *twice* as old as one who is 20 year old.

CHECK YOUR PROGRESS-III

1. Define Variable?

2. How you will ensure accuracy in measuring a variable?

1.8 PREPARING THE RESEARCH DESIGN

Research design is the conceptual structure within which research would be conducted. The function of research design is to provide for the collection of relevant information with smallest possible input in terms of effort, time and money. According to Green and Tull "A research is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures". The preparation of research design, appropriate for a particular research problem, involves the consideration of the following:

1. Objectives of the research study.
2. Methods of Data Collection to be adopted
3. Sources of information—Sample Design
4. Tools for Data collection
5. Data Analysis Tools : qualitative and quantitative

1.8.1 Research Design

Research Design is important as it guides the researcher to identify the correct methods of data collection and analysis, conditions in which the activity of research shall be carried out and approximation of the funds to be utilized for it; maintaining its connectivity to the purpose of research. A *good research design* is characterized by its flexibility, effectiveness and suitability etc.

A properly developed *research design* is the one that results in minimal or no error at all if everything goes as planned for. It is important to have clarity of the research question for the objectives to be achieved. Therefore researcher may have to create mix of various design approaches to create a suitable one for the problem being addressed.

1.8.2 Need of Research Design

- 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.
- It reduces inaccuracy;
- It helps to get maximum efficiency and reliability;
- It eliminates bias and marginal errors;
- Research design stands for advance planning of the method too be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff, time and money.
- It minimizes wastage of time;
- It is helpful for collecting research materials;
- It is helpful for testing of hypothesis;
- It gives an idea regarding the type of resources required in terms of money, manpower, time, and efforts;
- It Provides an overview to other experts;
- It Guides the research in the right direction.

1.8.3 Properties/Characteristics of good Research Design

In the view of various definition of research design, the following characteristics are found.

Objectivity: Objective findings may be achieved by allowing more than one person to agree between the final scores/ conclusion of the research.

- **Reliability:** Researcher should ensure that research questions are framed judiciously to make it reliable and provide similar outcomes. Thus the results obtained should be similar if the research is conducted in identical conditions and is repeated time and again. E.g. A Guest Comments Card contains the same set of questions and responses for all the guests staying at the hotel and it is suitably placed on the study table in a guest room allowing each guest to take time and fill the data.

- **Generalization:** The information collected from given sample must be utilized for providing a general application to the large group of which the sample is drawn.

- **Ethical:** It should be acceptable and be free of practices or procedures that may not be honest or may give error /bias.

- It should be proficient in obtaining the most reliable and valid data;

- A good research design should be able to address any situation wherein any unexpected events can be accommodated. ;

- It also helps a researcher arriving at flawed / misunderstood conclusions;

- It can adequately control the various threats of validity, both internal and external.

1.8.4 Types of Research Designs

Research design can be a **quantitative** or **qualitative research with** have extensive components. They can both be used or applied distinctively or together.

Quantitative Research design: A quantitative research design shares similar characteristics with a scientific research in the following ways:

- An outline question stating the problem that needs to be solved.
- Has a set order and procedure used to answer these questions?
- Analyses the data generated.
- Draws its conclusion after the data has been collated and analyzed so that the conclusion drawn from the findings are not predetermined.

A *quantitative research design* is used to examine the relationship between variable by using numbers and statistics to explain and analyze its findings and there are four types of quantitative research design:

1. **Descriptive design research**: As the name implies, it is intended to describe the present status of an issue or a problem which is analyzed based on the available data and so does not require hypothesis to begin with. E.g. If a guest is complaining about

a faulty shower in the bathroom just because he may not have used a modular shower earlier has to be resolved delicately and not by pointing out to him that he is not aware of new technology.

2. **Co relational design research**: This seeks to discover if two variables are associated or related in some way, using statistical analysis, while observing the variable. E.g. If the heat is reduced or increased during cooking how does the food react to it.

3. **Experimental design research**: This is a method used to establish a cause and effect relationship between two variables or among a group of variables. The independent variable is manipulated to observe the effect on the depended variable. E.g. The change in response to between groups of foreigners treated to welcome drinks and freshener tissues and the one that is simply welcomed and allocated rooms in a hurry due to peak hours of check in and check out.

4. **Quasi-experimental design research**: As the name suggests such an experiment is designed replicating the true experimental design, except that it does not use randomized sample groups. Also, it is used when a typical research design is not practicable.

Qualitative Research Design: Qualitative research design, on the other hand, is exploratory in nature as it tries to discover not guess the conclusion. It seeks to answer the questions what and how. It is a process to identify or develop a hypothesis that is further tested using other techniques.

A qualitative research design is used to explore the meaning and understanding of complex social environments, like the nature of experiences gained by a tourist by reading about the texts and stories shared by them. It also intends to understand, describe or discover the findings. The researcher is usually the primary instrument that formulates the question and interprets the meaning of a data. The data used are mostly documented words from interview, newspapers videos etc. More than one type of data is collected during this research, from the field, where the participants are. In other words, the research goes beyond the intended scope, so making it emergent because the method of research changes and different types of data might be collected as the research goes on.

1.8.5 Steps in developing a research design

1. Classify the intended outcome i.e. what needs to be understood.
2. Develop the research question.
3. Understand what needs to be measured.
4. Select the population as per the study taken up.
5. Identify the ideal data collection method.
6. Construct interconnected characteristics.
7. Use correct analysis tools.
8. Decide how the findings of the study shall be published.

HYPOTHESIS: A hypothesis is an educated guess, based on the probability of an outcome. Scientists formulate hypotheses after they understand all the current research on their subject. Hypotheses specify the relationship between at least two variables, and are testable. For a hypothesis to function properly, other researchers must be able to reproduce the results that prove or disprove it.

Two types of hypotheses exist: a descriptive hypothesis asks a question, and a directional hypothesis makes a statement. The researcher does not know about a phenomenon, but has an intuition to form the basis of certain assumption or guesses. These are tested by collecting information that will enable you to conclude if your assumption was correct.

A hypothesis is used in an experiment to define the relationship between two **variables**. The purpose of a hypothesis is to find the answer to a question. A formalized hypothesis will force us to think about what results we should look for in an experiment.

The first variable is called the **independent variable**. This is the part of the experiment that can be changed and tested. The independent variable happens first and can be considered the cause of any changes in the outcome. The outcome is called the **dependent variable**.

The verification process can have one of the three outcomes. Your assumption may prove to be:

1. Right;
2. Partially right; or
3. Wrong.

The validity of such assumptions or guesses cannot be conclusively verified if the process adopted is incorrect. Therefore , a hypotheses is a hunch, assumption, suspicion, assertion or an idea about a phenomenon, relationship or situation, the reality or truth of which you do not know. A researcher calls these assumptions/ hunches hypotheses and they become the basis of an enquiry. In most studies the hypotheses will be based upon your own or someone else's observation.

A researcher may carry out a valid investigation into a problem without construction of a hypothesis though it brings clarity, specificity and focus to a research problem.

The six most common forms of hypotheses are:

1. Simple Hypothesis.
2. Complex Hypothesis.
3. Empirical Hypothesis.
4. Null Hypothesis (Denoted by "HO")
5. Alternative Hypothesis (Denoted by "H1")
6. Logical Hypothesis.
7. Statistical Hypothesis.

A **hypothesis** is either a suggested explanation for an observable phenomenon, or a reasoned prediction of a possible causal correlation among multiple phenomena. **In** science, a **theory** is a tested, well-substantiated, unifying explanation for a set of verified, proven factors.

If enough evidence accumulates to support a **hypothesis**, it moves to the next step — known as a **theory** — in the scientific method and **becomes** accepted as a valid explanation of a phenomenon. Tanner further explained that a scientific **theory** is the framework for observations and facts.

Characteristics & Qualities of a Good Hypothesis

- Power of Prediction. One of the valuable attribute of a good hypothesis is to predict for future.
- Closest to observable things. A hypothesis must have close contact with observable things.
- Simplicity.
- Clarity.
- Testability.
- Relevant to Problem.

A **working hypothesis** is a **hypothesis** that is provisionally accepted as a basis for further research in the hope that a tenable theory will be produced, even if the **hypothesis** ultimately fails.

The general functions of hypotheses:

Development of Research Techniques
Separating Relevant From Irrelevant Observation
Selecting Required Facts
Direction of Research
Acts as a Guide
Prevents Blind Research
Accuracy & Precision
Link between Theory & Investigation
Link between Assumption & Observation
Provide answer for a Question
Save Time, Money & Energy

Proper Data Collection

- Proper Conclusion
- A proper formulated hypothesis may lead to a good reasonable, utilized and proper conclusion. If the hypothesis is better than the conclusions drawn by a researcher would be better for solution of a problem.
- The formulation of hypothesis provides a study with focus. It tells you what specific aspects of a research problem to investigate.

- A hypothesis tells you what data to collect and what not to collect, thereby providing focus to the study.
- As it provides a focus, the construction of a hypothesis enhances objectivity in a study.
- A hypothesis may enable you to add to the formulation of a theory. It enables you to specifically conclude what is true or what is false.

CHECK YOUR PROGRESS-IV

1. Define research design?

2. Write a note on 'Hypothesis'.

1.11 SUMMARY

Research is a process to discover new knowledge to find answers to a question. The word research has two parts re (again) and search (find) which denote that we are taking up an activity to look into an aspect once again or we want to look for some new information

about something. Clifford Woody states that research comprises defining and redefining problems, formulation of hypothesis; collection, organizing and evaluation of data; and reaching conclusions. Characteristics of research determine whether a research is free of biases, prejudices, and subjective errors or not. Research can be classified into various categories depending on the perspective under which the research activity is initiated and conducted. Before the research begins it is important to decide the methods of data collection would be qualitative or quantitative. Verifying existing theories or hypothesis, questioning them or measurement of variables conveys that quantitative methods be adopted whereas any attempt to collect statistical data, numbers or relative data means that one has t adopt quantitative methods.

According to Bryman, Alan. "The Research Question in Social Research: What is its Role?" *International Journal of Social Research Methodology* 10 (2007); A research problem is a definite or clear expression [statement] about an area of concern, a condition to be improved upon, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or within existing practice that points to a need for meaningful understanding and deliberate investigation. A research problem does not state how to do something, offer a vague or broad proposition, or present a value question. It is not always easy to formulate the research problem simply and clearly. It may take years to decide for some and just a few minutes for others to decide the research problem to be studied. The social issues may provide a broader prospect but it may not suggest a specific one. E.g. understanding economic background of society may not address the issues of unemployment in the same society therefore unemployment needs to studied differently and individually to assess the underlying problems. The availability of resources like money, time, manpower, etc also affects the selection of research problem.

1.12 GLOSSARY

Applied / Decisional Research: Applied research is done on the basis of pure or fundamental research to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon.

Bibliography: A **bibliography** is a list of all of the sources you have used (whether referenced or not) in the process of researching your work.

Co relational design research: This seeks to discover if two variables are associated or related in some way, using statistical analysis, while observing the variable. E.g. If the heat is reduced or increased during cooking how does the food react to it.

Conceptual research is associated to some theoretical idea(s) or presupposition and is generally used by philosophers and thinkers to develop new concepts or to get a better understanding of an existing concept in practice.

Descriptive design research: As the name implies, it is intended to describe the present status of an issue or a problem which is analyzed based on the available data and so does not require hypothesis to begin with. E.g. If a guest is complaining about a faulty shower

in the bathroom just because he may not have used a modular shower earlier has to be resolved delicately and not by pointing out to him that he is not aware of new technology.
Descriptive Research: This attempts to explain a situation, problem, phenomenon, service or programme, or provides information viz. living condition of a community, or describes attitudes towards an issue but this is done systematically. It is used to answer questions of who, what, when, where, and how associated with a particular research question or problem.

Developing a Conceptual Framework: The researcher has to conceptualize, identify and select a broad discipline before short listing the final aspects to be studied. Then it is to find out which of these aspects generate the maximum interest and lead one to work with enthusiasm and perseverance.

Empirical research draws together the data based on experience or observation alone, often without due regard for system and theory.

Empirical: The processes adopted should be tested for the accuracy and each step should be coherent in progression. This means that any conclusions drawn are based upon firm data gathered from information collected from real life experiences or observations.

Experimental design research: This is a method used to establish a cause and effect relationship between two variables or among a group of variables. The independent variable is manipulated to observe the effect on the depended variable. E.g. The change in response to between groups of foreigners treated to welcome drinks and freshener tissues and the one that is simply welcomed and allocated rooms in a hurry due to peak hours of check in and check out.

Explanatory: is the **research** whose primary purpose is to explain why events occur, to build, elaborate, extend or test a theory. It is more concerned with showcasing, explaining and presenting what we already have.

Exploratory Research: Exploration has been the human kind's passion since the time immemorial. Looking out for new things, new destinations, new food, and new cultures has been the basis of most tourist and travel journeys.

Generalised: The researcher usually divides the identified population into smaller samples depending on the resource availability at the time of research being conducted. This sample is understood to be the appropriate representative of the identified population therefore the findings should also be applicable to and representative of the entire population.

Government / Official Records: The orders passed by government. The decisions given in various cases by courts, the petitions and surveys conducted become important sources to shortlist finer prints in abrader problem.

Hypothesis: A hypothesis is an informed and educated prediction or explanation about something. Part of the research process involves testing the hypothesis, and then examining the results of these tests as they relate to both the hypothesis and the world around you.

Measurement Scales: The greater the refinement in the unit of measurement of a variable, the greater the confidence, other things being equal, one can place in the findings.

Media: Documentation done on various issues, live coverage, panel discussions etc.

Objective: The objectives provide an accurate description of the specific actions you will take in order to reach the aim. An objective is measurable and operational. It tells specific things you will accomplish in your project.

People: A group of individuals may be studied to understand how they behave, how tiny respond to a particular situation do or what responses are generated when they are influenced from within or outside the group.

Primary Literature: Primary sources means original study, based on direct observation, use of statistical records, interviews, or experimental methods, of actual practices or the actual impact of practices or policies. They are authored by researchers, contain original research data, and are usually published in a peer-reviewed journal. Primary literature may also include conference papers, pre-prints, or preliminary reports.

Pure / Basic / Fundamental Research: As the term suggests a research activity taken up to look into some aspects of a problem or an issue for the first time is termed as basic or pure.

Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. E.g. studying the stress levels and reasons for variable performances of staff in different shifts in the same department of a hotel. The same individuals may perform differently with the change of shift timings. It can involve performing research about changing preferences of customers as per the change of season.

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. E.g. Studying the number of enquiries received for room bookings through different modes like internet, emails, calls, letters, or different sources like travel and tours operators, companies and government organizations etc.

Quasi-experimental design research: As the name suggests such an experiment is designed replicating the true experimental design, except that it does not use randomized sample groups. Also, it is used when a typical research design is not practicable.

Reliability refers to the quality of a measurement procedure that provides repeatability and accuracy. This is understood by the example of preparing the bill of purchase using a software which has inbuilt details of taxes and charges levied, the formulas to be used and a format in which it would be printed. This ensures that all the bills shall have values calculated as per standard set.

Research Design: Research Design is important as it guides the researcher to identify the correct methods of data collection and analysis, conditions in which the activity of research shall be carried out and approximation of the funds to be utilized for it; maintaining its connectivity to the purpose of research. A *good research design* is characterized by its flexibility, effectiveness and suitability etc.

Research: Research is a process to discover new knowledge to find answers to a question. The word research has two parts re (again) and search (find) which denote that we are taking up an activity to look into an aspect once again or we want to look for some new information about something.

Resources: Literature such as books, journals, news articles, periodicals etc may facilitate the researcher to identify a relevant problem based on the area of interest.

Secondary Literature: Secondary literature consists of interpretations and evaluations that are derived from or refer to the primary source literature. Examples include review articles (such as meta-analysis and systematic reviews) and reference works. Professionals within each discipline take the primary literature and synthesize, generalize, and integrate new research. A secondary source of information is one that was created by someone who *did not* have first-hand experience or did not participate in the events or conditions being researched. They are generally accounts written after the fact with the benefit of hindsight.

Tertiary Literature: Tertiary literature consists of a distillation and collection of primary and secondary sources such as textbooks, encyclopaedia articles, and guidebooks or handbooks.

The interval scale: An interval scale has all the characteristics of an ordinal scale. In addition, it uses a unit of measurement with an arbitrary starting and terminating points.

The nominal or classificatory scale: A nominal scale enables the classification of individuals, objects or responses into subgroups based on a common/shared property or characteristic. A variable measured on a nominal scale may have one, two or more subcategories depending upon the extent of variation.

The ordinal or ranking scale: Besides categorizing individuals, objects, responses or a property into subgroups on the basis of common characteristic, it ranks the subgroups in a certain order.

The ratio scale: A ratio scale has all the properties of nominal, ordinal and interval scales plus its own property: the zero point of a ratio scale is fixed, which means it has a fixed starting point. Since the difference between intervals is always measured from a zero point, this scale can be used for mathematical operations. The measurement of variables like income, age, height and weight are examples of this scale. A person who is 40 year old is *twice* as old as one who is 20 year old.

Validity means that correct procedures have been applied to find answers to a question. If a large plot of land has to be measured the results should be same whether we use a meter scale or a measuring tape once we put the values obtained; in the **formula** being used to calculate the area.

Variable: An image, perception or concept that can be measured; hence capable of taking on different values- is called a variable. A variable is also defined as anything that has a quantity or quality that varies.

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1.14 SUGGESTED READINGS

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1.15 TERMINAL QUESTIONS

1. Define research?

2. List different types of research. Explain each with suitable examples.
3. What are the characteristics of research? Explain each with illustrations.
4. What do you mean by term 'reliability'?
5. What do you mean by term 'validity'?
6. Distinguish between:
    a. Pure and Applied Research
    b. Structured Approach and Un-structured Approach
    c. Reliability and Validity
    d. Descriptive and Analytical Research
    e. Quantitative Research and Qualitative Research
    f. Nominal Scale and Ratio Scale
7. What do you mean by research methodology?
8. What do you mean by Hypothesis?
9. What are different types of hypothesis?
10. Define Variable?
11. What do you mean by Measuring Variable?
12. List the categorical scales of measuring variables.

UNIT 2
SAMPLING DESIGN
AND
DATA COLLECTION

Structure

2.1 INTRODUCTION

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed but may include simple random sampling or systematic sampling.

2.2 Objectives

After reading this unit the learner will be able to:

- Understand the meaning of sampling
- Understand sampling Design
- Understand characteristics of Sampling Design
- Understand aims in selection a sample
- Understand the various types of sample design.
- Understand role of data in research
- Understand Types of data

- Understand various methods of collecting primary data-observation, interview and questionnaire
- Understand Sources of secondary data.

2.3 MEANING OF SAMPLING

As per Merriam Webster Dictionary it is the act, process, or technique of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population. Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed but may include simple random sampling or systematic sampling.

2.3.1 Sampling Design

This is identified as a fixed plan or system to enable a researcher to obtain data in smaller sizes from parts of a larger population known as samples. It also includes the modules, techniques or procedures to be used in identifying the items for the sample. Sample design also defines the number of items to be included in the sample i.e., the size of the sample. Sample design is determined before data is collected. The choice of determining sampling design depends on the individual and the type of research undertaken. Researcher must select/prepare a sample design which should be reliable and appropriate for the research study.

2.3.2 Characteristics of a Good Sample Design

1. **Proportional**: Sample design must result in a truly representative sample. This means that the sample selected should be exactly or almost similar to the population it represents I terms of data and characteristics.

2. **Error Free:** Sample design should reduce the probability of errors. The minimum numbers of errors in any sample ensure correct data obtained and analyzed.

3. **Budgeted**: Sample design must be practical and be within the limits of funds available for the research study.

4. **No Bias:** Sample design should be able to control systematic bias.

5. **Generalization of Results**: Sample should be such that the results of the sample study can be applied, in general, for the universe with a reasonable level of confidence.

While developing a sampling design, the researcher must pay attention to the following points:

i. **Type of universe:** The accuracy of the results in any study depends on how clearly the universe or population of interest is defined. The universe can be

finite or infinite, depending on the number of items it contains. Clearly definining the set of objects; in principle called the Universe, to be studied. The universe can be finite or infinite. In finite universe the number of items is certain, but in case of an infinite universe the number of items is infinite, i.e., we do not have any idea about the total number of items. The total number of employees in a hotel, the number of covers in a restaurant is example of finite universes, whereas the number of guests arriving in a particular business season, number of persons visiting a food festival, throwing of a dice etc. is example of infinite universes.

ii. **Sampling unit:** The sampling unit can be anything that exists within the population of interest. An assessment has to be taken with reference to a sampling unit before selecting sample. Sampling unit may be:

- A constructed unit such as Hotel, Restaurant, etc.,
- A social unit such as a college, community club, school, etc.
- An individual.
- A geographical one such as state, district, village, etc.,

iii. **Source list:** It is also known as 'sampling frame' from which sample is to be drawn. It contains the names of all items of a finite universe. If source list is not available, researcher has to prepare it. Such a list should be comprehensive, correct, reliable and appropriate. It is extremely important for the source list to be as representative of the population as possible.

iv. **Size:** The sample size should be justified, not be excessively large nor it should be too small. Preferably the sample size should be optimal which fulfills the requirements of efficiency, representativeness, reliability and flexibility and representative of the population to obtain dependable outcomes. Population variance, population size, parameters of interest, and budgetary constraints are some of the factors that impact the sample size.

This refers to the number of items to be selected from the universe to constitute a sample which at times may be an important issue for a researcher. While deciding the size of sample, researcher must determine the desired precision as also an acceptable confidence level for the estimate. A larger variance usually needs a bigger sample size to assure correct results. The parameters of interest in a research study must be kept in view, while deciding the size of the sample.

v. **Consideration of interest:** In determining the sample design, one must consider the question of the specific population stricture which is of interest. E.g. we may calculate the number of walk in guest's from total arrivals at a hotel on daily basis to understand the proportion and then to leave an optimum number of unreserved rooms everyday for such guest.

vi. **Budgetary limitation:** Funds available guide us to decide the size, variation and quantum of samples. This fact can even lead to the use of a non-probability sample.

vii. **Sampling procedure:** Finally, the researcher must decide the type of sample he will use i.e., he must decide about the technique to be used in selecting the items for the sample. In fact, this technique or procedure stands for the sample design itself. An ideal design is the one that for a given sample size and for a given cost, has a smaller sampling error.

CHECK YOUR PROGRESS-I

1. Define sampling?

2. Write a note on 'Characteristics of good sample design'.

2.4 TYPES OF SAMPLE DESIGNS

Non-probability sampling: Non-probability sampling is 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. A core characteristic of non-probability sampling techniques is that samples are selected based on the **subjective judgment** of the researcher. It is also known as deliberate sampling, purposive sampling and judgment sampling.

- With non-probability sampling methods, we do not know the probability that each population element will be chosen, and/or we cannot be sure that each population element has a non-zero chance of being chosen.

The choice of researcher is considered to be the topmost in priority. The sample construction depends upon purposive selection i.e. deliberate and is such that it represents the entire population in that smallest unit.

This offers the advantages of convenience and cost but the disadvantage is that non-probability sampling methods do not allow the estimation of the extent to which sample statistics are possibly varying from population parameters.

E.g. To study the average spending or average number of days stayed by tourists visiting religious destinations the researcher has the freedom to choose destinations and state them to be representative of all other religious destinations.

Probability sampling: This Sampling technique uses randomization to make sure that every element of the population gets an equal chance to be part of the selected sample. It's alternatively known as 'random sampling' or 'chance sampling'. Selection of winner of a lottery selected through mechanical process gives all ticket holders an equal chance of winning.

- With probability sampling methods, each population element has a known (non-zero) chance of being chosen for the sample.

A facility to measure the errors of estimation or the significance of results obtained from a random sample by providing same chance to all options proves that random sampling design is better than deliberate sampling design. The law of Statistical Regularity which states that if on an average the sample chosen is a random one, the sample will have the same composition and characteristics as the universe is truly applied here. This is the reason why random sampling is considered as the best technique of selecting a representative sample.

a) It gives each element in the population an equal probability of getting into the sample; and all choices are independent of one another.
b) It gives each possible sample combination an equal probability of being chosen.

Non-Probability Sampling Methods: Voluntary and convenience samples are two major types discussed here. .

- **Voluntary Sampling**: This constitutes of people who have keen interest in the topic of survey being conducted and are themselves getting involved to contribute as respondents.

  E.g. for a survey or online poll being conducted on a social site like Facebook attracts volunteers with common interests and they participate in it.

- **Convenience Sampling**: A convenience sample consists of people who are easily approachable and can be reached out to in shorter time.

  E.g. To study the popularity of handmade products or traditional goods the researcher may choose to visit a local fair where it is easy to reach out to buyers of such goods and services.

Probability Sampling Methods: The main types of probability sampling methods are simple random sampling, stratified sampling, cluster sampling, multistage sampling, and systematic random sampling. The basic advantage of probability sampling methods is that they assure that the sample chosen is representative of the population thereby ensuring that the statistical conclusions stand valid.

- **Simple random sampling**. Simple random sampling refers to any sampling method that has the following properties.

  - The population consists of N objects.
  - The sample consists of n objects.
  - If all possible samples of n objects are equally likely to occur, the sampling method is called simple random sampling.

There are many ways to obtain a simple random sample. One way would be the lottery method. Each of the N population members is assigned a unique number. The numbers are placed in a bowl and thoroughly mixed. Then, a blind-folded researcher selects n numbers. Population members having the selected numbers are included in the sample.

- **Stratified sampling**. With stratified sampling, the population is divided into groups, based on some characteristic. Then, within each group, a probability sample (often a simple random sample) is selected. In stratified sampling, the groups are called **strata**.

  E.g. For a survey carried our across a state the population may be divided age wise into groups or strata, like infants, children, minors, adolescents, teenagers, adults, etc. Within each stratum, we might randomly select survey respondents.

- **Cluster sampling**. With cluster sampling, every member of the population is assigned to one, and only one, group. Each group is called a cluster. A sample of clusters is

chosen, using a probability method (often simple random sampling). Only individuals within sampled clusters are surveyed.

With stratified sampling, the sample includes elements from each stratum. With cluster sampling, in contrast, the sample includes elements only from sampled clusters.

- **Multistage Sampling**: In this method of sampling, we select a sample by using combinations of more than one sampling method.

- For example, in Stage 1, we might use cluster sampling to choose clusters from a population. Then, in Stage 2, we might use simple random sampling to select a subset of elements from each chosen cluster for the final sample.

- **Systematic Random Sampling**: This begins with creation of a list of each member of the population. From the list, we randomly select the first sample element from the first *k* elements on the population list. Thereafter, we select every *kth* element on the list.

This method is different from simple random sampling since every possible sample of *n* elements is not equally likely.

Problem: Reservation Manager is conducting a satisfaction survey, sampling from a list of 10,000 new guests in various hotels. The list includes 2,500 guests from the Marriotts, 2,500 guests from the Marriott's, 2,500 guests from the Taj Hotels, 2,500 guests from the ITC Group buyers, and 2,500 guests from the Best Western Group. He selects a sample of 400 room guests, by randomly sampling 100 guests of each brand.

Is this an example of a simple random sample?

a) Yes, because each guest in the sample was randomly sampled.
b) Yes, because each guest in the sample had an equal chance of being sampled.
c) Yes, because guest of each brand was equally represented in the sample.
d) No, because every possible 400 guest sample did not have an equal chance of being chosen.
e) No, because the population consisted of purchasers of four different brands of hotels.

Solution

The correct answer is (D). A simple random sample requires that every sample of size *n* (in this problem, *n* is equal to 400) has an equal chance of being selected. In this problem, there was a 100 percent chance that the sample would include 100 guests of each brand of hotel. There was zero percent chance that the sample would include, for example, 99 Taj Guests, 101 Marriott Guests, 100 ITC Guests, and 100 Best Western Guests. Thus, all possible samples of size 400 did not have an equal chance of being selected; so this cannot be a simple random sample.

The fact that each guest in the sample was randomly sampled is a necessary condition for a simple random sample, but it is not sufficient. Similarly, the fact that each guest in the sample had an equal chance of being selected is characteristic of a simple random sample, but it is not sufficient. The sampling method in this problem used random sampling and gave each guest an equal chance of being selected; but the sampling method was actually stratified random sampling.

The fact that hotel guests of each of the brands were equally represented in the sample is irrelevant to whether the sampling method was simple random sampling. Similarly, the fact that population consisted of guests of different hotel brands is irrelevant.

2.5 DATA IN RESEARCH

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes. Data collection is a component of research in all fields of study including physical and social sciences, humanities, and business. It is a component of research in all fields of study including physical and social sciences, humanities, and business.

While methods differ by discipline, the importance of collecting accurate and honest data remains in place. The goal for all data collection is to capture quality evidence that allows analysis to lead to the formulation of convincing and credible answers to the questions that have been posed.

2.5.1 Importance of accuracy in Data Collection

- Despite the variation of the field of study or preference for defining data (quantitative or qualitative), accurate data collection is essential to maintaining the integrity of research.
- Both the selection of appropriate data collection instruments (existing, modified, or newly developed) and clearly delineated instructions for their correct use reduce the likelihood of errors occurring.
- A formal data collection process is necessary as it ensures that the data gathered are both defined and accurate and that subsequent decisions based on arguments embodied in the findings are valid.
- The process provides both a baseline from which to measure and in certain cases an indication of what to improve.

Consequences from improperly collected data include:

- Inability to answer research questions accurately;
- Inability to repeat and validate the study.
- distorted findings resulting in wasted resources

- misleading other researchers to pursue fruitless avenues of investigation
- compromising decisions for public policy
- causing harm to human participants and animal subjects

2.5.2 Types of Data

a) Primary Data: Primary data means original data that has been **collected** specially for the purpose in mind. It means someone collected the data from the original source first hand. Data collected this way is called primary data. The people who gather primary data may be an authorized organization, investigator, enumerator or they may be just someone with a clipboard. Those who gather primary data may have knowledge of the study and may be motivated to make the study a success. These people are acting as a witness so primary data is only considered as reliable as the people who gathered it.

b) Secondary Data: Refers to data which is collected by someone who is someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organizational records and data that was originally collected for other research purposes. Secondary data analysis can save time that would otherwise be spent collecting data and, particularly in the case of quantitative data, can provide larger and higher-quality databases that would be unfeasible for any individual researcher to collect on their own. In addition, analysts of social and economic change consider secondary data essential, since it is impossible to conduct a new survey that can adequately capture past change and/or developments. However, secondary data analysis can be less useful in marketing research, as data may be outdated or inaccurate.

2.5.3 Methods of Primary Data Collection

Primary data is collected by:

- Observation method
- Survey Method
- Contact Method
- Experimental method

OBSERVATION METHOD: This is commonly used in behavioral sciences. It is the gathering of primary data by investigator's own direct observation of relevant people, actions and situations without asking the respondent. E.g.

• *A hotel chain sends observers posing as guests into its coffee shop to check on cleanliness and customer service.*
• *A food service operator sends researchers into competing restaurants to learn menu items prices, check portion sizes and consistency and observe point-of purchase merchandising.*

• *A restaurant evaluates possible new locations by checking out locations of competing restaurants, traffic patterns and neighborhood* conditions.

Observation can yield information which people are normally unwilling or are unable to provide the responses. e.g. Observing numerous plates containing leftover / not eaten portions for a particular menu item indicates that food is not satisfactory.

Types of Observation:

- Structured – for descriptive research
- Unstructured - for exploratory research
- Participant Observation
- Non- participant observation
- Disguised observation

Limitations: Because of these limitations, researchers often supplement observation with survey research.

- Feelings, beliefs and attitudes that motivate buying behavior and infrequent behavior cannot be observed.
- Expensive.

SURVEY METHOD: This approach is most suited for gathering descriptive information.

- **Structured Surveys**: Using formal lists of questions asked to all respondents in an identical set.

- **Unstructured Surveys**: The interviewer probes the respondents and guides the interview according to their answers. E.g. Debates on political issues on Television Channels.
- **Direct Approach**: The researcher asks direct questions about behaviors and thoughts. e.g. Why don't you eat at MacDonald?

- **Indirect Approach**: The researcher might ask: "What kind of people eat at MacDonald's?"

From the response, the researcher may be able to discover why the consumer avoids MacDonald's. It may suggest factors of which the consumer is not consciously aware.

Advantages:

- Can be used to collect different kinds of information at same time.
- Quick and low cost as compared to observation and experimental method.

Limitations:

- Respondent's reluctance to answer questions asked by unknown interviewers about things they consider private.

- Respondents may refuse to share time showing to be busy.
- Respondents may try to please only by sharing positive responses.
- Respondents may be unable to answer because they cannot remember or never gave a thought to what they do and why.
- Respondents may answer in order to look smart or well informed.

CONTACT METHODS: **Mail Questionnaires**:

Advantages:

- Can be used to collect large amounts of information at a low cost per respondent.
- Respondents may give more honest answers to personal questions on a mail questionnaire.
- No interviewer is involved to bias the respondent's answers.
- Convenient for respondent's who can answer when they have time.
- Good way to reach people who often travel.

Limitations:

- Not flexible.
- Take longer to complete than telephone or personal interview.
- Response rate is often very low.
- Researcher has no control over who answers.

b. Telephone Interviewing:

Advantages:

- Quick method
- More flexible as interviewer can explain questions not understood by the respondent
- Depending on respondent's answer they can skip some Qs and probe more on others
- Allows greater sample control
- Response rate tends to be higher than mail

Limitations:

- Cost per respondent higher
- Some people may not want to discuss personal Qs with interviewer
- Interviewer's manner of speaking may affect the respondent's answers
- Different interviewers may interpret and record response in a variety of ways
- Under time pressure, data may be entered without actually interviewing

g. **Personal Interviewing:**

It is very flexible and can also be used to collect large amounts of information. Skilled interviewers are able to keep the respondent attentive and clarify difficult questions in case of a doubt. They can guide interviews, explore issues, and probe as the situation demands. Personal interview can be used in any type of questionnaire and can be conducted fairly quickly.

The responses, behavior and reactions can be put on record by the interviewer by making the products readily available, displays at convenient locations, by use of advertisements and packaging.

Types of Interviewing:

a. Intercept interviewing: It is an integral part of tourism research. It allows researcher to reach known people in a shorter durations but at the same time it reaches out to respondents whose details are not known. The interviewer has to make an effort to gain attention and cooperation from respondents to assure apt responses. The interviews can be conducted at different locations like residences, offices, public spaces, shopping destinations etc. The interviewer uses own judgement to identify the respondents depending on convenience and may also offer some compensations if the interaction is prolonged.

Limitations:

- Interviewer may be forceful in getting responses modified as per the objectives of study.
- There is possibility of an error and bias on the part of the interviewer who may not be able to correctly judge the religion, age, race etc.
- Interviewer may be uncomfortable talking to certain ethnic or age groups.

b. Focus Group Interviewing: As the term suggests it is conducted within selected group of respondents where the strength of the group is choice of the interviewer. Usually such activity is regulated by a trained moderator who can keep the group engaged from a few minutes to a few hours. The atmosphere is kept cool and the respondents may be offered snacks or tea/coffee etc to keep them interested. The moderator needs objectivity, knowledge of the subject and industry, and some understanding of group and consumer behavior. The process begins with a broad question before moving to more specific issues, encouraging open and easy discussion to bring out true feelings and thoughts i.e. moving from broader issue to specific ones thus justifying the name focus group interviewing technique.

Such activity helps in identifying issues and subjects which may later be used in conduct of study at larger scales or in case of direct interviews that are structured. The responses are recorded and noted to analyze them at later stages.

This method is especially suited for managers of hotels and restaurants, who have easy access to their customers. e.g. Some hotel managers often invite a group of hotel guests from a particular market segment to have a free breakfast with them. Managers get the chance to meet the guests and discuss what they like about the hotel and what the hotel could do to make their stay more enjoyable and comfortable. The guests appreciate this recognition and the manager gets valuable information. Restaurant managers use the same approach by holding discussion meetings over lunch or dinner.

Limitations:

- High cost.
- Sampling is difficult
- Interviewer bias.

EXPERIMENTAL METHOD: It is also named as *Empirical Research* or *Cause and Effect Method,* it is a data-based research, resulting in conclusions that can be verified with observation or experiment. Experimental research is appropriate when proof is sought that certain variables affect other variables in some way. E.g.

- Tenderizers (independent variable) effect on cooking time and texture of meat (dependent variable).
- The effect of substituting one ingredient in whole or in part for another such as soya flour to flour for making high protein bread.
- Developing recipes to create new products.

The researcher exercises controls over the variables and conditions of experiments of study and may use deliberate modification. A guess or a working hypothesis is developed before the study commences. The effort is the made to gather data an facts to approve or disapprove this hypothesis during the course of study.

"Evidence gathered through experimental or empirical studies today is considered to be the most powerful support possible for a given hypothesis". *Lowe, Belle; 1958, Experimental Cookery, John Willey & Sons, New York, pp 34-46.*

TOOLS FOR DATA COLLECTION: Selecting a research instrument to gather relevant information from the respondents is important to the study objectives. The famous saying about computers- "garbage in garbage out" is applicable for data collection also. A research tool gives desired input for the study and therefore the quality and validity of the output i.e. the findings is exclusively dependent on it.

Constructing a Research Tool:

Step I: Clearly define and individually list all the specific objectives or research questions for study.

Step II: For each objective or research questions, list all the associated questions that need to be answered through the study.

Step III: List the information required to answer the research questions formulated.

Step IV: Formulate questions to acquire such information.

A. Questionnaire:

Structured surveys/ interviews make the use of a questionnaire. It consists of a set of questions presented to a respondent for answers. The respondents read the questions, interpret what is expected and then write down the answers themselves.

It is called an Interview Schedule when the researcher asks the questions (and if necessary, explains them) and records the respondent's reply on the interview schedule. Because there are many ways to ask questions, the questionnaire is very flexible. Questionnaire should be developed and tested carefully before being used on a large scale.

There are three basic types of questionnaire:

i. Closed ended Questionnaire:

- Closed ended questions include all possible answers/prewritten response categories, and respondents are asked to choose among them e.g. multiple choice questions, scale questions
- Type of questions used to generate statistics in quantitative research.
- As these follow a set format, and most responses can be entered easily into a computer for ease of analysis, greater numbers can be distributed.

ii. Open ended Questionnaire: Open-ended questions allow respondents to answer in their own words.

- Questionnaire does not contain boxes to tick but instead leave a blank section for the respondent to write an answer.
- Whereas closed –ended questionnaires might be used to find out how many people use open-ended questionnaires might be used to find out what people think about a service.
- As there are no standard answers to these questions, data analysis is more complex.
- As it is opinions which are sought rather than numbers, fewer questionnaires need to be distributed.

- **Combination of Closed and Open Ended Questionnaire:** Such questionnaire is used to find out how many people use a particular service and what they think of the service in the same form. It begins with a series of closed –ended questions, with boxes to tick or scales to rank, and then finish with a section of open-ended questions or more detailed response. The users of particular brand of tea may be asked about the number of tines they drink tea, the average quantity used at home in one month, and also what they think of quality and taste.

How to construct questionnaires:

a. Appropriate wording and structure of questions.

- Questions should be kept short and simple.
- Do not ask two or more questions by framing single one. E.g. asking a walk in guest his name and type of room required at the same time. Requesting the above information in two questions is easier.
- Never use negative questions which have *not* in them as it is confusing for respondent to agree or disagree. Eg. I think you would not like to have tea in this hot weather?
- Question should not contain Prestige Bias – causing embarrassment or forcing the respondent to give false answer in order to look good e.g. questions about educational qualifications or income.

- Always use indirect questions for sensitive issues as respondents can relate their answer to other people.
- Using closed- ended questions: try to make sure that all possible answers are covered so that respondents are not constrained in their answer. "Don't know" category also needs to be added.
- Avoid Leading Question: Don't lead the respondent to answer in a certain way. e.g. "How often do you wash your car?" assumes that respondent has a car and he washes his car. Instead, ask a filter question to find if he has a car, and then, 'If you wash your car, how many times a year?'

b. Length and ordering of the Questions:

- Keep the questionnaire as short as possible.
- Ask easy questions that respondents take pleasure in answering.
- If combined questionnaire, place open ended questions at the end.
- Make questions as interesting as possible and easy to follow by varying type and length of question.
- Group the questions as per specific topic to be easily understood and followed.
- Layout and spacing is important as cluttered questionnaire is less likely to be answered.

Piloting the Questionnaire: The questionnaire before being finalized should be cross checked with peers, managers etc. Thereafter questionnaire must be piloted i.e. it should be tested to see if it is obtaining the results as per objectives or not. This is done by asking people to read it through and see if there are any ambiguities which you have not noticed. They should also be asked to comment about the length, structure and wording of the questionnaire. Alter the questions accordingly.

COLLECTING DATA: Data Collection becomes important once the other critical issues like hypothesis, objectives, research problem, sampling design, location, and population for study are addressed. This data gives the inputs from which the inferences are drawn leading to conclusive findings. Depending upon your plans, you might commence interviews, mail out a questionnaire, conduct experiments and/or make observations.

Collecting data through involves ethical issues in relation to the participants and the researcher:

- Those from whom information is collected or those who are studied by a researcher become participants of the study.
- Anyone who collects information for a specific purpose, adhering to the accepted code of conduct, is a researcher.

Ethical issues concerning research participants:

a. **Safety of respondents:** During the course of collecting information the respondents should not be subjected to unnecessary harassment, anxiety, or putting them through

experiments including hazards, discomfort, demeaning or dehumanizing procedures etc.

b. **Permission or consent:** It is important for respondents to be free and under no pressure to participate in a study being conducted. The information that is sought should be first assessed to be ethical. The respondent should be able to give an informed consent. This will lead to honesty on part of the respondent and the researcher. We should inform the respondents about the type of data or information being sought, the purpose of such study, and how the respondent can get involved in the study.

c. **Incentives:** The data collected does not need to be exchanged for a price as this deters or de-motivates the respondents to participate in a research study. Offering incentives, gifts, etc for seeking information is unethical and equivalent to bribing.

d. **Sensitive Information:** Certain types of information can be regarded as sensitive or confidential by some people thus asking for such information may upset or embarrass a respondent. E.g. questions on drug use, pilferage, income, age, marital status etc are invasive. Researcher has to be careful about the sensitivities of the participants. Any such information may be requested provided the respondent is informed and explained the purpose beforehand.

e. **Confidentiality:** Sharing information about a respondent with others for purposes other than research is unethical. Identification of study population to put the findings into context may be important but then it has to be assured that the information provided by respondents remains anonymous.

Ethical issues relating to the researcher:

a. **Prejudice:** Any deliberate attempt to hide the findings of the study or highlight something disproportionately to its true existence leads to a bias or prejudice. E.g. During year end appraisal if only the shortcomings are highlighted the candidate may not be evaluated honestly.

b. **Provision or deprivation of a treatment**: This may be understood as conducting an experiment without having the confidence whether it would be fruitful or otherwise for a study population. But at the same time on the other hand a constructive result may lead to wonderful results and benefits. E.g. developing a new food product for health benefits.

c. **Inappropriate research methodology:** Any instrument or process that may be unsuitable or have negative effect on a study should be avoided. E.g. asking respondents questions which lead to findings convenient to the researcher only.

d. **Misrepresentation of facts:** To report the findings in a way that changes or slants them to serve your own or someone else's interest is unethical.

e. **Misuse of data:** The data collected has to be used only for the purpose it is collected for not for making unethical usage. E.g. if the data of users is shared by a banking institution with an advertising company it leads to invasion of privacy and rights of the bank's clients.

CHECK YOUR PROGRESS-II

1. What are the various types of sample design?

2. Write a note on 'Methods of Collecting Primary Data'.

2.7 Summary

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed but may include simple random sampling or systematic sampling.

2.8 Glossary

Budgetary limitation: Funds available guide us to decide the size, variation and quantum of samples. This fact can even lead to the use of a non-probability sample.
Budgeted: Sample design must be practical and be within the limits of funds available for the research study.

Cluster sampling. With cluster sampling, every member of the population is assigned to one, and only one, group. Each group is called a cluster. A sample of clusters is chosen, using a probability method (often simple random sampling). Only individuals within sampled clusters are surveyed.

Confidentiality: Sharing information about a respondent with others for purposes other than research is unethical. Identification of study population to put the findings into context may be important but then it has to be assured that the information provided by respondents remains anonymous.

Consideration of interest: In determining the sample design, one must consider the question of the specific population stricture which is of interest. E.g. we may calculate the number of walk in guest's from total arrivals at a hotel on daily basis to understand the proportion and then to leave an optimum number of unreserved rooms everyday for such guest.

Convenience Sampling: A convenience sample consists of people who are easily approachable and can be reached out to in shorter time.

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes. Data collection is a component of research in all fields of study including physical and social sciences, humanities, and business. It is a component of research in all fields of study including physical and social sciences, humanities, and business.

Direct Approach: The researcher asks direct questions about behaviors and thoughts. e.g. Why don't you eat at MacDonald?

Error Free: Sample design should reduce the probability of errors. The minimum numbers of errors in any sample ensure correct data obtained and analyzed.

Generalization of Results: Sample should be such that the results of the sample study can be applied, in general, for the universe with a reasonable level of confidence.

Inappropriate research methodology: Any instrument or process that may be unsuitable or have negative effect on a study should be avoided. E.g. asking respondents questions which lead to findings convenient to the researcher only.

Incentives: The data collected does not need to be exchanged for a price as this deters or de-motivates the respondents to participate in a research study. Offering incentives, gifts, etc for seeking information is unethical and equivalent to bribing.

Indirect Approach: The researcher might ask: "What kind of people eat at MacDonald's?"

Intercept interviewing: It is an integral part of tourism research. It allows researcher to reach known people in a shorter durations but at the same time it reaches out to respondents whose details are not known. The interviewer has to make an effort to gain attention and cooperation from respondents to assure apt responses. The interviews can be conducted at different locations like residences, offices, public spaces, shopping destinations etc. The interviewer uses own judgement to identify the respondents depending on convenience and may also offer some compensations if the interaction is prolonged.

Misrepresentation of facts: To report the findings in a way that changes or slants them to serve your own or someone else's interest is unethical.

Misuse of data: The data collected has to be used only for the purpose it is collected for not for making unethical usage. E.g. if the data of users is shared by a banking institution with an advertising company it leads to invasion of privacy and rights of the bank's clients.

Multistage Sampling: In this method of sampling, we select a sample by using combinations of more than one sampling method.

No Bias: Sample design should be able to control systematic bias.

Non-probability sampling: Non-probability sampling is 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.

Permission or consent: It is important for respondents to be free and under no pressure to participate in a study being conducted. The information that is sought should be first assessed to be ethical. The respondent should be able to give an informed consent. This will lead to honesty on part of the respondent and the researcher. We should inform the respondents about the type of data or information being sought, the purpose of such study, and how the respondent can get involved in the study.

Personal Interviewing: It is very flexible and can also be used to collect large amounts of information. Skilled interviewers are able to keep the respondent attentive and clarify difficult questions in case of a doubt. They can guide interviews, explore issues, and probe as the situation demands. Personal interview can be used in any type of questionnaire and can be conducted fairly quickly.

Prejudice: Any deliberate attempt to hide the findings of the study or highlight something disproportionately to its true existence leads to a bias or prejudice. E.g. During year end appraisal if only the shortcomings are highlighted the candidate may not be evaluated honestly.

Primary Data: Primary data means original data that has been **collected** specially for the purpose in mind. It means someone collected the data from the original source first hand. Data collected this way is called primary data. The people who gather primary data may be an authorized organization, investigator, enumerator or they may be just someone with a clipboard. Those who gather primary data may have knowledge of the study and may be motivated to make the study a success. These people are acting as a witness so primary data is only considered as reliable as the people who gathered it.

Probability Sampling Methods: The main types of probability sampling methods are simple random sampling, stratified sampling, cluster sampling, multistage sampling, and systematic random sampling.

Proportional: Sample design must result in a truly representative sample. This means that the sample selected should be exactly or almost similar to the population it represents I terms of data and characteristics.

Provision or deprivation of a treatment: This may be understood as conducting an experiment without having the confidence whether it would be fruitful or otherwise for a study population. But at the same time on the other hand a constructive result may lead to wonderful results and benefits. E.g. developing a new food product for health benefits.

Safety of respondents: During the course of collecting information the respondents should not be subjected to unnecessary harassment, anxiety, or putting them through experiments including hazards, discomfort, demeaning or dehumanizing procedures etc.

Sampling procedure: Finally, the researcher must decide the type of sample he will use i.e., he must decide about the technique to be used in selecting the items for the sample. In fact, this technique or procedure stands for the sample design itself. An ideal design is the one that for a given sample size and for a given cost, has a smaller sampling error.

Sampling unit: The sampling unit can be anything that exists within the population of interest. An assessment has to be taken with reference to a sampling unit before selecting sample.

Secondary Data: Refers to data which is collected by someone who is someone other than the user. Common sources of secondary data for social science include censuses, information collected by government departments, organizational records and data that was originally collected for other research purposes. Secondary data analysis can save time that would otherwise be spent collecting data and, particularly in the case of quantitative data, can provide larger and higher-quality databases that would be unfeasible for any individual researcher to collect on their own. In addition, analysts of social and economic change consider secondary data essential, since it is impossible to conduct a new survey that can adequately capture past change and/or developments. However, secondary data analysis can be less useful in marketing research, as data may be outdated or inaccurate.

Sensitive Information: Certain types of information can be regarded as sensitive or confidential by some people thus asking for such information may upset or embarrass a respondent. E.g. questions on drug use, pilferage, income, age, marital status etc are invasive. Researcher has to be careful about the sensitivities of the participants. Any such information may be requested provided the respondent is informed and explained the purpose beforehand.

Size: The sample size should be justified, not be excessively large nor it should be too small. Preferably the sample size should be optimal which fulfills the requirements of efficiency, representativeness, reliability and flexibility and representative of the population to obtain dependable outcomes. Population variance, population size, parameters of interest, and budgetary constraints are some of the factors that impact the sample size.

Source list: It is also known as 'sampling frame' from which sample is to be drawn. It contains the names of all items of a finite universe. If source list is not available, researcher has to prepare it. Such a list should be comprehensive, correct, reliable and appropriate. It is extremely important for the source list to be as representative of the population as possible.

Stratified sampling. With stratified sampling, the population is divided into groups, based on some characteristic. Then, within each group, a probability sample (often a simple random sample) is selected. In stratified sampling, the groups are called **strata**.

Structured Surveys: Using formal lists of questions asked to all respondents in an identical set.

Systematic Random Sampling: This begins with creation of a list of each member of the population. From the list, we randomly select the first sample element from the first *k* elements on the population list. Thereafter, we select every *kth* element on the list.

Type of universe: The accuracy of the results in any study depends on how clearly the universe or population of interest is defined. The universe can be finite or infinite, depending on the number of items it contains.

Unstructured Surveys: The interviewer probes the respondents and guides the interview according to their answers. E.g. Debates on political issues on Television Channels.

Voluntary Sampling: This constitutes of people who have keen interest in the topic of survey being conducted and are themselves getting involved to contribute as respondents.

2.9 References/Bibliography

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- C. Rajendar Kumar : Research Methodology , APH Publishing
- J. R. Brent Ritchie, Charles R. Goeldner **:** Travel, Tourism, and Hospitality Research: A Handbook for Managers and Researchers, Wiley Publishers Publishers Ltd, UK

2.10 Suggested Readings

- *Kumar Ranjit: Research Methodology: A Step by Step Guide for Beginners*, Sage Publication, 2014.
- Kothari C.R. : Research Methodology, New Age International, 2011.
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2.11 Terminal Questions

1. Define sampling?
2. What are the different methods of sampling?
3. Define sample design?
4. List the various types of sample design.

UNIT 3
PROCESSING
AND
ANALYSING DATA

Structure

3.1 Introduction

The data collected from the survey tool, observation, and interview is raw and is of no value unless and until it is presented in usable manner. The data collected from the samples is arranged in meaningful way by editing, coding, and presented in tabular form for drawing useful inferences. In this unit we will be learning the various ways by which raw data is converted into important information,

3.2 Objectives

After reading this unit the learner will be:

- able to understand the editing of data
- able to convert raw data into useful information
- able to classify data
- able to prepare tables and graphs using raw data

3.3 Defining data processing and analysis

Processing and analyzing data involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing these in a manner that they answer the research questions (objectives).

3.4 Editing

It is a process of examining the collected raw data to detect errors and omissions and to correct these when possible. It is also defined as the process relating to the review and adjustment of collected survey data with an aim to control the quality of the collected data. Data editing can be performed manually, with the assistance of a computer or using a combination of both the methods.

Data editing is crucial as it helps in take full advantage of the available data to be converted into useful data, ensuring that the errors arising during collection, entry, assimilation are omitted or minimized. It also assures that the consistency is coherent and consistent, since such characteristics have a constructive impact on the final analysis and outcomes.

3.5 Coding

The purpose of data coding is to bring out the essence and meaning of the data that has been collected from the respondents. In order to make sense of the data, it must be analyzed.

Analysis begins with the labeling of data as to its source, how it was collected, the information it contains, etc. When we have received hundreds of questionnaires, forma and formats containing the data it seems impossible to figure out any outcomes just by looking at the quantum. E.g. if the Hotel guest's feedback is received in letter forms with no specific format it would be nearly impossible to assess the satisfaction levels, major complaint areas or just finding out who has been recommended by most of the guests as the best employee at the hotel.

Coding facilitates the researcher to reduce the bulk od information and data to a form that is easily understandable and can be interpreted soon either manually or through software programming. For example, the injury rate at different levels of intensive physical labor demanding operations in various hotels in the city may not be sorted under name but each of the hotels can be assigned a numeric or alphabetical code. The content analysis computer programs help researchers to code textual data for qualitative or quantitative analysis.

3.6 Classification and Tabulation

It is the process of arranging data in groups or classes on the basis of common characteristics such as descriptive or numerical.

Simple Classification: This means that one attribute is considered and the universe is divided into two classes. With one class consisting of items possessing the given attribute and the other class consisting of items which do not possess the given attribute.

Class interval Classification: This is more relevant when we use quantitative data like number of guests, number of spa users, age groups of tourists, income levels of travelers, daily occupancy and other statistical data.

E.g. Pocket Money Received by IHM Students

Income Range		Frequency	%
Rs.1001-2000	10	50	
Rs.2001-3000	8	40	
Rs.3001-4000	2	10	
Total	20	100	

3.6.1 Tabulation

It is the process of summarizing raw data and displaying the same in compact form for further analysis. It is an orderly arrangement of data in columns and rows.

Tabulation is essential because:

a. It conserves space and reduces explanatory and descriptive statement to a minimum.
b. It facilitates the process of comparison.
c. It facilitates the summation of items and the detection of errors and omissions.
d. It provides the basis for various statistical computations.

Tabulation may also be classified as simple and complex tabulation. Simple tabulation generally results in one-way tables which supply answers to questions about one characteristic of data only. Complex tabulation usually results on two-way tables that give information about two interrelated characteristics of data, three –way tables or still higher order tables known as manifold tables.

Components of Data Tables

The components of data tables are as under:

- Table Number
- Title
- Head notes
- Stubs
- Caption
- Body or field

- Footnotes
- Source

- **Table Number**: Each table should have a specific table number for ease of access and locating. This number can be readily mentioned anywhere which serves as a reference and leads us directly to the data mentioned in that particular table.

- **Title:** A table must contain a title that clearly tells the readers about the data it contains, time period of study, place of study and the nature of classification of data.

- **Head notes:** A headnote further aids in the purpose of a title and displays more information about the table. Generally, headnotes present the units of data in brackets at the end of a table title.

- **Stubs:** These are titles of the rows in a table. Thus a stub display information about the data contained in a particular row.

- **Caption:** A caption is the title of a column in the data table. In fact, it is a counterpart if a stub and indicates the information contained in a column.

- **Body or field:** The body of a table is the content of a table in its entirety. Each item in a body is known as a 'cell'.

- **Footnotes:** Footnotes are rarely used. In effect, they supplement the title of a table if required.

- **Source:** When using data obtained from a secondary source, this source has to be mentioned below the footnote.

CHECK YOUR PROGRESS-I

1. What coding of data?

2. What do you mean by editing data?

3.7 PRESENTATION OF DATA

The various types of data that can be presented are:

- Textual presentation
- Data tables
- Diagrammatic presentation
- Time Series Data
- Bar Charts
- Combo Charts
- Pie Charts
- Tables
- Geo Map
- Scorecard
- Scatter Charts
- Bullet Charts
- Area Chart
- Text & Images

Presenting and Analyzing data:

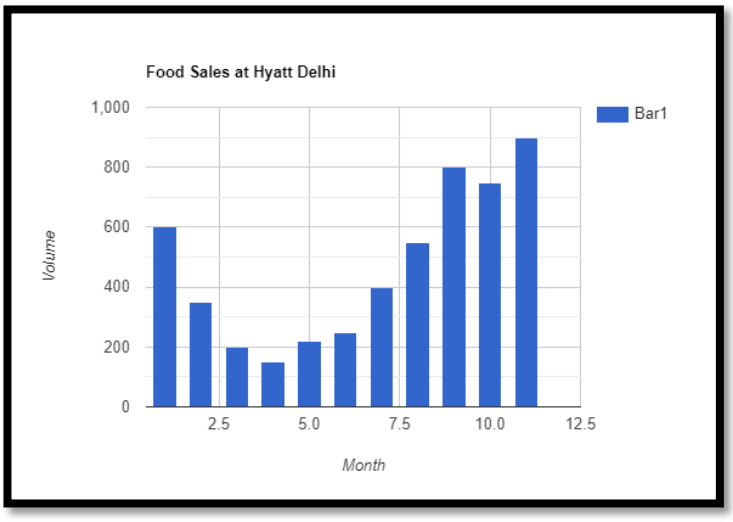
1. Frame the objectives of the study and make a list of data to be collected and its format.
2. Collect/obtain data from primary or secondary sources.
3. Change the format of data, i.e., table, maps, graphs, etc. in the desired format

4. Sort data through grouping, discarding the extra data and deciding the required form to make data comprehensible
5. Make charts and graphs to help to add visual part and analyze trends.
6. Analyze trends and relate the information to fulfill the objectives.

Presenting the results:

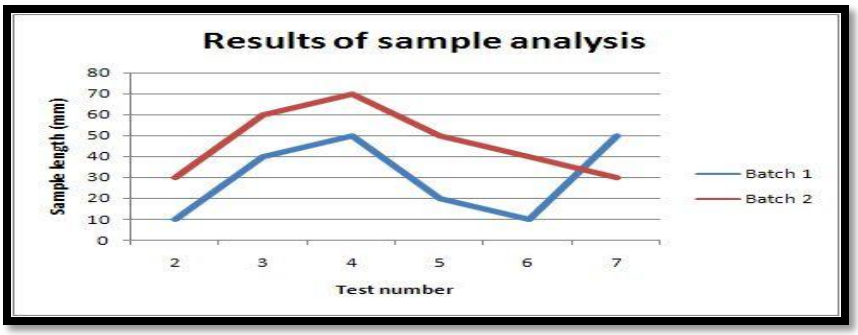
- The results should be presented such that a progression of arguments is in support of the study beginning with a statement defining the purpose of study and subsequently a logical presentation making objectives clear and related to the aim of study.
- Bigger objectives should be broken down into smaller ones i.e. define each objective as per need and outcome. Prepare a list of data to be collected, the sources of data, form in which data exists and needs to be obtained and conducting a primary survey for information which does not exist.
- Form and explain the methodology adapted to carry out a study.
- Sampling methods should be clear and confirmed for ease of collecting data that results in efficient and lesser errors in the process.
- Present only the required information and skip the background research to make your point more clear.
- Credits and references should either be provided in the end and wherever obligatory.
- The presentation methods depend upon the availability of resources and type of results expected out of the final presentation. PowerPoint, Models, Paper Charts, Smart Boards, Analytical software e.g. Google analytics etc can be used to make the presentation effective and crisp.

3.8 METHODS OF DATA PRESENTATION

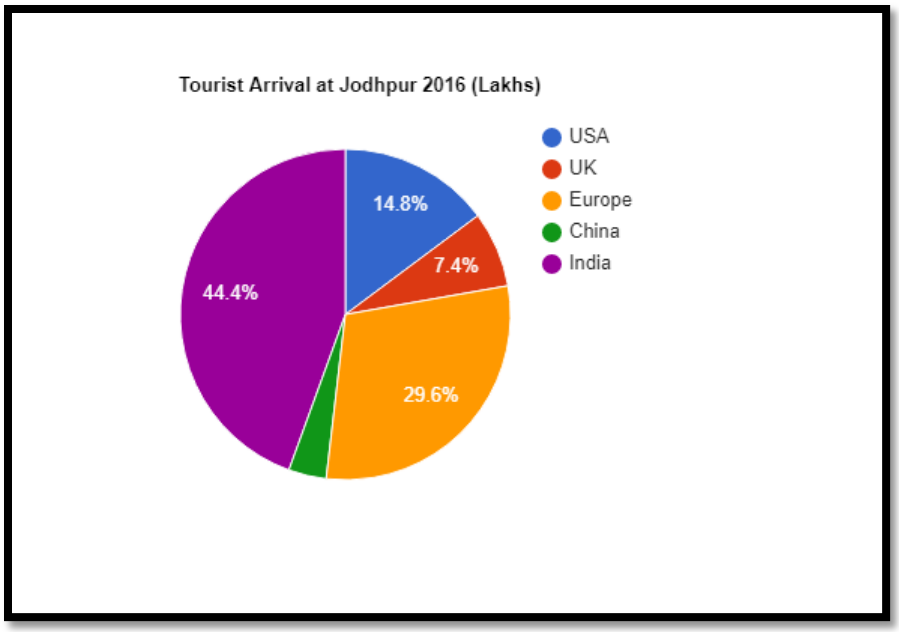


Bar Charts/Bar Graphs: These are one of the most widely used charts for showing the grown of a company over a period. There are multiple options available like stacked bar graphs and the option of displaying a change in numerous entities. A bar graph is a way of summarizing a set of categorical data. It displays the data using a number of rectangles, of the same width, each of which represents a particular category. Bar graphs can be displayed horizontally or vertically and they are usually drawn with a gap between the bars (rectangles).

Line Chart: These are best for showing the change in population, i.e., for showing the trends. These also work well for explaining the growth of multiple areas at the same time.

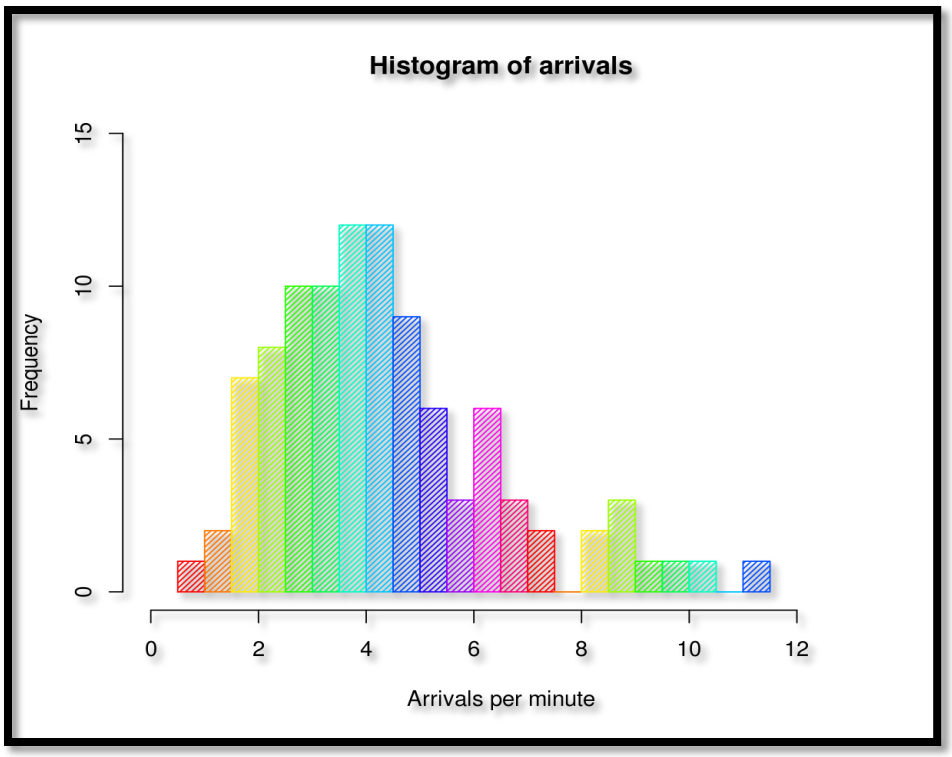


Pie Charts: These work best for representing the share of different components from a total 100%. For, eg. Contribution of different sectors to GDP, the population of different states in a country, etc. A pie chart is used to display a set of categorical data. It is a circle, which is divided into segments. Each segment represents a particular category. The area of each segment is proportional to the number of cases in that category.



Combo Chart: As the name suggests it is a combination of more than one chart type. The one shown in the figure below is a combination of line and bar graph. These save space and are at times more effective than using two different charts. There can even be 3 or more charts depending on the requirement.

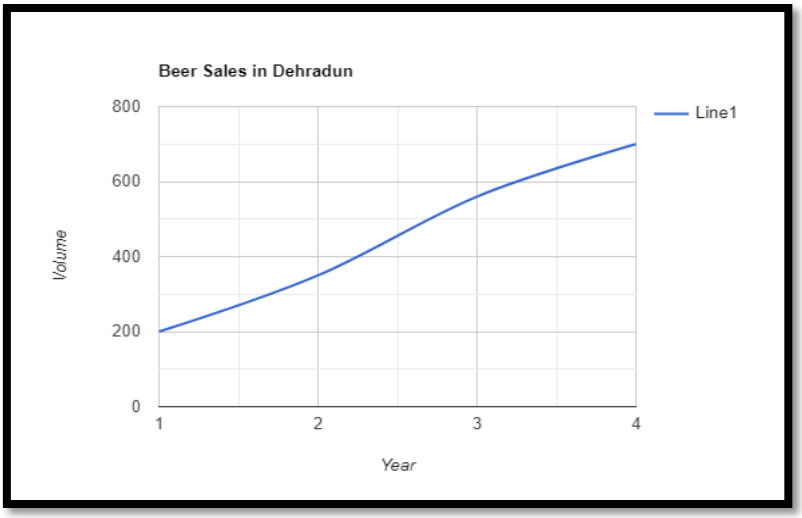
Histogram - A histogram is a way of summarizing data that are measured on an interval scale (either discrete or continuous). It is often used in exploratory data analysis to illustrate the features of the distribution of the data in a convenient form.



Line graph - A line graph is particularly useful when we want to show the trend of a variable over time. Time is displayed on the horizontal axis (x-axis) and the variable is displayed on the vertical axis (y- axis).

A) DESCRIPTIVE MEASURES:

Measures of central tendency and dispersion are common descriptive measures for summarizing numerical data.



1. Measures of central tendency: Measures of central tendency are measures of the location of the middle or the center of a distribution. The most frequently used measures of central tendency are the mean, median and mode.

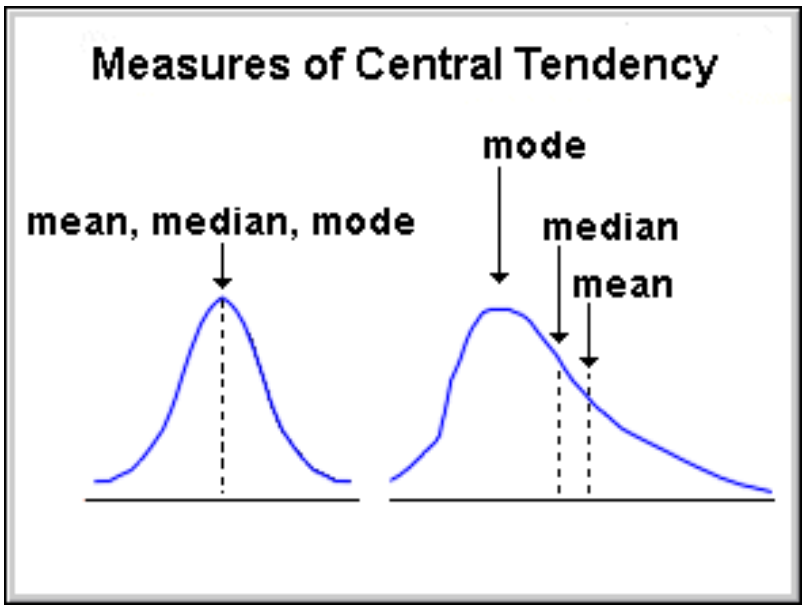
The mean is obtained by summing the values of all the observations and dividing by the number of observations. Add up values and divide by number of values.

$$x = \frac{\sum x}{n}$$

The median (also referred to as the 50th percentile) is the middle value in a sample of ordered values. Half the values are above the median and half are below the median. It is the middle value of data when ranked.

The mode is a value occurring most frequently. It is rarely of any practical use for numerical data. Figure that appears most often in the data

A comparison of the mean, median and mode can reveal information about skewness, as illustrated in figure below. The mean, median and mode are similar when the distribution is symmetrical. When the distribution is skewed the median is more appropriate as a measure of central tendency.



2. Measures of Dispersion:

A measure of dispersion is a numerical value describing the amount of variability present in a data set.

The standard deviation (SD) is the most commonly used measure of dispersion. With the SD you can measure dispersion relative to the scatter of the values about their mean.

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

The range can also be used to describe the variability in a set of data and is defined as the difference between the maximum and minimum values. The range is an appropriate measure of dispersion when the distribution is skewed.

CHECK YOUR PROGRESS-II

1. What pie chart?

2. Write a note on 'Histogram'.

3.9 Data Analysis Methods:

Data analysis methods are as under:

- Qualitative Data Analysis
- Quantitative Data Analysis
- Manual Data Analysis
- Computerized Data Analysis

3.9.1 Qualitative Data Analysis

Qualitative Data Analysis can be defined as researcher's movement from quantitative data to qualitative i.e. when an interpretation, explanation or understanding is generated based on the quantitative data. This gives meaning and better elucidation of facts and figures presented in form of charts or graphs.

In general the following terms are indicative of qualitative data analysis:

- **Theory**: A set of interrelated concepts, definitions and propositions that presents a systematic view of events or situations by specifying relations among variables.

- **Themes**: Clear-cut ideas that emerge from grouping of lower-level data points.

- **Characteristic**: It is the smallest unit of analysis i.e. a single item or event in a text, similar to an individual response to a variable or indicator in a quantitative research.

- **Coding**: The process of attaching labels to lines of text so that the researcher can group and compare similar or related pieces of information.

- **Coding sorts**: Compilation of similarly coded blocks of text from different sources in to a single file or report.

- **Indexing**: The process that generates a word list comprising all the substantive words and their location within the texts entered in to program.

QDA can be performed in two ways:

Deductive Approach: The research questions are used to group the data and then finding out the similarities and differences. It is used when time and resources are limited and when qualitative research is a smaller component of a larger quantitative study.

Inductive Approach: This is used when qualitative research is a major design of the inquiry. This uses emergent framework to group the data and then looks for relationships.

3.6.2 Quantitative Data Analysis

This is another systematic approach where the researcher converts or transforms the observations and collected information into numerical data. It is suited to surveys that are performed on a larger scale, are well administered and use carefully constructed questionnaire.

Different methods used are as follows:

- **Trend analysis:** As the name suggests it is interpretation of data that has been collected over a longer period of time thus making it easier to understand the changes that have come through. In this analysis usually one of the variables being studied remains constant.

- **Cross-tabulation:** This method used a basic table to draw inferences between different data sets available for a study. The qualities of data used are that they are either related to each other or are mutually exclusive.

- **SWOT analysis:** Strength, Weaknesses, Opportunities and Threats for a subject, individual, organization may be conducted to present a more holistic picture of competition. This is generally used when effective business strategies are to be formed.

- **MaxDiff analysis:** This is a method that is used in studying purchase preferences of customers and to understand why a particular factor is given more importance than other. E.g a sun and sand tourist would prefer cleaner and less crowded beaches compared to the beaches that have better availability of snacks and drinks options.

- **Conjoint analysis:** Like in the above method, conjoint analysis is a similar quantitative data analysis method that analyzes parameters behind a purchasing decision. This method possesses the ability to collect and analyze advanced metrics which provide an in-depth insight into purchasing decisions as well as the parameters that rank the most important.

- **TURF analysis:** Total Unduplicated Reach and Frequency Analysis is used when researcher has to find out the market reach of a product or service or a mix of both. It is helpful to develop a marketing plan when a product or service is exclusive yet has limited buyers.

- **Text analysis:** It is an advanced statistical method where unstructured raw data is collected and then it has to be converted into structured form for clearer understanding. Open ended questionnaires provide data that needs conversion to statistical units for correct analysis thus Text Analysis method is appropriate as it uses intelligent tools.

- **Gap analysis:** When it is important to understand the differential between actual and perceived values of a product or service gap analysis method is applicable. E.g. a guest may order a flashy looking cocktail perceiving light taste but may end up getting a drink that has stronger taste.

Manual Data Analysis: This analysis is suitable when there are limited variables and the number of respondents is also very small. This is applicable when simple cross tabulations are done and also it is needed to calculate frequency distribution. The easiest way to do this is to code it directly onto large graph paper in columns. Each column can be given a number or a distinctive heading to identify and code information corresponding to the question. This analysis begins with manually counting various codes in a column and then decode them. For statistical testing manual calculation is done depending on the researcher's expertise and how the results need to be communicated.

Computerized Data Analysis: Computerized data analysis needs the user to be familiar with appropriate programs to be used along with an understanding of systems, statistical data and software available. The most common software is SPSS for windows. However, data input can be long and laborious process, and if data is entered incorrectly, it will influence the final results.

CHECK YOUR PROGRESS-III

1. Write a note on 'Qualitative Data Analysis'?

2. Write a note on 'Quantitative Data Analysis'.

3.10 Summary

Processing and analyzing data involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing these in a manner that they answer the research questions (objectives). ***Manual Data Analysis*** is suitable when there are limited variables and the number of respondents is also very small. This is applicable when simple cross tabulations are done and also it is needed to calculate frequency distribution. The easiest way to do this is to code it directly onto

large graph paper in columns. Each column can be given a number or a distinctive heading to identify and code information corresponding to the question. This analysis begins with manually counting various codes in a column and then decode them. For statistical testing manual calculation is done depending on the researcher's expertise and how the results need to be communicated. ***Computerized Data Analysis*** needs the user to be familiar with appropriate programs to be used along with an understanding of systems, statistical data and software available. The most common software is SPSS for windows. However, data input can be long and laborious process, and if data is entered incorrectly, it will influence the final results.

3.11 Glossary

Body or field: The body of a table is the content of a table in its entirety. Each item in a body is known as a 'cell'.

Caption: A caption is the title of a column in the data table. In fact, it is a counterpart if a stub and indicates the information contained in a column.

Characteristic: It is the smallest unit of analysis i.e. a single item or event in a text, similar to an individual response to a variable or indicator in a quantitative research.

Coding sorts: Compilation of similarly coded blocks of text from different sources in to a single file or report.

Coding: The process of attaching labels to lines of text so that the researcher can group and compare similar or related pieces of information.

Computerized Data Analysis: Computerized data analysis needs the user to be familiar with appropriate programs to be used along with an understanding of systems, statistical data and software available. The most common software is SPSS for windows. However, data input can be long and laborious process, and if data is entered incorrectly, it will influence the final results

Conjoint analysis: Like in the above method, conjoint analysis is a similar quantitative data analysis method that analyzes parameters behind a purchasing decision. This method possesses the ability to collect and analyze advanced metrics which provide an in-depth insight into purchasing decisions as well as the parameters that rank the most important.

Cross-tabulation: This method used a basic table to draw inferences between different data sets available for a study. The qualities of data used are that they are either related to each other or are mutually exclusive.

Footnotes: Footnotes are rarely used. In effect, they supplement the title of a table if required.

Gap analysis: When it is important to understand the differential between actual and perceived values of a product or service gap analysis method is applicable. E.g. a guest

may order a flashy looking cocktail perceiving light taste but may end up getting a drink that has stronger taste.

Head notes: A headnote further aids in the purpose of a title and displays more information about the table. Generally, headnotes present the units of data in brackets at the end of a table title.

Indexing: The process that generates a word list comprising all the substantive words and their location within the texts entered in to program.

Manual Data Analysis: This analysis is suitable when there are limited variables and the number of respondents is also very small. This is applicable when simple cross tabulations are done and also it is needed to calculate frequency distribution. The easiest way to do this is to code it directly onto large graph paper in columns. Each column can be given a number or a distinctive heading to identify and code information corresponding to the question. This analysis begins with manually counting various codes in a column and then decode them. For statistical testing manual calculation is done depending on the researcher's expertise and how the results need to be communicated.

MaxDiff analysis: This is a method that is used in studying purchase preferences of customers and to understand why a particular factor is given more importance than other. E.g a sun and sand tourist would prefer cleaner and less crowded beaches compared to the beaches that have better availability of snacks and drinks options.

Source: When using data obtained from a secondary source, this source has to be mentioned below the footnote.

Stubs: These are titles of the rows in a table. Thus a stub display information about the data contained in a particular row.

SWOT analysis: Strength, Weaknesses, Opportunities and Threats for a subject, individual, organization may be conducted to present a more holistic picture of competition. This is generally used when effective business strategies are to be formed.

Table Number: Each table should have a specific table number for ease of access and locating. This number can be readily mentioned anywhere which serves as a reference and leads us directly to the data mentioned in that particular table.

Text analysis: It is an advanced statistical method where unstructured raw data is collected and then it has to be converted into structured form for clearer understanding. Open ended questionnaires provide data that needs conversion to statistical units for correct analysis thus Text Analysis method is appropriate as it uses intelligent tools.

Themes: Clear-cut ideas that emerge from grouping of lower-level data points.

Theory: A set of interrelated concepts, definitions and propositions that presents a systematic view of events or situations by specifying relations among variables.

Title: A table must contain a title that clearly tells the readers about the data it contains, time period of study, place of study and the nature of classification of data.

Trend analysis: As the name suggests it is interpretation of data that has been collected over a longer period of time thus making it easier to understand the changes that have come through. In this analysis usually one of the variables being studied remains constant.

TURF analysis: Total Unduplicated Reach and Frequency Analysis is used when researcher has to find out the market reach of a product or service or a mix of both. It is helpful to develop a marketing plan when a product or service is exclusive yet has limited buyers.

3.12 References/Bibliography

- *Kumar Ranjit: Research Methodology: A Step by Step Guide for Beginners*, Sage Publication, 2014.
- Kothari C.R. : Research Methodology, New Age International, 2011.
- Shajahan S. : Research Methods for Management, 2004.
- Thanulingom N : Research Methodology, Himalaya Publishing
- C. Rajendar Kumar : Research Methodology , APH Publishing
- J. R. Brent Ritchie, Charles R. Goeldner **:** Travel, Tourism, and Hospitality Research: A Handbook for Managers and Researchers, Wiley Publishers Publishers Ltd, UK

3.13 Suggested Readings

- Dawson, Catherine, 2002, *Practical Research Methods*, New Delhi, UBS Publishers' Distributors,
- Kothari, C.R.,1985, *Research Methodology-Methods and Techniques,* New Delhi, Wiley Eastern Limited.
- Kumar, Ranjit, 2005, *Research Methodology-A Step-by-Step Guide for Beginners*, (2nd.ed), Singapore, Pearson Education
- Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th Edition, by John W. Creswell (Author)
- The SAGE Handbook of Qualitative Research (Sage Handbooks) 4th Edition, by Norman K. Denzin (Editor), Yvonna S. Lincoln (Editor)
- Research an Introduction: Robert Ross

3.14 Terminal Questions

1. What do you mean by terms editing of data? Explain
2. What is coding of Data?
3. What is tabulation of data?

4. What do you mean by graphical representation of data?
5. What are different types of Graphs? Explain each type with example.
6. What do you mean by analysis of Data?

UNIT 4:
REPORT WRITING

Structure

4.1 Introduction

A report is a written explanation of something that one has observed, heard, done, or investigated. It is a systematic and well organized presentation of facts and findings of an event that has already taken place somewhere or has been found out after an in-depth study has been conducted.

4.2 Objectives

After reading this unit the learner will be able to understand:

- Types and steps involved in writing report
- Layout of the research report
- Mechanics of writing a research report
- Challenges of a good writing

4.3 Types and steps involved in writing report

Reports are used as a form of written assessment to find out what has been learnt from reading, researching or experiencing an important skill that is widely used in the work place. Good report writing is an important quality for any researcher as this also presents the findings to the readers outside your subject area with the experts in the field. It focuses on the findings, conclusions, discoveries made, efforts made and inferences drawn from the research study conducted. The report should be written in a simple but

scholastic style. The language should be formal and not like the one used in media publications.

A good research report has the following functions: (**Bhim Chimoriya**-March 09, 2017)

1. To provide the information regarding the findings of research work i.e. methods, data analysis, conclusion and so on in the systematic, scientific and accepted way.
2. To elicit crucial facts for solution derived and decision making.
3. To prove the worth and legitimacy of assigned research job.
4. To provide the judgement tools for the judgement of quality and talent of researcher within and outside the academia.
5. To communicate the research findings professionally.
6. To pertain the credibility of the research.
7. To develop appreciation of standards, consolidate arguments and identify the knowledge gaps.

Technical Report: In the technical report the main emphasis is on the methods employed, assumptions made in the course of the study and the detailed presentation of the findings including their limitations and supporting data. E.g, the project reports when a hotel is being conceptualised.

Formal or Informal Reports: A formal report has a carefully drafted structure, clear objectives, is organized and has sufficient details to let the reader understand the concepts. These are written using non personal elements whereas an informal report can be direct, short with casual language e.g. an inter office communication via a notice or memorandum.

Popular Report: The highlights of this report are simplicity and attractiveness. The simplification is done by clear writing, minimization of technical, particularly mathematical, details and liberal use of charts and diagrams. Attractive layout along with large print, many subheadings, even an occasional figurine is another characteristic feature of the popular report.

Informational or Analytical Reports: Informational reports (annual reports, monthly financial reports, and reports about personnel) carry objective information from one area of an organization to another. Analytical reports (scientific research, feasibility reports, and real-estate appraisals) present attempts to solve problems.

Proposal Report: The proposal is a variation of problem-solving reports. A proposal is a document prepared to describe how one organization can meet the needs of another. Most governmental agencies advertise their needs by issuing "requests for proposal" or RFPs. The RFP specifies a need and potential suppliers prepare proposal reports telling how they can meet that need.

Vertical or Lateral Reports: Any reports that move upward or downward the hierarchies are referred to as vertical reports; such reports contribute to management control. Lateral reports, on the other hand, assist in coordination in the organization. A report traveling between units of the same organization level (production and finance departments) is lateral.

Internal or External Reports: Internal reports are circulated within the organization e.g. the reports circulated in the morning meeting of managers at a hotel. External reports, such as annual reports of companies, are prepared for distribution outside the organization e.g. a report showing the growth, popularity of a hotel brand in comparison to others.

Periodic Reports: The reports generated on scheduled intervals for guiding the management to exercise better control. The format is unusually pre-printed and system generated so that they are uniform in nature.

Functional Reports: This classification includes accounting reports, marketing reports, financial reports, and a variety of other reports that take their designation from the ultimate use of the report. Almost all reports could be included in most of these categories. And a single report could be included in several classifications.

i. **Preprinted Form: These are like fill in the blank** reports, relatively short (five or fewer pages) and deal with routine information, mostly numerical information.
ii. **Letter:** Shorter reports that are aimed to develop an understanding in the people outside the organization. These reports include all the normal parts of a letter, but they may also have headings, footnotes, tables, and figures. Personal pronouns are used in this type of report.
iii. **Memo:** Common for short (fewer than ten pages) informal reports distributed within an organization. The memo format of "Date," "To," "From," and "Subject" is used. Like longer reports, they often have internal headings and sometimes have visual aids.
iv. **Manuscript:** These are the reports that range from a few pages to several hundred pages and require a formal approach. As their length increases, reports in manuscript format require more elements before and after the text of the report.

CHECK YOUR PROGRESS-I

1. What are different types of report?

2. Write a note on 'Steps in writing report'.

4.5 Mechanics of writing a research report

RESEARCH REPORT FORMAT

Traditional written reports tend to be produced in the following format.

1. Title Page

a) Title of the Research Project,
b) Name of the researcher,
c) Purpose of the research project, e.g. "A research project submitted in partial fulfillment of the requirements of Uttarakhand Open University, for the degree of …… in……..
d) Date of Publication

2. Table of Contents

In this section contents of the report are listed as they appear in the report, either in chapters or in subheadings e.g.

Contents **Page No.**

3. **Acknowledgements: In this section t**he researcher may acknowledge Institution Head, Faculty Guides, research participants, friends etc.

4. **Introduction** This section introduces the research setting out aims and objectives. It includes a rationale for the research.

5. **Chapter I Theoretical Framework and Review of Related Literature**

6. **Chapter II Research Design**

7. **Chapter III Data Analysis and Interpretation**

8. **Chapter IV Summary and Conclusion**

9. **Suggestions/ Recommendations for Further Research**

10. **References/ Bibliography**

11. **Appendices**

12. **Appendix I Questionnaire for Employees**

13. **Appendix II Questionnaire for Managers**

14. **List of Tables:** This section includes title and page number of all tables.

Table No.	Title	Page No.

15. **Details about respondents** (Demographic, Economical, Geographical, etc. relevant to justify the data collected for study).

16. **List of Figures:** This section contains title and page number of all graphs, pie charts etc.

Figure No.	Title	Page No.

REPORT WRITING TITLES MAY BE UNDERSTOOD AS FOLLOWS:

Theoretical Framework and Review of Literature

This section covers the sources of information and background research done by referring to the literature available. A good researcher keeps the details of all the sources and literature referred and should ensure giving suitable references wherever necessary to

avoid being accused for plagiarism i.e. breach of copyrights, unauthorized copying, or illegal use of information. The Harvard System is generally used to quote reference to a particular book, a chapter in the book, or an article in the journal.

Research Design:
This section assists the other researchers to follow and replicate the study being presented. All the practical methods used to select the population, area, collecting the data, selecting the respondents, selecting sample sizes, and methods of analysis used for these are presented in research design.

Data Analysis and Interpretation:
This is one of the most important sections of the report as it contains all the relevant information pertaining to the presentation of data in the study conducted e.g. tables, charts, graphs, statistical data charts, figures etc when it is quantitative research and a narrative prose or write uo describing the findings if it's a qualitative research.

Summary and Conclusion:
This is the chapter where the findings are summed up to draw conclusions from them, perhaps in relation to other research or literature.

Recommendations
If you have conducted a piece of research for a hotel or any other client organization, this section could be the most important part of the report. A list of clear recommendations which have been developed from the research is included- sometimes this section is included at the beginning of the report.

Suggestion for Further Research
This section helps the researcher to make the readers understand the broader scope of research that may be taken up next. It also brings forward the unanswered questions, new questions about the study, newer scopes, and the findings that may seem inconclusive.

E.g. while closing a report on slow down in a hotel's business the report may highlight the failure in terms of innovation by the hotel and non - inclusion of facilities offered by rival brands.

List of References /Bibliography

- List of references contains details only of those works cited in the text.
- A bibliography includes sources not cited in the text but which are relevant to the subject. (dissertations or thesis)
- Small research projects will need only a reference section detailing the literature referred in the report.

The popular referencing system **Harvard System** lists books and periodicals in the following manner:

For Books
1. Authors surname (alphabetically), followed by their initials,

2. Date of publication
3. Title of book in italics
4. Place of publication, Publisher. E.g. Philip, T.E.; 1986, *Modern Cookery for Teaching and Trade,* Mumbai, Orient Longman.

For Journal Article:
The title of the article appears in inverted commas and name of the journal comes in italics, followed by volume number and pages of the article. e.g. Philip, T.E.; "Influence of British Raj on Indian Cuisine"; *Journal of Hospitality Education*; 5:5-11

Appendices:
The pilot and final questionnaires constructed for a study and the interview schedule for research etc should be included as an appendix. Appendices do not count towards your total number of pages/words. It is a useful way of including relevant material so that the examiner can gain a deeper understanding of your work by reading it.

EDITING OF REPORTS USING EXTERNAL SOURCES:

a) **Substantive Editing**

This is the most comprehensive and articulated form of editing that includes evaluating the complete document and also looks into the acceptability of problems of structure, organization, coherence, and logical consistency. Language used is edited, sentences are added or removed, . Paragraphs may be rewritten, condensed, or expanded. Blocks of text may be moved from one section to another.

b) **Copy editing**

The editor corrects problems of grammar, style, repetition, word usage, and jargon. Copy editing includes one revision at no additional charge.

c) **Proofreading**

Proofreading is the lightest form of editing. Minor errors are corrected. Minor errors include:

- Errors of grammar and style (e.g. verb tense, units of measurements, use of numerals and words such as "10" or "ten")
- Errors of capitalization, punctuation (e.g. the use of commas, semicolons, colons, periods, dashes, apostrophes)
- Errors of spelling and word usage (e.g., no/ know, then/than).

d) **Formatting**

The editor will amend document text to ensure that it complies with the required format, such as the format required by a specific journal.

e) **References/Literature Cited**

Literature citations are checked to ensure that each citation that appears in the text is also included in the list of citations. Citations are also checked to ensure that each citation that appears in the list of citations also appears in the text. The format of the citations are corrected so that it conforms with requirements, such as the style preferred by a specific journal.

f) **Other documents**

Other documents also may be edited. For example, the editor may rework tables, figures, and figure legends to represent the data more clearly.

g) **Review**

The editor may provide a one to two page diagnosis of the manuscript that highlights the areas where changes might be most beneficial. Criticisms that are likely to arise during peer review, such as repetitive, ambiguous, or incomplete information, will be noted. A review includes proofreading at no charge. Turnaround time must be negotiated.

TYPING AND BINDING OF RESEARCH PROJECT REPORT:

Paper: Bond Paper (need not be executive bond)
Size: 8.5inches X 11 inches
Margin: Left- 1.5 inch
Top- 1 inch
Bottom 1 inch
Right 1 inch
Font: Times New Roman
Font Size: 12
Spacing: Double
Binding: Black / Blue Soft Rexene
Gold / Silver Embossing on Cover:

Research Title
Student Name
Name of Institute
Year of Submission

4.6 CHALLENGES OF A GOOD WRITING

1. **Choosing the Right Topic:** The importance of selecting the right topic is crucial for all steps to follow in a research study. A researcher has to evaluate the available resources and then decide atopic to which expected justification can be assured. Most of the content available related to the topic has to be read and made note of for future referencing.

   If a theoretical framework that supports the study can be filtered down it proves to be authoritative in later stages. The topic should be providing constant motivation for the

researcher so that the study seems doable and interesting in the longer duration. A niche for differentiation should be looked for and asking for input from experts from the field of study shall always help in finalizing minute details.

2. **Choosing the Right Methodology:** Selecting appropriate methodology is imperative for a good research work. But this selection mostly defends on right questions being framed. Quantitative and qualitative research works shall have different methodologies depending on the topic and resources. The questions that include words such as "explore," "understand," and "generate," suggest that the study is qualitative. Whereas words such as "compare," "relate," or "correlate" suggest that it is a quantitative study. Assess from whom the data is to be collected from, how the collection would be done and what shall be the tools for analysis of this information.

3. **Developing a Research Team:** Savage suggests that you "cultivate friendships with people who are going to help you think critically" about your topic. These people are invaluable for helping you consider your idea from a different angle or perspective. A good research team would also ensure collection of genuine data, honesty in analysis and guidance in case a change is necessary. The team should be clear and in unison with the reearcher's idea of study.

4. **Selecting the respondents for the study:** It is always the biggest of challenges to select the respondents suitable to the study as they shall ensure the results and findings are suitable to the study. E.g. to study the facilities and services required for a five star hotel needs the respondents used to visiting such hotels instead of general public who has no or a vague idea of services and products offered by a hotel in such category. Using personal networks and contacts are fruitful in getting respondents who shall listen and understand the demands of the researcher thereby saving the cost also.
5. **Reaching out to establishments to contribute in research work:** Researcher may face challenges when the respondents are associated to the organisations which may be useful to support the field of study. It has to be ensured that no controversial or confidential information is solicited and the respondents are aware that due approvals have been taken from such organisation. This can also be done by contacting an agency or a body that can connect to the respondent organisation on behalf of the researcher. A formal but long lasting collaboration or professional relationship with such organisations leads to better outcomes.

6. **Self Motivation:** This is important because many studies may take longer than expected to be concluded. The respondents may become non cooperative, or slow in responding, the resources may run out, their attitudes may change thus making it difficult for researcher to move forward. This calls for self motivation and positive approach and to be passionate.

7. **Data assimilation and analysis:** Once the process of data collection is nearing completion it becomes important to make this data work for the researcher i.e. it should be tabulated in such a way that it starts making sense. Here the methodology

adopted should be referred time and again. The data should be presented in a way that it demonstrates how the research adds to the body of knowledge. Making use of technology and software available eases out this function. The bias in any form should be looked into and taken care of by generalising it as per population.

CHECK YOUR PROGRESS-II

1. What challenges one faces while writing good report?

4.7 Summary

Reports are used as a form of written assessment to find out what has been learnt from reading, researching or experiencing an important skill that is widely used in the work place. Good report writing is an important quality for any researcher as this also presents the findings to the readers outside your subject area with the experts in the field. It

focuses on the findings, conclusions, discoveries made, efforts made and inferences drawn from the research study conducted. The report should be written in a simple but scholastic style. The language should be formal and not like the one used in media publications.

4.8 Glossary

Appendices: The pilot and final questionnaires constructed for a study and the interview schedule for research etc should be included as an appendix. Appendices do not count towards your total number of pages/words. It is a useful way of including relevant material so that the examiner can gain a deeper understanding of your work by reading it.

Data Analysis and Interpretation: This is one of the most important sections of the report as it contains all the relevant information pertaining to the presentation of data in the study conducted e.g. tables, charts, graphs, statistical data charts, figures etc when it is quantitative research and a narrative prose or write uo describing the findings if it's a qualitative research.

For Journal Article: The title of the article appears in inverted commas and name of the journal comes in italics, followed by volume number and pages of the article. e.g. Philip, T.E.; "Influence of British Raj on Indian Cuisine"; *Journal of Hospitality Education*; 5:5-11

Formal or Informal Reports: A formal report has a carefully drafted structure, clear objectives, is organized and has sufficient details to let the reader understand the concepts. These are written using non personal elements whereas an informal report can be direct, short with casual language e.g. an inter office communication via a notice or memorandum. Functional Reports: This classification includes accounting reports, marketing reports, financial reports, and a variety of other reports that take their designation from the ultimate use of the report. Almost all reports could be included in most of these categories. And a single report could be included in several classifications.

Informational or Analytical Reports: Informational reports (annual reports, monthly financial reports, and reports about personnel) carry objective information from one area of an organization to another. Analytical reports (scientific research, feasibility reports, and real-estate appraisals) present attempts to solve problems.

Internal or External Reports: Internal reports are circulated within the organization e.g. the reports circulated in the morning meeting of managers at a hotel. External reports, such as annual reports of companies, are prepared for distribution outside the organization e.g. a report showing the growth, popularity of a hotel brand in comparison to others.

Letter: Shorter reports that are aimed to develop an understanding in the people outside the organization. These reports include all the normal parts of a letter, but they may also

have headings, footnotes, tables, and figures. Personal pronouns are used in this type of report.

Manuscript: These are the reports that range from a few pages to several hundred pages and require a formal approach. As their length increases, reports in manuscript format require more elements before and after the text of the report.

Memo: Common for short (fewer than ten pages) informal reports distributed within an organization. The memo format of "Date," "To," "From," and "Subject" is used. Like longer reports, they often have internal headings and sometimes have visual aids.

Periodic Reports: The reports generated on scheduled intervals for guiding the management to exercise better control. The format is unusually pre-printed and system generated so that they are uniform in nature.

Popular Report: The highlights of this report are simplicity and attractiveness. The simplification is done by clear writing, minimization of technical, particularly mathematical, details and liberal use of charts and diagrams. Attractive layout along with large print, many subheadings, even an occasional figurine is another characteristic feature of the popular report.

Preprinted Form: These are like fill in the blank reports, relatively short (five or fewer pages) and deal with routine information, mostly numerical information.

Proposal Report: The proposal is a variation of problem-solving reports. A proposal is a document prepared to describe how one organization can meet the needs of another. Most governmental agencies advertise their needs by issuing "requests for proposal" or RFPs. The RFP specifies a need and potential suppliers prepare proposal reports telling how they can meet that need.

Recommendations: If you have conducted a piece of research for a hotel or any other client organization, this section could be the most important part of the report. A list of clear recommendations which have been developed from the research is included-sometimes this section is included at the beginning of the report.

Research Design: This section assists the other researchers to follow and replicate the study being presented. All the practical methods used to select the population, area, collecting the data, selecting the respondents, selecting sample sizes, and methods of analysis used for these are presented in research design.

Suggestion for Further Research: This section helps the researcher to make the readers understand the broader scope of research that may be taken up next. It also brings forward the unanswered questions, new questions about the study, newer scopes, and the findings that may seem inconclusive.

Summary and Conclusion: This is the chapter where the findings are summed up to draw conclusions from them, perhaps in relation to other research or literature.

Technical Report: In the technical report the main emphasis is on the methods employed, assumptions made in the course of the study and the detailed presentation of the findings including their limitations and supporting data. E.g, the project reports when a hotel is being conceptualised.

Theoretical Framework and Review of Literature: This section covers the sources of information and background research done by referring to the literature available. A good researcher keeps the details of all the sources and literature referred and should ensure giving suitable references wherever necessary to avoid being accused for plagiarism i.e. breach of copyrights, unauthorized copying, or illegal use of information. The Harvard System is generally used to quote reference to a particular book, a chapter in the book, or an article in the journal.

Vertical or Lateral Reports: Any reports that move upward or downward the hierarchies are referred to as vertical reports; such reports contribute to management control. Lateral reports, on the other hand, assist in coordination in the organization. A report traveling between units of the same organization level (production and finance departments) is lateral.

4.9 References/Bibliography

- Dawson, Catherine, 2002, *Practical Research Methods,* New Delhi, UBS Publishers' Distributors,
- Kothari, C.R.,1985, *Research Methodology-Methods and Techniques,* New Delhi, Wiley Eastern Limited.
- Kumar, Ranjit, 2005, *Research Methodology-A Step-by-Step Guide for Beginners*, (2nd.ed), Singapore, Pearson Education
- Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th Edition, by John W. Creswell (Author)
- The SAGE Handbook of Qualitative Research (Sage Handbooks) 4th Edition, by Norman K. Denzin (Editor), Yvonna S. Lincoln (Editor)
- Research an Introduction: Robert Ross

4.10 Suggested Readings

- *Kumar Ranjit: Research Methodology: A Step by Step Guide for Beginners*, Sage Publication, 2014.
- Kothari C.R. : Research Methodology, New Age International, 2011.
- Shajahan S. : Research Methods for Management, 2004.
- Thanulingom N : Research Methodology, Himalaya Publishing
- C. Rajendar Kumar : Research Methodology , APH Publishing

- J. R. Brent Ritchie, Charles R. Goeldner **:** Travel, Tourism, and Hospitality Research: A Handbook for Managers and Researchers, Wiley Publishers Publishers Ltd, UK

4.11 Terminal Questions

1. List the steps involved in writing report.
2. What is Layout of the research report?
3. What challenges one faces while writing a good report?
4. Briefly explain the following:

a. Appendices
b. Data Analysis and Interpretation
c. For Journal Article
d. Formal or Informal Reports
e. Functional Reports
f. Informational or Analytical Reports
g. Internal or External Reports
h. Manuscript
i. Memo
j. Periodic Reports
k. Proposal Report
l. Research Design
m. Technical
n. Theoretical Framework and Review of Literature
o. Vertical or Lateral Reports