SYLLABUS
RESEARCH METHODOLOGY
MBA–3rd SEMESTER, M.D.U., ROHTAK

External Marks : 70 Internal Marks : 30
Time : 3 hrs.

UNIT - I

Introduction; meaning and nature of research; significance of research in business decision making, identification and formulation of research problem, setting objectives and formulation of hypotheses.

UNIT - II

Research design and data collection; research designs - exploratory, descriptive, diagnostic and experimental data collection; universe, survey population, sampling and sampling designs, data collection tools-schedule, questionnaire, interview and observation, use of SPSS.

UNIT - III

Scaling techniques; need for scaling, problems of scaling, reliability and validity of scales, scale construction techniques-arbitrary approach, consensus scale approach (Thurston), item analysis approach (Likert) and cumulative scales (Gut man's Scalogram).

UNIT - IV

Interpretation and report writing; introduction, meaning of interpretation, techniques and precautions in interpretation and generalisation report writing - purpose, steps and format of research report and final presentation of the research report.

RESEARCH METHODOLOGY

MBA 3rd Semester (DDE)

UNIT – I

Q. Define Research. Also explain its nature, objectives and Types.

Ans. Introduction : Research is an art of scientific investigation. Research covers the search for and retrieval of information for a specific purpose. Research has many categories, from medical research to literary research. Basically research is a search for truth with the help of some study, observation, comparison and experiments. It is search for knowledge with the help of objective and systematic method of finding solution to a problem.

Meaning of Research : Research in common man's language refers to "search for knowledge".

Research is simply the process of finding solution to a problem after a complete study and analysis of the situational factors.

Research is purposeful investigation. It provides a structure for decision making. It provides an analytical framework for the subject matter of investigation. It establishes the relationship between different variables, especially the relationship of the dependent variables with the valuable independent variables. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. Research is required because of the following reasons:

- To identify and find solutions to the problems
- To help making decisions
- To develop new concepts
- To find alternate strategies

(1) To identify and find solutions to the problems : Research is required to understand the problem in depth. For Example:

- Why is that demand for a product is falling?
- Why is there a business fluctuation once in three years?

By identify the problem as above; it is easy to collect the relevant data to solve the problem.

(2) To help making decisions : Research is helpful for making the decision. For example: Should we maintain the advertising budget same as last year? Research will answer this question.

(3) To find alternative strategies : Research is helpful to find alternative strategies. For example: Should we follow pull strategy or push strategy to promote the product.

(4) To develop new concepts.

Definition of Research:

According to P.M. Cook

"Research is an honest, exhaustive, intelligent searching for facts and their meanings for implications with reference to given problem. It is the process of arriving at dependable solutions to problems through the planned and systematic collection, analysis and interpretation of data. The best search is that which is reliable, verifiable and exhaustive so that it provides information in which we have confidence".

Characteristics of Research :– The characteristics of research are as follows: -

1. **Systematic Approach :–** Each step must on your investigation be so planned that it lead to the next step.
2. **Objectivity : –** It implies that true research should attempt to find an unbiased answer to the decision making problem. Its means true research have a pre-planned objective.
3. **Relevancy : –** A research should be relevant according to objective and according to information required for that. It furnishes three important tasks:-
   a) It avoids the collection of irrelevant data or information and saves money and time.
   b) It compares the information to be collected with researcher's criteria for action.
   c) It enables to see whether to research is proceeding in right direction.

Nature of Research : The nature of research are as follows :–

(1) Objective & Logical : – Research strives to be objective and logical, applying every possible test to validate the procedure employed, the data collected and the conclusion reached.

(2) Future Occurrence : – Research emphasizes the development of generalization, principles of theories that will be helpful in predicting future occurrences.

(3) Courage : – Research some times requires courage

(4) Solve the Problem : – Research is directed towards the solution of a problem. It may attempt to answer a question to determine the relation between two or more variables.

(5) Experiences :– Research is based upon observable experience

(6) Recording and reporting : – Research is carefully recorded and reported.

(7) Expertise : – Research requires expertise; the researcher knows what is already known about the problem and how others have investigated it.

(8) Collection of Data : – Research involves gathering new data from primary sources or using existing data for new purpose.

(9) Research demands accurate descriptions.

Objectives of Research : All researchers aim at finding answer to questions by applying certain scientific procedures. Research investigates the truth, which is hidden and tries to find solution to existing problem which have not been discovered yet. Different research studies have different purposes depending on nature and type of research. Generally, we have following categories of objectives of research:

(1) To investigate a Subject : Research is undertaken in a specific field of knowledge. It may be pure science or social science; one may be interested in verifying a fact or principle in any discipline of his choice like physics, chemistry, botany, commerce or economics. For that matter, every discipline is a body of knowledge. An activity undertaken to verify or revise these facts or principles becomes research.

(2) To collect the data regarding a problem : Research gathers new knowledge or data from primary or first hand sources. It is not research when on simply restates what is already known or what has been written. Research endeavors to research the first hand source of data instead of serving its purpose with the data available from second hand sources.

(3) To conduct logical and objective study : Research is logical and objective, applying every possible test to verify the data collected and the procedure employed. The researcher eliminates personal feelings and preferences from his research activity. He works with in the scope and relevance of his data.

(4) To conduct a systematic inquiry of the subject : Research is said to be a careful and systematic inquiry. It means that research is a scientific study of facts.

(5) For carefully recording, reporting and presenting the facts : Research is carefully recorded and reported. Every term is carefully defined, all procedures are described in details, all limiting factors are recognized, all references are carefully documented and all results are objectively recorded.

Types of Research : On the basis of the objectives of the research, we can classify research into following types:

(1) Applied Vs. Fundamental Research : Research can either be applied or fundamental. 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.

(2) **Descriptive vs. Analytical Research :** 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 present. In social science and business research, we quite often use the term Ex-post facto research for descriptive research studies. The main characteristics of this method are that the researcher has no control over the variable; he can only report what has happened or what is happening. Most ex-post facto research projects are used for descriptive studies in which the researcher seeks to measure such items :

- Frequency of Shopping
- Preference of people etc.

In analytical research, the researcher has to use facts or information already available and analyse these to make a critical evaluation of the material.

(3) **Quantitative vs. Qualitative Research :** Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. It is research methodology that seeks to quantity the data and typically applies some form of statistical analysis. Quantitative research is structured in nature and recommends a final course of action. Qualitative research, on the other hand, is concerned with qualitative phenomenon. Qualitative research is important in the behavioural sciences where the aim is to discover the underlying motives of human behaviour. Through such research we can analyse the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing.

(4) **Conceptual vs. Empirical Research :** Conceptual research is related to some abstract ideas of theory. It is generally used by philosophers and thinkers to develop new concepts. On the other hand, empirical research relies 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. We can also call it an experimental type of research.

(5) **Historical Research :** Any research which makes use of observations based on past events is known as historical approach.

Q. What do you mean by the Research? Explain it's significance in business decision making?

Ans: Introduction : Research is an art of scientific investigation. Research covers the search for and retrieval of information for a specific purpose. Research has many categories, from medical research to literary research. Basically research is a search for truth with the help of some study, observation, comparison and experiments. It is search for knowledge with the help of objective and systematic method of finding solution to a problem.

Meaning of Research : Research in common man's language refers to "search for knowledge".

Research is simply the process of finding solution to a problem after a thorough study and analysis of the situational factors.

Research is purposeful investigation. It provides a structure for decision making. It provides an analytical framework for the subject matter of investigation. It establishes the relationship between different variables, especially the relationship of the dependent variables with the valuable independent variables. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. Research is required because of the following reasons:

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Significance of Research in Business Decision Making

The role of research has greatly increased in the field of business and economy as a whole. In modern of development three factors increase the interest in a research to business decision making.

1. The manager's increased need for more and better information.
2. The availability of improved techniques and tools to meet this need.
3. The resulting information overload.

Role of research in important areas of business through research, an executive can quickly get a information of the current scenario. The following are the major key areas in which research play a key role in making effective decisions.

1. **Marketing : –** Marketing Research stimulates the flow of marketing data from the customers and his environment to Organization marketing research tools are applied effectively or studies of various variables and these are :–

   a) Demand forecasting

   b) Consumer buying behaviour

   c) Measuring advertising effectiveness

   d) Media selection for advertisement

   e) Product positioning

   f) Product potential

Marketing Research involves following : –

i) Product Research: - Assessment of suitability of goods with respect to design and price.

ii) Market Characteristics Research (Qualitative):- Who uses the product ?

Relationship between buyer and user, buying motive, how a product used, analysis of consumption rates, units in which product is purchases, consumer attitudes, brand loyalty etc.

iii) Size of Market: - Market potential, total sales quota, territorial sales quota, quota for individuals etc.

iv) Competitive position and trends research.

v) Sales Research: - Analysis of sales record.

vi) Distribution channel research.

vii) Advertising and promotion Research: - Testing and evaluating the promotion program.

viii) New product launching and product positioning

2. **Production : –** Research helps you in an enterprise to decide in the field of production on : –
   - What to produce
   - How much to produce
   - When to produce
   - From whom to produce

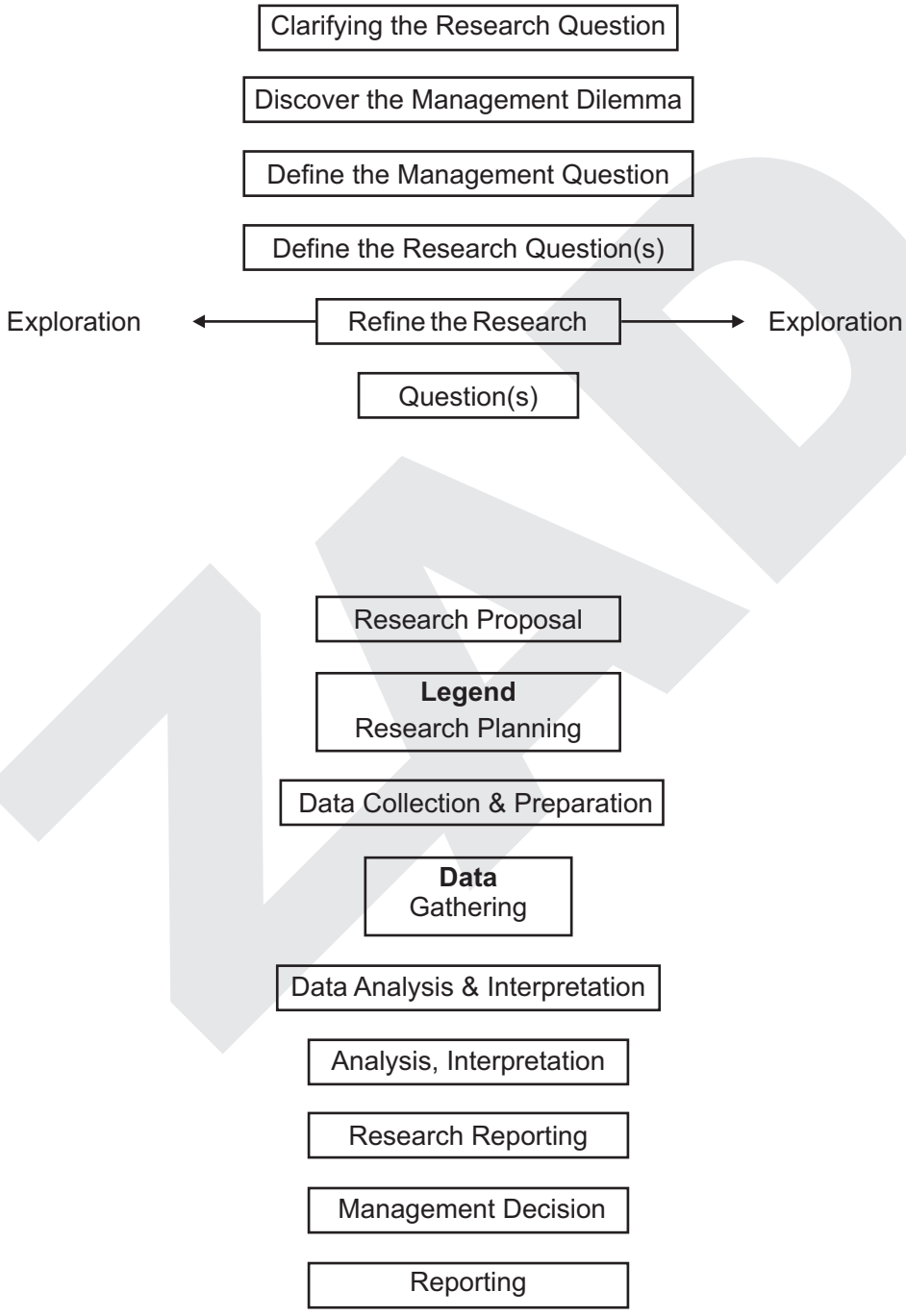
Some other areas you can apply
   - Product Development
   - Cost Reduction
   - Work Simplification
   - Profitability Improvement
   - Inventory Control

3. **Materials : –** The materials department uses research to create suitable policies regarding.
   - Where to buy?
   - How much to buy?
   - When to buy?
   - At what price to buy?

4. **Human Resource Development: -** H.R. Department uses the research for study.
   - Wages Rates
   - Incentive Schemes
   - Cost of Living
   - Employee Turnover Ratio
   - Employment Trends
   - Performance Appraisal

From these various points we can say that research is used in the business for the purpose of formulating efficient policies or purchasing, production and sales. Research with regard to demand and market actor has great utility in business. With above these points we can say that research is the important tool or the business decision making.

(Diagram)


Clarifying the Research Question
Discover the Management Dilemma
Define the Management Question
Define the Research Question(s)
Exploration
Refine the Research
Exploration
Question(s)
Research Proposal
Legend
Research Planning
Data Collection & Preparation
Data
Gathering
Data Analysis & Interpretation
Analysis, Interpretation
Research Reporting
Management Decision
Reporting

Q. Define Research Process.

Ans. Research Process : Research process can be explained with the help of following diagram:

RESEARCH PROCESS

STEPS	TASK TO BE PERFORMED
1. Formulation of Research Problem	Identification of Research Problem. Selection of Research Problem.
2. Review of Literature	Review of concepts & Theories Review of previous Research Findings
3. Formulation of Hypothesis	Discuss the Problem with colleagues Examine the data & Reports Developed tentative assumptions
4. Operationalisation of Concept	Define concept to be used in the study Construct Index Construct scale for measuring variables Operationalisation of concept
5. Preparation of the Research Plan/Research Design	The means of obtaining information. The availability and splits of the researchers. Explanation of the ways in which selected Means of obtaining information will be organized. Time Schedule Cost of Scheme
6. Determine the Sample Design.	Define Population Determine Sample Size Choosing the sample Techniques

7. Construction of the Tools for Data Collection	Observation Personal Interview Telephone Interview Questionnaire Schedule
8. Collection of data	Primary Source Secondary Source
9. Processing of Data	Editing Classification Coding Transcription or Decoding Tabulation
10. Analysis of Data	Percentage Average Time Series Analysis Index Number Analysis Use of other Statistical Tools
11. Hypothesis Testing	chi-square Test F-Test Z-Test T-Test
12. Interpretation and Generalization	Draw meaning from the analysis Reach to the conclusion See of the Conclusion are applicable Universally. Make Generalization.
13. Report Writing Or Dissertation	The Preliminary Pages Main Text Introduction Main Reports Summary & Findings Conclusion

Q. What is a Research problem? What are the steps involved in formulating the Problem?

Ans. Introduction : There is a famous saying that "Problem well defined is half solved". This statement is true in market research because if the problem is not stated properly, the objectives will not be clear. Once objective is not clearly defined, data collection becomes meaningless.

Meaning of Research Problem : A research problem, in general refers to some difficulty which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.

Characteristics of Research Problem:

(1) A basic characteristic of a research problem is that it is "researchable". Researchable problem is first one that can be investigated through the collection and analysis of data.

(2) A second major characteristic of a good problem is that it has theoretical or practical significance.

(3) A third major characteristic of a good problem is that it is a good problem for you.

Components of Research Problem:

(1) There must be an individual or a group which has some difficulty or the problem.

(2) There must be some objectives to be attained at. If one wants nothing, one cannot have a problem.

(3) There must be alternative means for obtaining the objectives one wishes to attain. This means that there must be at least two means available to a researcher for if he has no choice of means, he cannot have a problem.

(4) There must remain some doubt in the mind of a researcher with regard to the selection of alternatives.

(5) There must be some environment to which the difficulty pertains.

Defining and Formulating Research Problem:

(1) Statement of the problem in a general way : First of all the problem should be stated in a broad general way, keeping in view either some practical concern or some scientific or intellectual interest. For this purpose, the researcher must immerse himself thoroughly in the subject matter concerning which he wishes to pose a problem. In case of social research, it is considered advisable to do some field observation and as such the researcher may undertake some sort of preliminary survey. Then the researcher can himself state the problem.

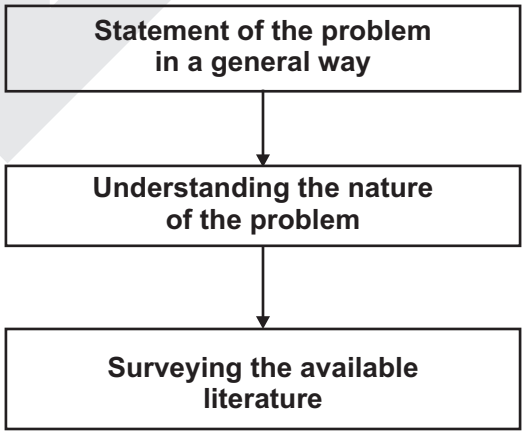
(2) **Understanding the nature of the problem :** The next step in defining the problem is to understand its origin and nature clearly. The best way of understanding the problem is to discuss it with those who first raised it in order to find out how the problem originally came about and with what objectives in view. If the researcher has stated the problem himself, he should consider once again all those points that induced him to make a general statement concerning the problem.

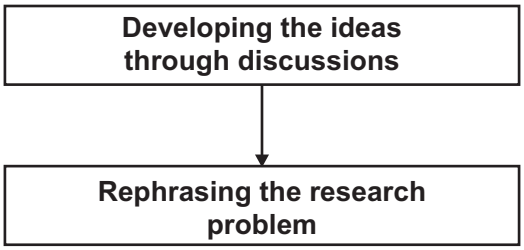
(3) **Surveying the available literature :** All available literature concerning the problem at hand must necessarily be surveyed and examined before a definition of the research problem is given. This means that the researcher must be well-conversant with relevant theories in the field, reports and records as also all other relevant literature. He must devote sufficient time in reviewing of research already undertaken on related problems. This is done to find out what data and other materials, if any, are available for operational purposes.

(4) **Developing the ideas through discussions :** Discussions concerning a problem often produces useful information. Various new ideas can be developed through such an exercise. Hence, a researcher must discuss his problem with his colleagues and others who have enough experience in the same area or in working on similar problem. This is quite often known as an experience survey.

(5) **Rephrasing the research problem :** Finally, the researcher must sit to rephrase the research problem into a working proposition. Once the nature of the problem has been clearly understood, the environment has been defined, discussion over the problem have taken place and the available literature has been surveyed and examined, rephrase the problem into analytical or operational terms is not a difficult task. Through rephrasing, the researcher puts the research problem in as specific terms as possible so that it may become operationally viable and may help in the development of working hypotheses.

This process can also be explained with the help of following diagram:





Q. Define Hypothesis. What is the procedure for testing of Hypothesis.

Ans. Meaning of Hypothesis : Ordinarily, when one talks about hypothesis, one simply means a mere assumption or some supposition to be proved or disproved. But for a researcher hypothesis is a formal question that he intends to resolve. Thus a hypothesis may be defined as a proposition or a set of proposition set forth as an explanation for the observed phenomenon.

Definition of Hypothesis:

According to George A. Lundberg

"A hypothesis is a tentative generalization, the validity of which remains to be tested. In its most elementary stage, the hypothesis may be a mere bunch, imaginative data which becomes the basis for action or investigation.

According to William E. Emory

"When propositions are formulated or empirically tested, they are called hypothesis. Propositions are combinations of concepts designated by statements that may be judged true or false, if they refer to observable phenomena.

Characteristics of Hypothesis:

(1) Clarity of Concepts : Concepts should not be abstract. If concepts are not clear, precise problem formulation will be difficult leading to difficulty in data collection. Concepts are important because it means different to different people.

(2) Specific/ Clear : Hypothesis should be clear and precise. If hypothesis is not clear and precise, the inferences drawn on its basis cannot be taken as reliable.

(3) Ability to Test : Hypothesis should be capable of being tested.

(4) Hypothesis should state relationship between variables, if it happens to be a relational hypothesis.

(5) Limited in Scope : Hypothesis should be limited in scope and must be specific. A researcher must remember that narrower hypotheses are generally more testable and he should develop such hypotheses.

(6) Hypothesis should be stated as far as possible in most simple terms so that the same is easily understandable by all concerned.

(7) **Consistent :** Hypotheses should be consistent.

(8) **Statistical Tools :** Hypothesis should be such that it is possible to use statistical techniques. Such as

- Anova
- Chi-Square Test
- T-Test
- Other non parametric tests

(9) **Logical :** If there is two or more hypothesis derived from the same basic theory they should not contradict each other.

(10) **Subjectivity :** Researchers subjectivity or his biased judgement should be eliminated from the hypothesis.

Sources of Hypothesis : Hypothesis can be derived from many sources:

(1) **Theory :** Theory on the subject can act as a source of hypothesis. We start of from a general premise and then formulate hypothesis.

Example : Providing employment opportunity is an indicator of social responsibility of a government enterprise from the above several hypothesis can be deduced.

(i) Public enterprise has greater social concern than other enterprise

(ii) People's perception of government enterprise is social concern.

(iii) Govt. enterprise helps in improving the life of less privileged people.

(2) **Observation :** People's behavior is observed. In this method we use observed behavior to infer the attitudes. This is an indirect method of attitude measurement.

(3) **Past Experience :** Here researcher goes by past experience to formulate the hypothesis.

(4) **Case Studies :** Case studies published can be used as a source for hypothesis. Normally this is done before the launch of a product to find customer taste and preferences.

Role of Hypothesis :

(1) Hypothesis helps to guide the investigator in the right direction.

(2) What is to be studied is clear to the researcher through hypothesis.

(3) The type of research be it exploratory, descriptive or causal is decided by the hypothesis

(4) Statistical techniques are determined.

Procedure for Testing of Hypothesis :

(1) State the Null Hypothesis as well as the alternative hypothesis : In the context of statistical analysis, we often talk about null hypothesis and alternative hypothesis.

- If we are to compare method **A** with method **B** about its superiority and if we proceed on the assumption that both methods are equally good, then this assumption is termed as null hypothesis. The null hypothesis is generally symbolized as **Ho.** Null hypothesis states that there is no difference between the parameter and the statistic that is being compared.
- As against this, we may think that the method **A** is superior or the method **B** is inferior, we are then stating what is termed as alternative hypothesis. The alternative hypothesis is generally symbolized as **Ha.**

Example : For example, let us assume the population **mean=100** and set up the hypothesis **μ=100.** This is called the null hypothesis and is denoted as;

Null Hypothesis Ho:μ= μ H0 =100

If our sample results do not support this null hypothesis, we should conclude that something else is true. What we conclude rejecting the null hypothesis is known as alternative hypothesis. If we accept **Ho,** then we are rejecting **Ha** and if we reject **Ho,** then we are accepting **Ha.** For **Ho:μ= μ H0 =100,** we may consider three possible alternative hypothesis as follows:

Alternative Hypothesis	To be read as follows
Ha:μ ? μ_{H0}	The alternative hypothesis is that the population means is not equal to 100
Ha:μ> μ_{H0}	The alternative hypothesis is that the population mean is greater than 100
Ha:μ< μ_{H0}	The alternative hypothesis is that the population mean is less than 100\

(2) Establish a level of Significance : This is a very important concept in the context of hypothesis testing. The level of significance signifies the probability of committing Type 1 error a is generally taken equal to 0.05. Sometimes the value is established as 0.01. , but it is at the discretion of the investigator to select its value, depending upon the sensitivity of the study. To illustrate per cent level of significance indicates that a researcher is willing to take 5 per cent risk of rejecting the Null Hypothesis when it happens to be true.

(3) Choosing a suitable test statistic : Now the researcher would choose amongst the various tests. Actually for the purpose of rejecting or accepting the null hypothesis, a suitable statistic called 'test statistics' is chosen. There are the following tests:

- Anova
- T-Test
- Chi-Square Test
- Other non parametric tests

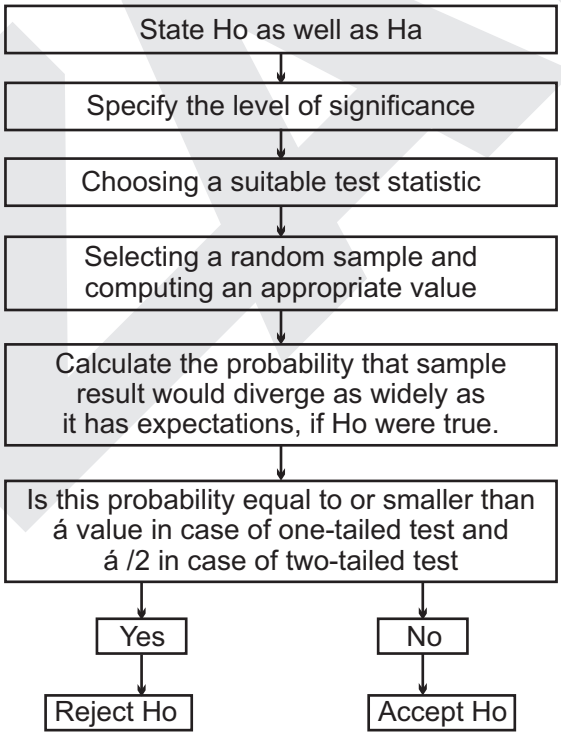
(4) Selecting a random sample and computing an appropriate value : Another step is to select a random sample and compute an appropriate value from the sample data concerning the test statistic utilizing the relevant distribution. In other words, draw a sample to furnish empirical data.

(5) Calculation of the probability : One has then to calculate the probability that the sample result would diverge as widely as it has from expectations, if null hypothesis were in fact true.

(6) Comparing the probability : Yet another step consists in comparing the probability thus calculated with the specified value for a, the significance level.

- If the calculated probability is equal to or smaller than the a value in case of one-tailed test, then reject the null hypothesis and accept the alternative hypothesis.
- If the calculated probability is greater than the a value in case of one-tailed test, then accept the null hypothesis and reject the alternative hypothesis

Flow Diagram for Hypothesis Testing:



RESEARCH METHODOLOGY

MBA 3rd Semester (DDE)

UNIT – II

Q. Define Research Design.

Ans. Decision regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design. There are many definitions of research design.

- Research design constitutes the blue print for the collection, measurement, and analysis of data.
- Research design aids the researcher in the allocation of limited resources by posting crucial choices in methodology.
- Research design is the plan and structure of investigation so conceived as to obtain answer to research questions.
- Research design is an agreement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

The research design decision happen to be in respect of:-

i) What is the study about?
ii) Why is the study being made?
iii) Where will the study be carried out?
iv) What type of data is required?
v) Where can the required data be found?
vi) What period of time will the study include?
vii) What should be sample design?
viii) What technique of data collection will be used?
ix) How will the data be analysed?
x) In what style will the report be prepaid?

In brief research design is a plan or contain

- A clear statement of research problem.
- Procedures and technique to be used for gathering data.

- The population to be studied.
- Methods to be used in processing and analyzing of data.

We can split the overall research design into following parts.

a) **Sample Design :–** It's deals with the method of selecting items to be observed for the given study.

b) **Observational Study :–** It's refers to the conditions under which the observation are to be made.

c) **Statistical Design :–** It's concerns with the questions of how much items are to be observed and how the informed and data gathered are to be analysed.

d) **Operational Design :–** It's deals with the techniques by which the procedures specified is sampling, observational and statistical designs can be carried out.

Importance and Need of Research Design: -

- **Minimize the Expenditure :–** Research design help to reduce the expenditure of effort, time and money by preparing the advance plan of all the research.
- **Smooth Flow of Research Operations :–** Just as for better, economical and attractive construction of a house we need a blue print and a map of that, similarly use need a blue print or a design for the smooth flow of the operation of research.
- **Provide an Overview to Other Experts :–** A research design provide a overview of all the research process and with the help of the design we can take the help and the views of the experts of that field.
- **It's Provide a Direction :–** A research design provide a proper or particular direction to the other executives and others who are helping us in to the process.

Q. What do you mean by Research Design and what are different types of RD?

Ans. The task of defining the research problem is preparation of the design of the research project, popularly known as the "Research Design". Decisions regarding what, where, when, how much by what means concerning an inquiry or a research study constitute a research design. "A RD is the management of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure".

RD is the conceptual structure within which research is conducted; it constitutes the blue print for the collection, measurement and analysis of data.

We can spilt the overall resign design into following parts:-

a) The sampling design which deals with the method of selecting items to be observed for the given study.

b) The observational design which relates to the conditions under which the observations are to be made.

c) The statistical design which concerns with the question of how many items are to be observed and how the information and data gathered are to be analysed, and

d) The operational design which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

So, we can say that the features of Research Design are:-

1. It's a plan that specifies the sources and types of information relevant to the research problem.
2. It's a strategy specifying which approach will be used for gathering and analysis the data.
3. It also includes the time and cost budgets since most studies are done under these two constraints.

So in brief, we can say that a Research Design, must contain:-

a) A clear statement of the research problem.

b) Procedures and techniques to be used for gathering information.

c) The population to be studied and

d) Methods to be used in processing and analyzing data.

Need for Research Design :–

Research design is needed because it facilitates the smooth scailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. Just as for better, economical and attractive construction of a house, we need a blueprint well thought out and prepared by an expert architect; similarly we need a research design or a plan in advance of data collection and analysis for our research project. Research design stands for advance planning of the methods to 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. Preparation of research design should be done with great case as any error in it may upset the entire project.

Research design, in fact, has a great bearing on the reliability of the results arrived at and as such constitutes the firm foundation of the entire edifice of the research work. Even then the need for a well thought out research design is at times not realized by many. The importance which this problem deserves is not gives to it. As a result many researches do not serve the purpose for which they are undertaken. In fact, they may even give misleading conclusions. Thoughtlessness in designing the research project may result in rendering the research exercise futile. It is, therefore imperative that an efficient and appropriate design

must be prepared before stetting research operations. The design helps the researcher to organize his ideas in a form whereby it will be possible for him to look for flaws and inadequacies. Such a design can even be given to others for their comments and critical evaluation. In the absence of such a course of action, it will be difficult for the critic to provide a comprehensive review of the proposed studies.

Features of Good Design

A good design is often characterized by adjectives like flexible, appropriate, efficient, and economical and so on. Generally, the design which minimizes bias and maximizes the reliability of the data collected and analysed is considered a good design. The design which gives the smallest experimental error is supposed to be the best design in many investigations. Similarly, a design which yields maximal information's provides an opportunity for considering many different aspects of a problem is considered most appropriate and efficient design in respect of many Research problems.

A Research design appropriate for a particular research problem, usually involves the consideration of the following factors:-

1. The means of obtaining information.
2. The availability and skills of the researcher and his staff, if any;
3. The objective of the problem to be studied,
4. The nature of the problem to be studied; and
5. The availability of time and money for the research work.

Types of Research Designs :–

1. Exploratory
2. Descriptive
3. Diagnostic and
4. Experimental Data Collection

1. **RD in case of Exploratory Research Studies :–** Exploratory Research Studies are also termed as FORMULATIVE RESEARCH Studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypothesis from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. As such the Research Design appropriate for such studies must be flexible enough to provide opportunity for considering different aspects of a problem under study. Inbuilt flexibility in Research design is needed because the research problem, broadly defined initially, is transformed into one with more precise meaning in exploratory studies, which fact may necessitate changes in the research procedure for gathering relevant data generally three methods in the context of RD for such studies are :-

1. Survey of concerning literature.
2. The experience survey and
3. The analysis of 'insight-stimulating' examples

1. The Survey of concerning Literature happens to be the most simple and fruitful method of formulating precisely the research problem or developing hypothesis. Hypothesis stated earlier workers may be reviewed and their usefulness be evaluated as a basis for further research. It may also be considered whether the already stated hypothesis suggest new hypothesis. In this way the researcher should review and build upon the work already done by others, but in cases where hypothesis have not yet been formulated, his task is to review the available material for deriving the relevant hypothesis from it.

2. Experience Survey means the survey of people who have had practical experience with the problem to be studied. The object of such a survey is to obtain insight into the relationships between variables and new ideas relating to the research problem. For such a survey people who are competent icon contribute new ideas may be carefully selected as respondents to ensure a representation of different types of experience. The so selected as may be interview by the investigator, the researcher must prepare an interview schedule for the systematic questioning of informants. But the interview must ensure flexibility in the sense that the respondents should be allowed to raise issues and questions which the investigator has not previously considered. This type of interview is likely to be long and may last for few hours. Thus an experience survey may enable the researcher to define the problem not concisely and help in the formulation of the research hypothesis. This survey may as well provide information about the practical possibilities for doing different type of research.

3. Analysis of 'Insight-Stimulating' for example is also a first method for suggesting hypothesis for research. It is particularly suitable in areas where there is little experience to serve as a guide. This method consists of the intensive study of selected instances of the phenomenon in which one is interested. For this purpose the existing records, if any, can be examined, the unstructured inter-viewing may take place. The intensity of study and the ability of researcher to draw together diverse information into a unified interpretation are the main features which make this method an appropriate procedure for evoking insights.

2. Research Design in case of Descriptive and Diagnostic Research Studies : Descriptive research studies are those which are concerned with describing the characteristics of a particular individual or of a group, whereas diagnostic determine the frequency with which something occurs or associate. The studies concerning whether certain variables are associated or not.

Most of social research comes under this category. From the point. of view of research design, the descriptive as well as diagnostic studies share common requirements and as such we may group together. These are two types of research studies.

In both, the researcher must be able to define clearly, what he wants to measure and must find adequate methods for measuring it along with a clear cut definition of population the wants to study. Since aim is to obtain complete and accurate information. The research design must make enough provision for protection against bias and must maximize reliability with due concern for economical completion of research study. Focus must be rigid not flexible.

a) Formulating the objective of study.

b) Designing the methods of data collection.

c) Selecting sample.

d) Collecting the data.

e) Processing the data.

f) Reporting the findings.

In both, the first step is to specify objectives with sufficient precision to ensure that the data collected are relevant. Then the selecting of methods by which data is to be obtained. Then next step is that researched take out sample or samples and then wishes to make the statements about the population on this basis. Then the data which are collected must be processed and analysed and includes steps like coding, observations etc. tabulating the date and performing computations and cost is to reporting the finding i.e. the task of communicating the findings to other and the researcher to do in efficient manes.

3. **Research Design in case of Hypothesis-Testing Research Studies :** Hypothesis-testing research studies and those where the researcher tests the hypothesis of casual relationship between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will drawing inferences about causality. Usually experiments meet this requirement. Hence, when we talk of Research Design is such studies; we often mean the design of experiment. Today these designs are being used in researcher relating to phenomena of several disciplines. Since experimental designs originated in the context of agricultural operations, we still use, though in a technical sense, several terms of agriculture in experimental designs.

Q. Define universe survey population and sample and census survey.

Ans. Universe or Population : All the items in any field of enquiry is called a universe or a population. A population is the total collection of elements about which we wish to make some incenses. For example we want make a research on the office employees. And 4000 persons are working in that office. It's means our population is 4000 persons.

Census Survey : A survey which covers all the element of the population is called census survey. This type of inquiry involves a great deal of time, money and efforts. This inquiry is used when the greater accuracy is need in the research. But it's difficult when the field of inquiry is too large. And this type of inquiry needs great or large resources.

Features of Census Survey

- It's covers all the elements of population.
- Provide greater accuracy.
- Need large resources (money, time, energy).
- Difficult when population is too large.
- Basically adopted by Government.

Sampling :– Selecting some of the element from the population is called sampling. Sample is subset of the population on universe. Sample is solution of some element of population for draw conclusion about the entire population. When the population size is large we adopt this method for conclusion of whole population. This type of inquiry needs less money time and energy compare to census survey.

Importance of Sampling :–

1. **Lower Cost :–** Sample survey have economical advantages rather than 9 census survey. Cost and money is a large resource and much important resource. And why should we spend thousands of money for interviewing all 4000 employee in our company if we can find out what we need to know by asking only a few hundred.
2. **Accuracy of Results :–** A sample survey provide greater accuracy of results. A research had shown that a census survey provide greater accuracy when the population is shall. When the population is large we can get the accuracy with sample survey.
3. **Greater Speed of Data Collection :–** Sampling's speed of execution reduce the time between the recognition of a need for information. We can get very quickly the data and the information which we require with the sampling method.
4. Single method in the case of infinite population.
5. **Availability of population element :–** Sample is a element of the population and some time of situations not allowed the census method due to the large loss. So in that type of cases we need this sample method.

Sample Versus Census

The advantages of sample over census studies are less compelling when the population is small and the variability with in the population is very high. Two conditions are appropriate for a census study.

- A census study is possible when the population is small.
- A census study is necessary when the elements are quite different from each others.

Q. Define sample Design? What are the basis criteria of selecting a sampling procedure? Write down the characteristics of Good Sample Design.

Ans. Sample Design : A sample design is a definite plan for obtaining a sample for a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. Sample design is determined before the data collected.

Steps in Sample Design :–

1. **Type of Universe :–** The first step in developing any sample design is to clearly define the set of objects or universe. Either the universe is finite or infinite or other features of the universe.

2. **Sampling Unit :–** A decision has to be taken concerning a sampling unit before selecting sample. It may be a geographical one such as a city, state etc. or a construction unit such as house, flat etc. or it may be social unit such as family, club, school etc. or it may be individual. The researcher will have to decide one or more such units that he has to select for study.

3. **Source List :–** It is also known as 'Sampling Frame' from which sample is to be drawn. It contains of all items of a universe. It is extremely important for the source list to be as representative of population as possible.

4. **Size of Sample :–** This refers to the number of items to be selected from the universe to be constituting a sample. It's an important step because the size of sample should neither be excessively large, nor too small. It should be optimum which fulfills the requirement of efficiency, representativeness, reliability and flexibility.

5. **Parameters of interest :–** In determining the sample design, one must consider the question of specific population parameters which are of interest.

6. **Budgetary Constraint :–** Cost have a major impact upon the decision relating to size of sample but also to the type of sample.

7. **Sampling Procedure :–** The researcher must decide about the technique to be used in selecting the items for the sample. There are many techniques, out of which the researcher must choose one for his study.

Criteria of selecting sampling procedure a researcher must consider all the points which can create a error in our result. And all those points and error must consider which comes in sampling procedure. These factors and error are following:-

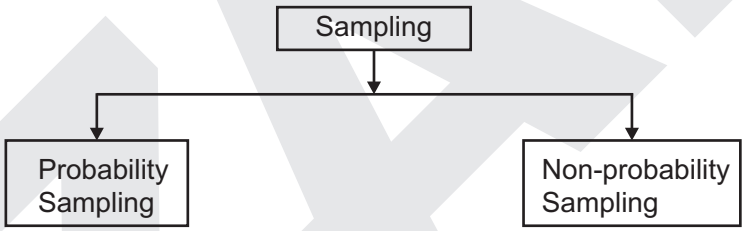
- Inappropriate sampling frame.
- Defective measuring device: if our measuring devices are defective like wrong or non proper questioner and interview creates error in our result.
- Indeterminacy principal: Some time we find that individuals act differently when kept under observation than what they do when kept in non-observed situations.

Characteristics of a Good Sample Design :–

- Sample design must result in a truly representative sample.
- Sample design must be such which results is a small sampling error.
- Sample design must be viable in the context of funds available for the research study.
- Sample design must be such so that systematic first or error can be controlled in better way.
- Sample should be such that the results of the sample study can be applied.

Q. Write down the various types of sampling.

Ans.



1. **Probability Sampling :–** Probability sampling is based on the concept of random selection - in probability sampling every element of population have a equal chance of choose as a sample. It's a controlled procedure that ensures that each population element is given a known non-zero chance of selection.
   - It gives each element in the population an equal probability of getting into the sample, and all choices are independent of one another.
   - It gives each possible sample combination an equal probability of being chosen.
2. **Simple Random Sampling :–** In simple random sampling we close the element with simple lottery system. We then mix all these slips thoroughly in a container and then drawn as a lottery either blind foled or by rotating a drum. In simple random sampling each and every element has equal probability of selection.

$$\text{Probability of Selection} = \frac{\text{Sample Size}}{\text{Population Size}}$$

A simple random sampling is very easy to understand and implement. But it's take or need a list of population elements and it can be time-consuming and expansion.

3. **Complex Random Sampling :–** Probability sampling under restricted sampling techniques, as started above, may result in complex random sample design. Some of the popular complex random sampling design are:-

i) **Systematic Sampling :–** A versatile form of probability sampling is systematic sampling. In this approach every **Kth item** or element in the population is sampled, beginning with a random start of an element in the range of **1 to K.** The Kth element or skip interval is determined by dividing the sample size into population size to obtain the skip pattern applied to sample frame.

$$K = \text{Skip Interval} = \frac{\text{Population Size}}{\text{Sample Size}}$$

For example we have a population of 100 persons and we need 4 persons as a sample:-

- Firstly we divide 100 persons in four equal parts K = 25.
- After that we choose one element randomly from first group or 1 to 25th element.
- After that add every 25th element on that element.

For example if 5 is came in drawn from first selection. Add every 25th item in that than sample elements are 5th, 30th, 55th, 80th element.

ii) **Stratified Sampling :–** If a population from which a sample is to be drawn from a heterogeneous group. It's containing following steps.

- Population is divided into several sub-populations that are individually more homogeneous then the total population. These sub groups are called 'strata'.
- After that select randomly one element from each strata to constitute sample. Basically it is used when the population contain element with different characteristic for cover each characteristic we used this sampling. So strata are formed on the basis of common characteristic.

iii) **Cluster Sampling :–** If the total area of population is too big then we used cluster sampling. In this we divide our population into a number of smaller and non over lapping areas and then we select these smaller areas as a sample. Basically these smaller areas are called cluster.

After converting our population into cluster we select randomly the no. of cluster which we require for sample.

iv) **Area Sample :–** If we divide our cluster to be some geographic subdivision, in that case cluster sampling is better known as area sampling.

v) **Multi Stage Sampling :–** When the total population is divided into several stages. The sampling process is carried out through several stages. For example we want to select 1000 colleagues from southern stage. In first stage we select any state. In second stage we select some city from that state. After that we select some colleagues from that city. It's called a multi stage sampling.

2. **Non-probability Sampling :–** Depending upon the object of inquiry and other considerations a predetermined number of sample unit is selected. It's called non-probability sampling.

The probability of selection of the element from the population is unknown. There is a unequal chance of each element for selection. In this type of sampling a researcher can select according to their convenience.

Methods of Non-probability Sampling

- **Convenience :–** In this the researcher have freedom to select any one according to their convenience.
- **Judgement Sampling :–** The choice of sample items depends exclusively on the judgement of the investigation. The investigator's experience and knowledge about the population will help to select the sample unit.
- **Quota Sampling :–** Under this design quotas are set up according to some specified characteristic such as age group, income group etc.

For example :– The sampling quota would call for sampling students at a 55 to 45 percent ratio.

Q. Write down the various methods of Data Collection?

Ans. Methods of Data Collection :– While collecting data, the researcher should keep in mind about the types of data viz., primary and secondary.

- **Primary Data :–** are those data which are collected afresh and for the first time and thus happen to be original in character.
- **Secondary Data :–** are those which have already been collected by someone else and which have already been passed through the statistical process.

The researcher would have to decide which type of data he would be using for his study and accordingly he will have to select one or other method of data collection.

Several Methods of Collecting Primary Data are :–

i) Observation Method

ii) Interview Method

iii) Through Questionnaires

iv) Through Schedules

v) Other methods include

a) Warranty Cards

b) Distributor Audits

c) Pantry Audits

d) Consumer Panels

e) Content Analysis

f) Depth Interviews etc.

i) Observation Method :– Under the observation method, the information is sought by way of investigation own direct observation without asking from the respondent e.g. in a study relating to consumer behaviour, the investigator, instead of asking from respondent about the brand of wrist watch he use, may himself look at the watch.

The main advantages in using this method is that: -

- The subjective bias is eliminated, if observation is done accurately.
- Secondly, the information obtained is related to what is currently happening.
- Thirdly, this method is independent of respondent's willingness to respond.

Some limitations are:-

- It is an expensive method.
- Information provided by this method is very limited.
- Sometimes, unforeseen factors may interfere with the observation task.

Observation may be structured, unstructured, participant, non-participant, controlled, uncontrolled.

While using observation method, the researcher should keep in mind things like:-

- What should be observed?
- How the observations should be recorded?
- How the accuracy of observation can be ensured?

ii) Interview Method :– This method involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. This method can be used through

- Personal Interviews
- Telephonic Interviews

a) **Personal Interviews :–** There are two persons, one is an interviewer who asks questions and an interviewer, who respond generally maintaining face-to-face contact. This sort of interview may be in the form of direct personal investigation or it may be indirect oral investigation.

This method is usually carried out in a structured manner and as such we call the interviews as Structured Interviews. There are pre-determined questions and of highly standardized techniques of recording.

The unstructured interviews are characterized by flexibility of approach to questioning.

- Focused interviews is meant to focus attention on the given experience of the respondent and its effects.
- Clinical interviews are concerned with broad underlying feelings or motivations or with the course of individual's life experience.
- Non-directive interviews: - In this, the interviewer's function is simply to encourage the respondent to talk about a given topic with a base minimum of direct questioning.

b) **Telephonic Interviews :–** This method consists in contacting respondents on telephone itself it is not a widely used method but plays a vital role in industrial surveys.

iii) **Collection of Data through Questionnaires :–** In this method, a questionnaire is sent (usually by post) to the persons concerned with a request to answer the questions and return the questionnaire.

A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms.

Merits

a) Low cost involved.
b) Free from the bias of an interviewer.
c) Respondents have adequate time to give answers.

Demerits

a) This method can be used only when respondents are educated and cooperating.
b) Slowest method of collecting response of respondents.
c) Low rate of return of dully filled in questionnaires; bias due to no-response is often indeterminate.

Main Aspects of a Questionnaire:-

1. **General Form :–** It can either be structured or unstructured. It may be closed (i.e. of the type 'Yes' or 'No') or open (i.e. inviting free response).

2. **Question Sequence :–** A proper sequence of questions reduces considerably the chances of individual questions being misunderstood.
   - Questions that put too great a strain on the memory should be avoided.
   - Questions of personal character should also be avoided.
   - Questions related to personal wealth should not be asked.

3. **Question Formulation and Wording :–** Questions should be very and impartial in order not to give a biased picture of the true state of affairs. In general all questions should meet the following standards:-
   - Should be easily understood.
   - Should be simple.
   - Should be concrete.
   - Should conform as much as possible to the respondent's way of thinking.

4. **Collection of Data through Schedules :–** Schedules are a set of questions contained in a Performa and there is a little difference lies in schedules and questionnaires.

   Schedules are being filled in by enumerators, who are specially appointed for the purpose.

   These enumerators, along with the schedules, go to respondents, put to them the questions from the Performa in the order the questions are listed and record the replies in the space meant for the same in the Performa.

   This method requires the selection of enumerators for filling up schedules or assisting respondents to fill up schedules and as such enumerators should be very carefully selected and should be trained to perform their job well.

   This method is very useful in extensive enquiries and can lead to fairly reliable results, but however, very expensive and is usually adopted in governmental investigations or some big organizations.

Collection of Secondary Data

Secondary data means data that are already available i.e. they refer to the data which have already been collected and analysed by someone else. Secondary data may either be

1. Published Data
2. Unpublished Data

1. **Usually Published data are available in:-**
   - Various publications of the central, state or local governments.
   - Various publications of foreign governments.
   - Technical and trade journals.

- Books, magazines and newspapers.
- Reports and publications of various associations connected with business and industry, banks, stock exchanges etc.
- Reports prepared by research scholars, universities etc. in different fields.
- Public records and statistics, historical documents etc.

By way of caution, the researcher, before using secondary data, must see that they possess following characteristics:-

a) **Reliability of Data :–** The reliability can be tested by finding out such things about the said data :-

i) Who collected the data?

ii) What were the sources of data?

iii) Were they collected by using proper methods?

iv) At what time were they collected?

b) **Suitability of Data :–** The data that are suitable for one enquiry may not necessarily be found suitable in another enquiry. Hence, if the available data are found to be unsuitable, they should not be used by the researcher.

c) **Adequacy of Data :–** If the level of accuracy achieved in data is found inadequate for the purpose of the present enquiry, they will be considered as inadequate and should not be used by the researcher.

Selection of an appropriate method for Data Collection

- **Nature, Scope and object of enquiry :–** An important factor affecting choice of a particular method is nature, scope and object of an enquiry. The method selected should be such that it suits the type of enquiry that is to be conducted by the researcher.
- **Availability of Funds :–** Finance, in fact, is a big constraints in practice and the researcher has to act within this limitation.
- **Time Factor :–** Availability of time has also to be taken into account in deciding a particular method of data collection.
- **Precision required :–** It is also another vital time of selecting the method of data collection.

RESEARCH METHODOLOGY

MBA 3rd Semester (DDE)

UNIT – III

Q. What do you means by scaling? Write down the types of measured scale and problems of scaling?

Ans. Scaling is the procedure for assignment of numbers or other symbols to a property of objects in order to impart some of the characteristic of numbers to the properties in question. We can assign numbers to indicate of the properties of objects.

The scheduling being a function of the rules under which the number are assigned.

Types of measurement scales

a) Nominal Scale :– Nominal scale is simple a system of assigning number or symbols to event in order to label them. For example provide the number. to cricket player for identify them. These numbers are just convenient labels, the way of keeping events and as such have no quantitative value. For example if we provide no. 1 to 10 to ten player. It does not mean that 10 > 2 etc. This is just a label.

Nominal scale is a least power full tool of measurement. It indicates no order or distance relationship and has no arithmetic origin. It's simply describing difference between things by assigning them to categories.

b) Ordinal Scale :– Ordinal scale only permits the ranking of the item from highest to lowest. The ordinal scale place event into order, but there is attempted to make the interval of the scale equal in the team of some rules. Rank order repugnant the ordinal scale. For example providing the rank to the student in a class is a ordinal scale like Ram have 10th rank in the class and Sham have 30th rank in the class. It does not mean that Ram's position 3 times good than the Sham. Because of there is no interval scale in that. It is first order from highest to lowest.

In this scale we can say that which element is highest and which is lowest but we can not make any comparison on them. It's just told which one is highest. Because of the difference between the rank 1 and 2 may be equal or unequal with the difference between 5 and 6. So it's first for the ranking.

c) **Interval Scale :–** In this we provide the intervals. The intervals are adjusted in term of some scale that has been established as basis for making the units equal. For example increase in the temperature from 300 to 400. We can say that the increase of 100 C in the temperature. But we can't say that 600 are twice than the 300. Because of both are dependent on the fact that the zero on the scale is set arbitrarily at the temperature of freezing point of water.

d) **Ratio Scale :–** Ratio scale represents the actual amounts of variables. Measures of physical dimensions such as weight, height, distance etc.

Problems in Measurement Scaling

1. **Problem Related with Respondent :–** If the respondent have a very little knowledge but may not admit his ignorance. He gave the answers with guesses and many other major which create problem to respond accurately and fully.

2. **Situation :–** Situational factor may also come in the way of correct scaling. A respondent can gave the different answers in the different situation.

3. **Measurer :–** The inter viewer can distort responsibility rewarding or reordering questions. His behaviour, style, look may encourage or discourage certain replies from respondents. Careless mechanical processing may distort the findings.

4. **Instrument :–** Error may create because of using defective measuring instrument. The use of context words, ambiguous meaning, poor printing, and inadequate space for replies, etc. which makes the measuring instrument defective.

Q. Write down the validity and reliability of scale and the relationship among them?

Ans. Validity of Scale :– A valid measure is one that provides the information that it was intended to provide. The purpose of a thermometer, for example, is to provide information on the temperature, and if it works correctly, it is a valid thermometer.

Test of Validity

Validity indicates the degree to which an instrument measures what it is supposed to measure. Validity is the extent to which differences found with a measuring instrument reflect true differences among those being tested.

Type of Validity

a) **Content Validity :–** It is the extent to which a measuring instrument provides adequate coverage of the topic under study. If the instrument contains a representative sample of universe, the content validity is good. It can be determined by the using a panel of persons who shall judge how well the measuring instrument meets the standards.

b) Criterion-related Validity :– This form of validity reflects the success of measuring used for some empirical estimating purpose criterion related actually refers to

i) Predictive Validity
ii) Concurrent Validity

i) Predictive Validity :– It's refers to the usefulness of a test in predicting some future performance.

ii) Concurrent Validity :– It's refers to the usefulness of a test in closely relating to other measure of other validity.

c) Constraint Validity :– A measure is said to possess construct validity to the degree that it confirms to predicted correlations with other theoretical proposition. It is the extent to which your items are tapping into the underlying theory. It's how well the items hang together or distinguish different people on certain traits or behaviour.

Reliability :– It's means that the findings would be consistently the same if the study were done overaghan. A measuring instrument is reliable if it provides consistent results.

The Reliability contains two aspects:-

i) Stability
ii) Equivalence

Stability aspect is concerned with securing consistent result with repeated measurement of the same person and with same instrument.

Equivalency aspect considers how much error may get introduced by different investigator or sample of the items being studies. We can improve this by two ways:-

i) By standardizing the conditions under which the measurement takes place.
ii) By carefully designed directions for measurement with no variation from group to group.

Methods of Measuring Reliability:-

i) Test Retest :– The Test Retest in the same group technique is to administer your test, instrument, survey, or measure to some group of people at difficult point in time.

ii) Multiple Forms :– The multiple forms technique has other names, such as parallel forms and disguised test retest, it's simply the scrambling or mixing up of questions on your survey. **For Example: -** Giving it to the same group twice. It's a more vigorous test of reliability.

Relationship Between Reliability and Validity: - A reliable instrument need not be a valid instrument. For instance, a scale that consistently overweighs objects by five Kgm., is a reliable scale, but it does not gave a valid measure of weight. But the other way is not true means a valid instrument is always reliable.

Reliable but not valid	Not reliable but valid	Reliable and valid

Q. Write down the rating and ranking scale and the basis of classification of scales?

Ans. 1. Rating Scales :– The rating scale involves qualitative description of a limited number of aspects of a thing or of traits of a person. We judge an object in absolute term against some specific criteria. These ratings may be in such forms as "like-dislike", "above average, average-below average. There is no specific rule whether to use two point scale, three paint scale, or scale still with more points.

Rating scale may be either a graphic scale or an itemized rating scale:-

i) The Graphic Rating Scale :– In this various prints are usually put along the line to form a continuum and the rater indicates his rating by simply making a mark (such as ✓) at the appropriate point on the line.

Example of five points scale

How do you like the Product?

Like Very Much	**Like Some** What	**Neutral** What	**Dislike Some** Very Much
Dislike			

Limitation of Graphic Scale

- Find the real meaning of like, dislike is a difficult work for the respondent so it's always very difficult for respondent to analyse the question?

ii) The Itemized Rating Scale :– It's also known as numerical scale. Its presents a series of statements from which a respondent selects one as best reflecting his evaluation. These statements are ordered progressively in the term of more or less of some property. Example, suppose we wish to inquire as to how well does a worker get along with his fellow workers? In such a situation we may ask the respondent to select one, to express his opinion, from the following:-

- He is almost always involved in some friction with fellow workers.
- He is often at odds with one or more of his fellow workers.
- He sometime gets involved in friction.
- He infrequently becomes involved in friction with others.
- He almost never gets involved in friction with fellow workers.

Advantages of Rating Scale

- Provide favourable results compare with other methods.
- Requires less time.
- Easy and interesting to use.
- Wide range of applications.

2. Ranking Scales :– In this respondents directly compare two or more objects and make choices among them.

a) Method of Paired Comparison :– Under it, respondent can express his attitude by making a choice between two objects, say between a new flavour of soft drink and an established brand of drink. But when there are more than two to judge. The number of judgement required in a period comparison is given by formula.

$$N = \frac{n(n-1)}{2}$$

N = number of judgement

n = number of object to be judged

b) Method to Rank Order :– Under this method of comparative scaling, the respondents are asked to rank their choices. For example with 10 items according to Paired comparison we takes 45 pair comparisons to complete the task, whereas the method of rank order simply require ranking of 10 items only.

Classification of Scale on the Basics

a) Subject Orientation :– Under it a scale may be designed to measure characteristics of the respondent who competetes it or to judge the stimulus object which is presented to the respondent.

b) Response Form :– Under this way may classify the scales as categorical and comparative. Categorical scales are also knowing as rating scales and comparative scales we also known as ranking scales. In this respondent is asked to compare two or more objects.

c) Degree of Subjecting :– With this basis the scale data may be based on whether we measure subjective personal preferences or simply make non-preference judgement.

In subjective personal, the respondent is asked to close which person he favours.

In non preference simply asked to judge which person is most effective in some aspect.

d) **Scale Properties :–** We can classified the scales as nominal, ordinal, interval and ratio scale.

e) **Number of Dimensions :–** In respect of this basis scales are classified as 'undimensional' and 'multidimensional' scale. In first we measure only one attribute of respondent or object. But in second an object might be described better by using the concept of an attribute space of 'n' dimensions.

f) **Scale Construction Techniques :–** According to different techniques of the construction of scales.

i) Arbitary Approach
ii) Differential Scales
iii) Sumnated Scales
iiii) Cumulative Scales

Q. Write down the various scale construction techniques?

Ans. 1. Arbitary Scales :– These scales are developed on adhoc basis and are designed largely through the researcher's first collects few statement or items which he believes are unambiguous and appropriate to a given topic. Some of these are selected for inclusion in the measuring instrument and then people are asked to checking list the statement with which they agree.

Advantages :–

- It can develop very easily, quickly.
- It's very less expensive.
- It can used in various applications.
- It can be designed to be highly specific and adequate.

Limitations :–

- We do not have objective evidence that such scales measures.

2. Differential Scale (or Thurstone-type Scales) :– The L.L Thursontone developed that scale. The procedure to developed that scale is following:-

a) Firstly researcher gather large number of statements, that express the points related to the topic area.

b) These statements are then submitted to a panel of judges, each of whom arranges them in eleven groups or piles ranging from one extreme to another in position. Each of the judges is requested to place generally in the first pile the statements which he thinks are most unfavourable to the issue, in the second pile to place those statements which is thinks, are next most unfavourable and he goes on doing so in the manner till in the relevant pile he puts the statement which he considered to be most favourable.

c) This sorting by each judge yields a composite position for each of the item. In case of market disagreement between the judges is assigning a position to an item that item is disordered.

d) For item that are retained, each is given its medium sale value between one and eleven as established by panel.

e) A final selection of statements is then made. For this purpose a sample of statements, whose medium stores are spread evently from one extreme to other is taken. The statements so selected, constitute the final scale to be administered to respondents.

This type of scale considers more appropriate and reliable when used for measuring a single attitude. But its too costly and required more efforts. Another weakness is that the value assigned to various statements by the judges may reflect their own attitude.

3. Summated Scales (or likert type scales) :– This scale consist of a number of statements which express either a favourable or unfaverable attitude towards the given object to which the respondent is asked to react. The respondent indicates his agreement or disagreement with each statement in the instrument.

Each response is given a numerical score, and the scores are totalled to measure the respondent's attitude. In likert scale, the respondent is asked to respond to each of the statement in terms of several degrees, usually five degrees (but at times 3 or 7 may also be used) of agreement or disagreement.

Example

Strongly Agree	Agree	Undivided	Disagree	Strongly Disagree

Each point on the scale carries a score for example Strongly agree (Say 5) and strongly disagree (Say1). Normally these sore are not printed on the instrument. Something are done or each and every statement in the instrument. For example a instrument contain 40 statements. The following score values world be revealing.

40 x 5 = 200 Most favourabal response

40 x 3 = 120 Neutral Attitude

40 x 1 = 40 most on favorable response

So the store of an individual world fall between 40 to 200, and if the total is more than 120 it's means it shows a favourable opinion.

Procedure to Develop Likert Scale

1. Collects the large numbers of statements which are relevant to studies. After that provide definite favourablen or unfavourable to a particular point of view or the attitude.
2. After that statement has being gathered, a trial test should be administered to a number of subjects.

3. The response to various statements are stored in such a way that a response indicative of the most favourable attitude is given a highest score.

4. Then the total score of each respondent is obtained by adding its scores that he received for separate statements.

5. The next step is to array these total scores and find out those statements which have a high discriminatory power. And determined which statements consistently carrelate with low favourable and which with high favourable.

6. Only those statements that are correlated with the total test should be retrieved in the final instrument and all others must be discarded from it.

Advantages of Likert Scale

a) Its very easy to constant.

b) Likert Scale is considered more reliable and also provides more information and data compare to thrustone type scale.

c) Its too less time consuming and less costly limitations.

d) We can simply know that respondents are favourable or unfavourable to a topic. But we can tell how much.

e) There is no basis for belief that the five positions indicated on the scale are equally spud.

The interval between 'strongly agree and agree' may not be equal to 'strongly disagree and disagree'.

From above discussion, we can say that Likert type scale is regarded as the most useful in a situation where in it. It is possible to compare to respondents score with a distribution of score from the well defined group.

4. **Cumulative Scales :–** Cumulative scale is also known as Louis Buttman's Scalogram analysis. This scale consists of series of statements to which a respondent express his agreement or disagreement. The special feature of this type of scale is that statements in it form a Cumulative series.

The statements are in order and related to one another in such a way that an individual, who replies favourably to say item No. 3, also replies favourably to item No. 2 and 1, and one who want to replies No. 4 also replies 3, 2 and 1.

The individual's score is worked out lay counting the number of points concerning the number of statements the answer favourably.

Item Numbers				Respondent Score
4	3	2	1	
✓	✓	✓	✓	4
-	✓	✓	✓	3
-	-	✓	✓	2
-	-	-	✓	1
-	-	-	-	0

A score of 4 means that the respondent is in agreement with all the statements which is indicative of the most favourable attitude. And score 3 means respondent agree with first three statements but not for fourth.

Procedure for Preparing Scalogram

a) We must lay down in clear terms that issue we want to deal within our study.

b) Develop a number of items relating the issue and to element by inspection the items that are irrelevant.

c) The third step consists in pre-testing the items to determine whether the issue at hand is scalable.

In pre-test we include more items and fewer respondents and in the pre-test respondent are asked to reward their opinions on all selected items using a likert-type. Point scale, ranging from strongly agrees to strongly disagree. And provide the strongest favourable response is highest scored (say 5) and lowest to most unfavourable score (say 1).

Respondents total score are then arranged according to total score for analysis and evaluation if the response of an item from a cummulative scale, its response category score should decress in orderly fashion as indicated in above table.

Earlier to slow the said decresse pattern means that there is overlapping which slows that item concerned is not a good cummulative scale items. After analyzing some items, say 5 items may be chosen.

d) The next step is again to total the scores for the various opinionnaries and to rearrange them and prepare a final result in a scologram analysis. For example five items are selected like (5, 12, 3, 10, and 7) and number of respondent is 25 who response in various items have been tabulated along with number of errors.

A perfect scale types are those in which the respondent's answers fit the pattern that be respondent by using the person's total score as a guide.

Scale Type		Items				Error per	Number of	Number
Error	5	12	3	10	7	Case	Cases	of Error
5 (Perfect)	✓	✓	✓	✓	✓	0	7	0
4 (Perfect)	-	✓	✓	✓	✓	0	3	0
(Non Scale)	-	✓	-	✓	✓	1	1	1
(Non Scale)	-	✓	✓	-	✓	1	2	2
3 (Perfect)	-	-	✓	✓	✓	0	5	0
2 (Perfect)	-	-	-	✓	✓	0	2	0
1 (Perfect)					✓	0	1	0
(Non Scale)	-	-	✓	-	-	2	1	2
-	-	-	✓	-	-	2	1	2
0 (Perfect)	-	-	-	-	-	0	2	0

Non scale types are those in which the category pattern differs from that expected from the respondent's total score. Whether the series of statement selected for final scale may be regarded a perfect cumulative, we have to examine on the basis of efficient of reproducibility. Butman has set 9 as the level of minimum reproducity.

Coefficient of Reproducity = 1 - e / n(N)

n = Number of items

N = Number of cases

1 - 7 / 5(25) = 94

In above example its 94 it's means that the items in this order constitute the cumulative.

RESEARCH METHODOLOGY

MBA 3rd Semester (DDE)

UNIT – IV

Q. Define Interpretation. What are the techniques and precautions of interpretation?

Ans. Introduction : Interpretation means bring out the meaning of data or we can say that interpretation is to convert data into information. The essence of any research is to draw conclusion about the study. This requires high degree of skill. Successful interpretation depends on 'How well the data is analyzed'. If data is not properly analyzed, the interpretation may go wrong. If analysis has to be corrected, then data collection must be proper. Similarly if data collected is proper but analyzed wrongly, then also the interpretation or conclusion will be wrong. Sometimes even with proper data and proper analysis, can still lead to wrong interpretation. Interpretation depends on experience of the researcher and methods used by him for interpretation.

Precautions in Interpretation:

(1) At the outset, researcher must invariable satisfy himself that
   (i) The data are appropriate and trustworthy.
   (ii) The data reflect good homogeneity and that
   (iii) Proper analysis has been done through statistical methods.

(2) The researcher must remain cautions about the errors that can possibly arise in the process of interpreting results. Errors can arise due to false generalization and/or due to wrong interpretation of statistical measures.

(3) He must always keep in view that the task of interpretation is very much intertwined with analysis and cannot be distinctly separated. As such he must take the task of interpretation as a special aspect of analysis and accordingly must take all those precautions that one usually observes while going through the process of analysis viz., precautions concerning the reliability of data, computational checks, validation and comparison of result.

(4) The researcher must remember that "ideally in the course of a research study, there should be constant interaction between initial hypothesis, empirical observation and theoretical conceptions. It is exactly in this area of interaction between theoretical

orientation and empirical observation that opportunities for originality and creativity lie". He must pay special attention to this aspect while engaged in the task of interpretation.

(5) Keep the main objective of the research in mind

(6) Analysis of data should start from simpler and more fundamental aspects

(7) It should not be confusing

(8) Sample size should be adequate

(9) Take care before generalization of the sample studied

(10) Give due attention to significant questions.

Techniques :– As the interpretation task is not an easy job, and requires a great skill and dexterity on the part of researches. It is an art that one learns through practice and experience and the researcher sometimes, seek guidance from experts for accomplishing the task of interpretation.

Technique involves following steps:-

1. Researcher must give reasonable explanations of the relations which he has found and he must interrupt the lines of relationship in terms of the underlying processes and must try to find out the thread of uniformity that lies under the surface layer of his diversified research findings. In fact, this is the technique of how generalization should be done and concepts be formulated.

2. **Extraneous Information :–** If collected during the study, must be considered while interpretation the final results of research study, for it may prove to be a key factor in understanding the problem under consideration.

3. It is usually advisable, before embarking upon final interpretation, the consult someone having insight into the study and who is franc and honest and will not hesitate to point out the omissions and errors in logical argumentation. Such consultation will result in correct interpretation and hence will enhance the utility of research results.

4. Researcher must accomplish the task of interpretation, only after considering all relevant factors affecting the problem to avoid false generalization. He must be in no hurry while interpreting results, for quite often the conclusions, which appear to be sight at the beginning, may not at all accenate.

Q. Define Research Report. Explain the Objectives and Types of Research Report.

Ans. Introduction : The final step in any research is to complete the findings into a summarized format. It is often said that without a research report the research remains valueless as it cannot be communicated accurately and effectively to the persons who are responsible for policy decisions.

Meaning of Research Report : A research report is more or less an official document that presents the information for an interested reader. It involves investigation and analysis and the facts may lead to conclusions and recommendation. The facts must be accurate, complete easy to find and usually must be interpreted. They provide valuable record for the business. They can also be made use of in future

A research Report can be Defined as:

"The process of communicating the results of an investigation. It is a document which reflects the research conducted and the care that has been exercised throughout the study".

Characteristics of a Good Research Report :

(1) Grammatical Accuracy : The grammatical accuracy of language is of fundamental importance. It is one of the basic requisite of a good report as of any other piece of composition.

(2) Accuracy of Facts : The scientific accuracy of facts is very essential to a good report.

(3) Simple and unambiguous language : A good report is written in a simple, unambiguous language

(4) Reader Orientation : A good report is always reader oriented. While drafting a report, it is necessary to keep in mind the persons who are going to read it.

(5) Objectivity of Recommendation : If recommendations are made at the end of a report, they must be impartial and objective. They should come as a logical conclusion to investigation and analysis.

(6) Clarity : The report writer must proceed systematically. He should make his purpose clear,define his source, state his findings and finally make necessary recommendations. He should divide his report into short paragraphs giving them headings.

(7) Relevance : The facts presented in a report should be only accurate but relevant also.

Objectives/Purpose of a Research Report:

(1) To provide information to some one who is interested in gathering such information or who wishes to make use of this information in one way or the other

(2) To have the full knowledge about a fact.

(3) To make use of the report either for reference or for any other purpose in future.

Types of Report :

(1) Technical Report : In the technical report the main emphasis is on

- The method employed
- Assumptions made in the course of the study
- The detailed presentation of the findings including their limitations and supporting data.

A technical report consists of the following aspects:

i. **Major Findings and Contents :** A technical report will contain the main findings just in two or three pages.

ii. **Nature of the Research Work :** This describes
- The general objectives of the study
- Formulation of the problem in operational items
- The working hypothesis
- The type of analysis
- Data required, etc.

iii. **Research Methodology :** This explains the various methods used in the study and their limitations. For instance:
- Sample Size
- Sample Selection etc.

iv. **Data Analysis :** The report analyses the data and their sources, characteristics and limitation. If secondary data are used, their suitability to the problem at hand is fully assessed. In case of a survey, the manner in which data were collected should be fully described.

v. **Presentation of Findings :** The researcher presents his main findings of the study with supporting data in the form of tables and charts.

vi. **Main Conclusion :** Here, the main findings of the research are presented and the main body of the report, usually extending over several chapters.

vii. **Bibliography :** This contains the main sources of secondary data.

viii. **Technical appendices :** This contain all technical matters relating to questionnaire, mathematical derivation etc.

Conclusion : The above format provides a general idea of the nature of a technical report; the order of presentation may not necessarily be the same in all technical reports. Therefore, the presentation may differ.

(2) Popular Report : The popular report is one which gives emphasis on simplicity and attractiveness. The simplification should be sought through
- Clear writing
- Minimization of technical
- Particularly mathematical
- Detail and liberal use of charts and diagrams.

The following is the general outline of a popular report:

(i) **Major Findings and Conclusions :** The report will have findings of practical interest and their implications.

(ii) **Follow-up Action :** It will suggest follow-up action on the basis of the findings of the study in this section.

(iii) **Objectives of the Study:** Here the problem is presented, along with the specific objectives of the study.

(iv) **Methodology :** Here, a description of the methods and techniques used, including a short review of the data on which the study is based is provided.

(v) **Results :** This is the main body of the report, presented in clear and non-technical terms with the liberal use of all sorts of illustrations such as

- Charts
- Diagrams and the like.

(vi) **Appendices :** This consists of detailed information on the methods used, forms, etc. Appendices are generally not included if the report is meant for the general public.

(3) **Oral Reports :** An oral report is a piece of face to face communication about something seen or observed. An oral report is a simple and easy to present. This type of reporting is required, when the researchers is asked to make an oral presentation. Making oral presentation is somewhat difficult compared to written report. This is because; the reporter has to interact directly with the audience. Any faltering during oral presentation can leave a negative impression on the audience. In oral presentation, communication plays a big role. Lot of planning and thinking is required to decide

- What to say
- How to say
- How much to say

(4) **Written Report :** A written report enjoys several advantages over the oral one:

- An oral report can be denied at any time. But a written report is a permanent record. The reporter cannot deny what he has reported once.
- A written report can be referred to again and again
- A written report can change hands without any danger of distortion during transmission.

(5) **Informal Reports :** An informal report is usually in the form of a person to person communication. An informal report is usually submitted in the form of a letter, or a memorandum.

(6) Formal Report : A formal report is one which is prepared in a prescribed form and is presented according to an established procedure to a prescribed authority. Formal report can be statutory or non statutory.

(7) Routine Reports : These are of two types:

(i) Progress Reports: When government departments give work on contract they insist on such reports from contractors. These enable the government to know whether the work is progressing according to schedule.

(ii) Annual Confidential reports on employees: Most organizations make a periodic evaluation of the performance and general conduct of their employees. Periodical reports are prepared at regular intervals to indicate the working of a section or a department. These reports are usually prepared by filing in a printed form since the information required is of a routine nature and can be tabulated.

(8) Special Reports : These reports cannot be prepared by filling in forms; they require special skills in collecting facts and presentation. The people who prepare these reports are responsible and senior persons. Special reports may be categorized into following categories:

(i) Inventory Report : Inventory report is customary for every organization to take stock of equipment, furniture and stationery etc., at regular intervals. The person, who checks the stock, fills in his findings in a prescribed form.

(ii) Survey Report : Survey report is written when a particular area or field has to be surveyed and its condition observed and recorded.

(iii) Project Report : Project report is prepared after a proposal takes shape and usually after the preliminary survey has been completed.

(iv) Inspection Report : Inspection report is written when an inspection is assigned to a person; an auditor, an officer from the Head-office, or any senior officer may be assigned the task of making an inspection of a branch or a section.

(v) Investigation Report : Investigation report is prepared after an investigation has been made when a problem cannot be easily solved; the cause need careful searching, analysis and consideration. When there are losses, labour problems, poor sales, customer complaints, falling sales, a senior person or a committee of senior persons is appointed to investigate the causes. It is difficult to make an investigation and the task requires collection of facts which are not easy to get. The collected data have to be analysed and interpreted; conclusions have to be drawn from the analysis and solutions to the problem have to be recommended.

Q. Explain the Format and Contents of a Research Report

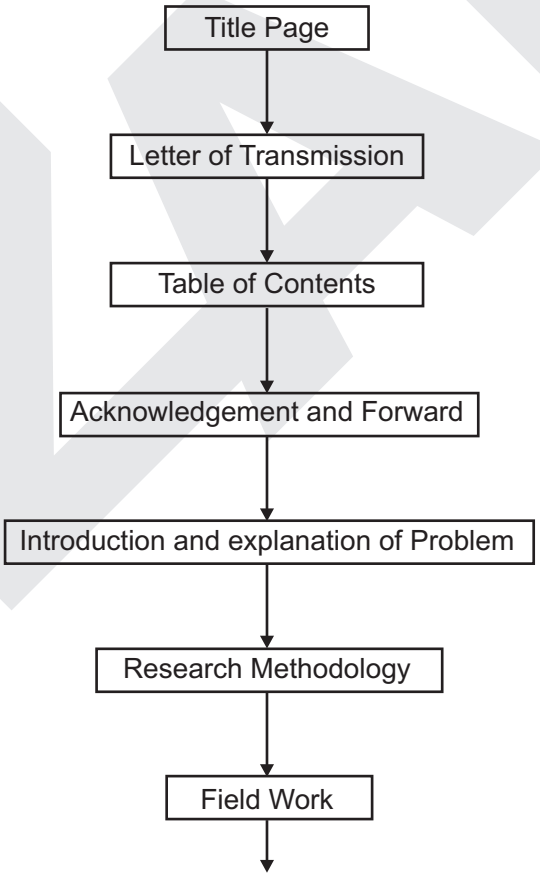
Ans. Introduction : The final step in any research is to complete the findings into a summarized format. It is often said that without a research report the research remains valueless as it cannot be communicated accurately and effectively to the persons who are responsible for policy decisions.

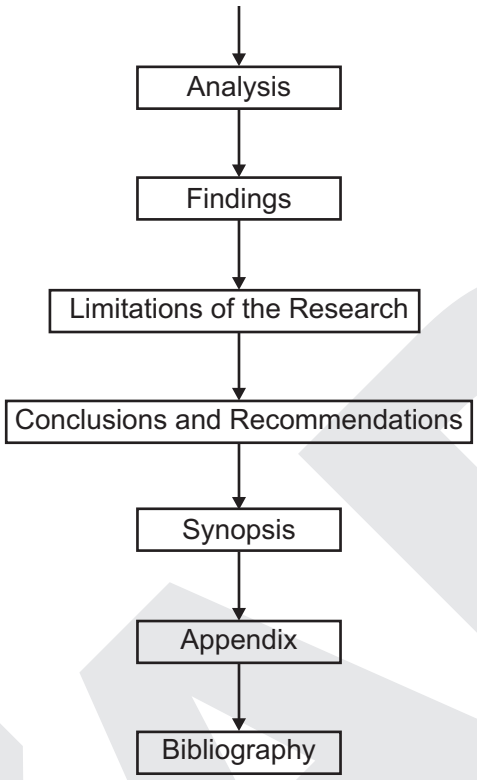
Meaning of Research Report : A research report is more or less an official document that presents the information for an interested reader. It involves investigation and analysis and the facts may lead to conclusions and recommendation. The facts must be accurate, complete easy to find and usually must be interpreted. They provide valuable record for the business. They can also be made use of in future

A research Report can be Defined as:

"The process of communicating the results of an investigation. It is a document which reflects the research conducted and the care that has been exercised throughout the study".

Format/Contents of a Research Report: Report is the crux of the research work done by the researcher as it complies all the data and presents it in actionable form. The research report communicates the efforts spent in the investigation and should be presented in such a way that readers are able to understand it easily. In short, the research report should be prepared keeping in mind the following format: -





(1) Title Page : It is the first and the most important part of the report. Title page should indicate the topic on which report is prepared. It should include the name of the person or agency who has prepared the report, the date of submission of the report is to be included in the report. It is a part which automatically comes first to the sight of the reader and creates the first impression about the work in his mind. The title should be able to clarify the following aspects:

- What it is
- Where it was carried out
- What are the special features involved in it.

(2) Letter of Transmission : It indicates to whom the reported research is directed, the reason for doing the work and the official authorization to conduct and start the investigation.

(3) Table of Contents : The table of contents will help the reader to know 'what report contains? Table of content should indicate the various parts or sections of the report. It should also indicate the chapter heading along with page number.

Table of Contents

(4) Acknowledgement and Forward : It introduces the research project to the reader giving the background of the problem, its importance, various dimensions of the problems, whether any previous research pertinent to the specific project being reported was done or not. It should provide enough information so that the reader may understand why the study was undertaken.

(5) Introduction and Explanation of the Problem : The problem should be briefly described and its salient features should be brought out. The explanation should cover the following points:

- Scope of work
- Hypothesis on which research is based
- Historical Background
- Reasons for doing the research
- Objectives to be achieved.

(6) Research Methodology : The method employed in investigation depends on the purpose and scope of the inquiry. The following lines describe the research procedure covering the following points:

(a) Research design used
(b) Data collection method
(c) Sampling Scheme

(7) **Field Work :** This should give an indication about the accuracy with which the investigation was done. A general summary of the degree of competence shown by the field people must also be given.

(8) **Analysis :** If some special statistical techniques are used, then the same should be mentioned.

(9) **Findings :** The findings should be presented keeping in view the objectives of the study. A list of the information needed for the objectives should limit the scope of the findings presented. The supporting arguments for the recommendations should be included and alternatives be analysed and evaluated.

(10) **Limitations of the Research :** A good report tells the results of the study but every project has its own limitations. Every research project has shortcomings which need to be communicated in a clear manner.

(11) **Conclusions and Recommendations :** Conclusions from the research investigation should be drawn with direct reference to the objectives of the study. Specific conclusions relating to each objective should be found out. As far as the recommendations of the findings are concerned, it is not always possible for the researcher to draft these properly. Making recommendations requires thorough knowledge about the policies and resources of the organization as well as the merits and demerits of various alternative actions possible for the problem situation. For effective and useful formulation of the recommendations, a close interaction and understanding between the decision maker and the researcher is necessary.

(12) **Executive Summary/Synopsis :** It enables an executive to quickly grasp the importance of the research. The synopsis precedes detailed reasoning. The executive summary is written specially for decision makers and should enable them to take action

The Executive Summary should Include:

(i) Objectives of the research project
(ii) Nature of the decision problem
(iii) Key results
(iv) Conclusions
(v) Recommendations for action.

(13) **Appendices :** The purpose of the appendix is to provide a place for material which is not absolutely essential to the body of the report. This material is typically more specialized and complex than the material presented in the main report and it is designed to serve the needs of the technically oriented reader.

(14) Bibliography : It contains detailed information about the references or source of material from where the help is being taken to conduct the research and in preparation of the research report.

Q. What are the different steps in report writing?

Ans. Introduction : The final step in any research is to complete the findings into a summarized format. It is often said that without a research report the research remains valueless as it cannot be communicated accurately and effectively to the persons who are responsible for policy decisions.

Meaning of Research Report : A research report is more or less an official document that presents the information for an interested reader. It involves investigation and analysis and the facts may lead to conclusions and recommendation. The facts must be accurate, complete easy to find and usually must be interpreted. They provide valuable record for the business. They can also be made use of in future

A research report can be defined as:

"The process of communicating the results of an investigation. It is a document which reflects the research conducted and the care that has been exercised throughout the study".

Different Steps in Writing Report:

(1) Logical Analysis of the Subject Matter : It is the first step which is primarily concerned with the development of a subject. There are two ways in which to develop a subject

(i) Logically : The logical development is made on the basis of mental connections and associations between the one thing and another by means of analysis Logical treatment often consists in developing the material from the simple possible to the most complex structures.

(ii) Chronologically : Chronological development is based on a connection or sequence in time or occurrence.

(2) Preparation of the Final Outline : It is the next step in writing the research report "outlines are the framework upon which long written works are constructed.

(3) Preparation of the Rough Draft : This follows the logical analysis of the subject and the preparation of the final outline. Such a step is of utmost importance for the researcher now sits to write down what he has done in the context of his research study. He will write down the procedure adopted by him in collecting the material for his study along with various limitations faced by him, the technique of analysis adopted by him, the broad findings and generalizations and the various suggestions he wants to offer regarding the problem concerned.

(4) **Rewriting and Polishing of the Rough Draft :** This step happens to be most difficult part of all formal writing. Usually this step requires more time than the writing of the rough draft. The careful revision makes the difference between a mediocre and a good piece of writing.

(5) **Preparation of the Final Bibliography:** Next in order comes the task of the preparation of the final bibliography. The bibliography which is generally appended to the research report is a list of books in some way pertinent to the research which has been done. It should contain all those works which the researcher has consulted.

Q. What is the layout of Report?

Ans. Introduction : Anybody, who is reading the research report, must necessarily be conveyed enough about the study so that he can place it in its general scientific context, judge the adequacy of its methods and thus form an opinion of how seriously the findings one to be taken. And for this, there is need of proper layout of Report.

Layout means as to what the research report should contain.

Layout of Research Report

(1) **Preliminary Pages :–** It includes a title and date, followed by acknowledgement in the form of 'Preface'. Then there should be table of contents followed by the list of tables and illustrations so that decision-maker interested in reading the report can easily locate the required information in the report.

(2) **Main Text :–** The main text provides the complete outline of the research report along with all details. Title of research study is repeated at the top of first page of main text and then follows the other details on pages numbered consecutively, beginning with the second page. The main text of report should have following sections :-

(i) **Introduction :–** In this introduction of the research project is there. It contains a clear statement of the objectives of research i.e. background should be given to make clear to the read that why the problem was considered worth investigation. A priet summary of other relevant research may also be stated so that the present study can be seen in that context.

(ii) **Statement of Findings and Recommendations :–** After introduction, the research report must contain a statement of findings and recommendations in non-technical language so that it can be easily understood by all concerned. If the findings happen to be extensive, at this point they should be put in standardized form.

(iii) **Results :–** A detailed presentation of findings of the study, with supporting data in the form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of report.

(iv) **Implications of the Results :–** The end of main text, the researcher should again put down the research clearly and precisely. He should, state the implication for understanding the human behaviour. Such implications are -

a) A statement of the inferences drawn from the present study which may be expected to apply in similar circumstances.

b) The conditions of the present study which may limit the extent of legitimate generalizations of the inferences drawn from the study.

c) The relevant questions that still remain unanswered or new question raised by the study along with suggestions for the kind of research that would provide answers to then.

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

(3) **End Matter :–** At the end of the report, appendices should be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones.

Bibliography of sources consulted should also be given. Index (an alphabetical listing of names, places and topical along with the numbers of the pages in a book or report on which they or discussed) should invariably be given at the end of the report. The value of INDEX lies in the fact that it works as a guide to the reader for the contents is the report.

RESEARCH METHODOLOGY

Past Year Question Papers

JAN 2009

UNIT - I

1. "Research is much concerned with proper fact finding, analysis and evaluation". Do you agree? Give reasons support your answer.
2. Write a comprehensive note on the task of defining a research problem. What is research?

UNIT - II

1. Give your view on good research design. Do you think a single research design is suitable for all research designs? Explain.
2. Define sample design. What should be kept in mind by a researcher while developing a sample design?

UNIT - III

1. "Scaling describes the procedures of assigning numbers to various degrees of opinion, attitude and other concepts." Discuss in the light of need, prolems and reliability of scaling techniques.
2. Explain the following with examples :
   (a) Item analysis approach
   (b) Cumulative scales

UNIT - IV

1. "Interpretation is fundamental component of research process." Explain.
2. What points will you keep in mind while preparing a research report.

JULY 2008

UNIT - I

1. Differentiate between pure research and applied research. Which is more significant for business decision making and how? Also discuss the process of business decision making.
2. Define objectives. What is their importance in research? What are the major considerations in setting objectives?

UNIT - II

1. Discuss the meaning and objectives of research design. Elaborate the research design exploratory research.
2. Discuss the scope of primary data in research. Also discuss the features of questonnaire method. What are the advantages and limitations of this method?

UNIT - III

1. Why and where do we need scaling in research? Discuss i detail the problems of scaling.
2. Differentiate between the following :
   (i) Rating and ranking scales
   (ii) Ordinal and nominal scales

UNIT - IV

1. What should be the sequential methodology in writing a report?
2. (a) Generalization of results
   (b) Oral Presentation

JAN 2008

UNIT - I

1. Using illustratons, explain the process of business decission making. How does research help in this process?
2. What is the relevance of setting objectives in research? How are the objectives set? How do objectives help in hypothesis formulation? Explain and illustrate.

UNIT - II

1. What are the characteristics of descriptive research? Describe the features of this research design.
2. What is the importance of primay data in research? Which method of primary data, do you think, is the best and why? Explain.

UNIT - III

1. What are the difficulties faced in measuring attitudes in research? How does scaling help in removing these difficulties?

UNIT - IV

1. Describe the steps of report writing. How are foot notes shown in research?
2. (a) Write notes on: Generalization of results.
   (b) Format of Research Report Sections of a research report.

JAN. 2007

UNIT - I

1. Define research. What are the various steps involved in a research process?
2. What factors should be kept in mind while setting the objectives? What is the relatonship between objectives and hypothesis formulation?

UNIT - II

1. Explain research design as a tool to study the cause and effect relationship amongst variables in research.
2. Discuss interview as a technique of data collection.

UNIT - III

1. Write short notes on the following :
   (a) Reliability and validity of scales
   (b) Likert Scale
2. Compare and contrast the various attitude measurement techniques. When would you use each of them and why?

UNIT - IV

1. Explain the principles of writing a business research report.
2. "Interpretation is a fundamental component of research process" Discuss.