



Research Methodology

(Tools and Analysis)

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(Tools and Analysis)

(As per the Syllabus of Pune University for T.Y.BBA, Semester–V)

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Preface

It is a matter of great pleasure to present a book on Research Methodology to students and teachers fraternity of T.Y. Bachelor of Business Administration for Savitribai Phule Pune University.

The special features of this book are simple and lucid language, in-depth analysis, more explanation to most of the topics. The book is also with practical clarity, methods and concept based w.r.t. applications of research techniques. All chapters are properly revised and edited as per the syllabus of T.Y. BBA including latest techniques and theories.

We are thankful to god for this inspirational work, which we hope, will satisfy the inquisitiveness of young researchers.

We are also grateful to our family members for constant support and motivation during this endeavour. We would like to thank Ms. Samiksha, who organised typing and xeroxing work with skill and great patience.

We would like to express our special thanks to Himalaya Publishing House Pvt. Ltd. for giving us the chance to write this book.

Authors

Syllabus

T.Y. BBA

Semester V

Compulsory Paper

Subject Name: Research Methodology (Tools and Analysis)

Course Code: 504

Objective: To expose students to the areas of commercial and business research activities.

Unit No.	Topic	Periods
1.	Commercial and Business Research: Aims, Objectives, Importance – Research Methodology, Research Plan or Design – Steps to be Followed.	08
2.	Research Process: (a) Collecting Data and (b) Secondary Data. Sources of Collecting Secondary Data: Demographic Information – Money, Banking – Company Information – Labour Market – Capital Market – Tax Information – Information on the Economy, International Business – Government Information – Syndicated Commercial and Other Non-government Sources of Information.	10
3.	Research Process: (a) Primary Data (b) Methods of Collecting Primary Data Tools for Collecting Primary Data. <ul style="list-style-type: none">● Questionnaire Method: Types of Questions, Essentials of Good Questionnaire – Guidelines for Questionnaire Designing, Scheduling, Sampling, Methods and Advantages● Interview Method: Structured and Unstructured● Observation Method● Group Discussion Method	10
4.	Data Processing and Analysis: <ul style="list-style-type: none">● Editing, Codification, Classification, Tabulation, Scaling and Measurement● Hypothesis and its Testing	10
5.	Writing Skills for Business Research : <ul style="list-style-type: none">● Project Report: Selecting and Defining Topic, Project – Terms of Reference, Subject Matter, Style, Structure● Research Paper● Communication Research Orally – PowerPoint Presentation● Use of Computers in Research: Data Collection and Analysis.	10
Total		48

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CHAPTER 1

Introduction to Research and Research Methodology

Structure

- 1.1 Introduction
- 1.2 Characteristics of Research
- 1.3 Importance of Research
- 1.4 Objectives of Research
- 1.5 Qualities of a Good Researcher
- 1.6 Types of Research
- 1.7 Various Stages of a Research
- 1.8 Qualities of a Good Research
- 1.9 Advantages of Research
- 1.10 Limitations of Research
- 1.11 Process of Research
- 1.12 Purpose of Research

1.1 INTRODUCTION

Research is searching for and gathering information, usually to answer a particular question or problem. The word research is derived from the French word 'recherche' which means "to go about seeking". The word research consists of two syllables, "re" and "search". Research includes creative work which is undertaken on an organised basis in order to increase the bank of knowledge, including knowledge of humans, culture and society, and the use of this bank of knowledge to formulate new applications. It is used to create or confirm facts, reconfirm the results of previous work, solve new or existing problems, support theorems, or develop new theories. A research project may also be an extension on past work in the related field. Research is a continuous process and is useful in decision-making, especially in business.

Research has been defined in a number of different ways.

According to Martyn Shuttleworth, research is any gathering of data, information and facts for the advancement of knowledge.

Creswell says that "Research is a process of steps used to collect and analyse information to increase our understanding of a topic or issue".

According to Fred Kerlinger, research is an organised enquiry designed and carried out to provide information for solving a problem.

1.2 CHARACTERISTICS OF RESEARCH

1. **Uses Scientific Methods:** Research uses scientific methods to discover facts and tries to give solutions to specified problems. Researchers follow organised procedure to carry out research. To receive better results, scientific method is used for carrying out investigation.
2. **Continuous Process:** It is a continuous process as it studies existing facts and also develops new facts. Research also tries to distinguish relationship among variables.
3. **Multipurpose Activity:** Research is a multipurpose activity as it not only includes collection of data but also includes predicting future, establishing relationship between variables, finding solutions to problems, and developing new theories, tools, and concepts.
4. **Maintains Objectivity and Eliminates Impartiality:** Research is based on suitable procedures. It collects appropriate, precise and objective data to understand research problem. After data collection, researcher process data, analyse it and arrive at appropriate solutions.
5. **Empirical Nature:** Empirical research can be undertaken to study situations where methods such as observation, experimentation or survey can be used for conducting research.
6. **Generalisation:** Research conclusions can be applied to a large population. Research can be carried on sample of respondents that represents the universe where the conclusions generated through research can be applied to the complete universe.
7. **Researchers Controlled Movement of the Research Procedure:** In social research, there are many factors that have an effect on result. Due to various factors, some of them can be considered as controlled factors while others can be tested for possible consequences. But, it is difficult to execute controlled experiments in social researches, whereas it is easy to perform controlled experiments in pure sciences.
8. **Development of Concepts and Theories:** Research helps to develop new concepts and theories where these innovations can be useful for the betterment of society at a large scale.

1.3 IMPORTANCE OF RESEARCH

Research is significant both in scientific and non-scientific fields. Research is important for the following reasons:

1. A research problem refers to a complexity which a researcher or a scientific community or an industry or a government organisation or a society experiences. It may be a theoretical or a practical situation. It calls for a systematic understanding and possible solution.
2. Research on existing theories and concepts help us recognise their range and applications.
3. It is the bank of knowledge and provides strategy for solving problems.
4. It is important in industry and business for higher profits, output, efficiency and to improve the quality of products.
5. Mathematical and logical research on business and industry reduces the problems in them.
6. It leads to the identification and categorisation of new materials, new living things, new stars, etc.

7. Inventions can be done through research
8. Social research helps find answers to social problems. They explain social phenomena and try to find solution to social problems.

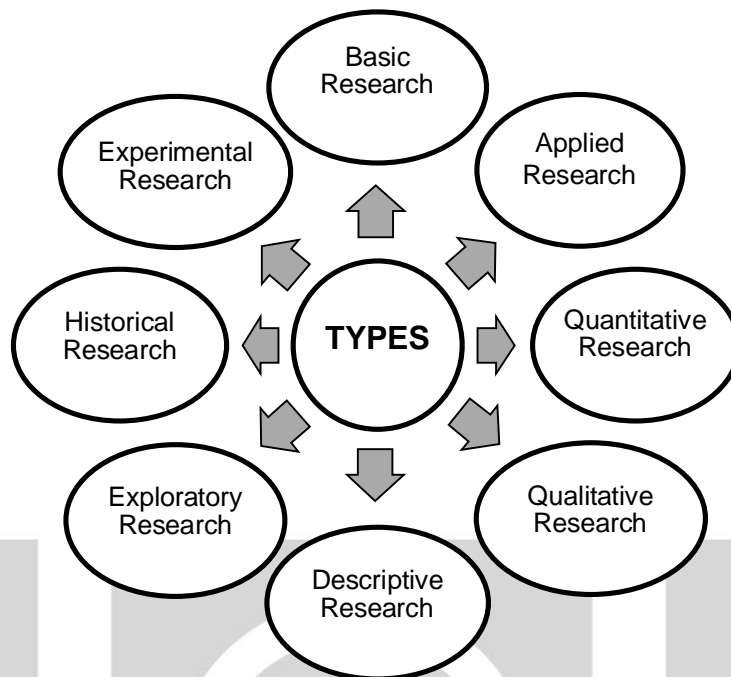
1.4 OBJECTIVES OF RESEARCH

- To understand clearly an observed phenomenon and explain its logic and reason for happening.
- To get insights about problem.
- To find solutions for a problem.
- To test existing laws or theories.
- To develop new ideas, concepts and theories.
- To test hypothesis of a casual relationship between variables.
- To identify areas where research could make the difference.
- To predict future of events.

1.5 QUALITIES OF A GOOD RESEARCHER

1. **Method of Approach:** The researcher should adopt correct course of action for identifying a problem and then for working on it, to find a solution for that problem.
2. **Knowledge:** The researcher should have complete knowledge and information of the field of investigation so that he can go in for correct planning and then application of the correct and efficient methods for selection of the problem and then for solving it.
3. **Qualification:** The researcher should have a good background of study, which will facilitate the researcher to have a better knowledge and understanding of the subject.
4. **Motivation:** The researcher must be motivated to perform his work. For that, he should have a proper attitude, vision of his own, and an aim with some objectives to achieve something.
5. **Perseverance:** Perseverance means to carry on work strongly even though there are certain problems and difficulties in carrying out work. As a result researcher should be stable and must have consistent thinking.
6. **Communication Skills:** Good Communication skills are required by researcher as he can interact with respondents efficiently and understand their opinions.
7. **Organisational Skills:** Researcher should use time management techniques so that work can be completed on time. Whereas maintaining budget, keeping records, filing necessary documents, keeping paper cuttings is needed to carry on work successfully.
8. **Independent:** Researcher must be able to work without close supervision, managing your own time and projects.

1.6 TYPES OF RESEARCH



1. Basic Research

- It is also known as pure or fundamental research.
- This research is mainly conducted to increase knowledge base. It is driven purely by interest and a desire to expand our knowledge.
- This type of research tends not to be directly applicable to the real world in a direct way, but enhances our understanding of the world around us.
- Pure research can be exploratory, descriptive or explanatory.
- Basic research generates new ideas, principles and theories in different fields.
- Basic research concentrates on fundamental principles and testing theories.
- It is sometimes implicitly said that basic research doesn't have practical applications. For example, someone conducting basic research on cheating behaviour may design a study examining whether students from illiterate families cheat more often than students from literate families.
- Notice that the research is not done to reduce cheating or help people who cheat or any other "applied" aspect, but to increase the understanding of cheating behaviour.

2. Applied Research

- Applied research is mainly related with solving practical problems rather than focussing on knowledge expansion.
- It is mainly used to find solutions to problems which occur on a daily basis and develop new innovative technologies.

- The main aim of applied research is to provide better technologies for humans to enhance their standard of living.
- Example: Investigating which treatment approach is the most effective for treating cancer patients whereas Researching which strategies work best to motivate workers.

3. Quantitative Research

- Quantitative research is generally related with the positivist concept.
- It usually involves collecting and converting data into numerical form so that statistical calculations can be made and conclusions drawn.
- Objectivity is very vital in quantitative research.
- Therefore, researchers try to avoid their own presence, behaviour or attitude affecting the results (e.g., by changing the circumstances being studied or causing participants to behave differently).
- They also examine their methods and results for any possible bias.
- The aim of quantitative research is to develop mathematical models, theories related to phenomenon. Quantitative research is mainly used in social sciences.

4. Qualitative Research

- Qualitative research is the approach usually related with the social constructivist concept which emphasises the socially constructed nature of reality.
- It is about recording, analysing and attempting to reveal the in debt meaning and significance of human behaviour and experience, including conflicting beliefs, behaviours and emotions.
- The qualitative method tries to answer why and how of decision-making rather than what and when.
- The approach to data collection and analysis is logical but allows for greater flexibility than in quantitative research.
- Data is collected in textual form on the basis of observation and communication with the participants, e.g., through participant observation, in-depth interviews and focus groups.
- It is not converted into numerical form and is not statistically analysed.

5. Descriptive Research

- Descriptive research is used to describe characteristics of an observable fact being studied.
- Descriptive studies are structured in such a way that it cannot be changed frequently, so it can be said that they are rigid in nature.
- They cannot identify cause and effect relationship between variables.
- Descriptive research answers questions such as who, when, where, what and how.
- This type of research describes what exists and may help to reveal new facts and meaning.
- The purpose of descriptive research is to observe, describe and document.

6. Exploratory Research

- Exploratory research is carried out for a problem that has not been clearly defined.
- The main aim of this research is to gather initial information which helps to define problems and recommend hypothesis.
- Exploratory research helps to settle on the best research design, data collection method and selection of subjects.
- Exploratory research often relies on secondary research such as reviewing available literature, or qualitative approaches such as informal discussions with consumers, employees, management or competitors, and more formal approaches through in-depth interviews, focus groups, projective methods, case studies or pilot studies.
- Exploratory research can mainly be conducted when researchers lack clear idea of the problem.
- The results of exploratory research are not generally useful for decision-making, but they can provide major insight into a given situation.

7. Historical Research

- It is defined as the type of research that examines past events or combinations of events to arrive at an account of what has happened in the past.
- Historical research is carried out to discover the unknown; answer questions, recognise the relationship that the past has to the present; record and assess activities of individuals, agencies, or institutions; and assist in understanding the culture in which we live.
- Historical research can exhibit patterns that occurred in the past and over time which can facilitate us to see where we came from and what kinds of solutions we have used in the past.
- We usually will notice that what we do today is expressly rooted in the past. Historical research involves the process of collecting and reading the research material collected, and writing the document from the data collected.

8. Experimental Research

- It is commonly used in sciences such as sociology and psychology, physics, chemistry, biology, medicine, etc.
- It is a collection of research designs which use manipulation and controlled testing to understand fundamental processes.
- Usually, one or more variables are manipulated to establish their effect on a dependent variable.
- Experimental Research is mainly used when: there is time priority in a causal relationship (cause precedes effect) or there is uniformity in a causal relationship (a cause will always lead to the same effect) or the magnitude of the correlation is great.
- Experimental research is important to society as it helps us to improve our daily lives.

1.7 VARIOUS STAGES OF A RESEARCH

Whenever a scientific problem is to be solved, there are several important steps to follow. The problem must be stated clearly, including any simplifying assumptions. A universal set of chronological components of research is the following:

- Selection of a research topic
- Definition of a research problem
- Literature survey
- Evaluation of current status of the topic chosen
- Formulation of hypotheses
- Research design
- Actual investigation
- Data analysis
- Interpretation of result
- Report

1.8 QUALITIES OF A GOOD RESEARCH

A research is a wide task and it requires great efforts for a researcher. A good research should have the following qualities:

1. **Clarity:** It is the most significant quality of any research. The research should be clear so that others can easily understand the nature of your research. The research should have a single version so that people cannot get sidetracked. The topic should have to be very clear in mind of researcher so that he can properly undertake it. The research topic should have to be free of any vagueness. Clarity also means that the research should have to be directional and it should set the whole research methodology.
2. **Planned Research Design:** Research design must be properly planned. For example, if a researcher is using sampling technique for a selected group, the researcher must make the sample representative. Here, the researcher can collect primary as well as secondary data. The major challenge generally seen is personal bias in selecting data by the researcher.
3. **Maintain Ethical Standard:** Mainly researchers work independently. Data reliability should be the main concern. Ethical issues involved in conducting research should be given precedence.
4. **Organised Presentation of Findings:** The most important task of a researcher is to present research findings in an organised manner. Researcher should avoid technical jargons and must include objectivity in results.
5. **Emphasise Limitations:** It is desirable that the researcher points out limitations which he has gone through the process of research. Limitations may be related to data collection, shortage of time, money, etc.
6. **Rationalise Conclusions:** Researchers must verify their work and provide rationalised conclusions, which are mainly received when the research work is free from bias.

1.9 ADVANTAGES OF RESEARCH

1. **Facilitates Discoveries:** Research leads to the development of new concepts, theories, principles, tools, methods, etc.
2. **Answers Queries:** Research answers questions like what, where, when and how. The answer provides a right direction and tries to give a proper solution.
3. **Facilitates Interaction with People:** Research leads to interaction with people during the process of data collection. Sometimes, the researcher not only gathers information from respondents but they also educate the respondents which lead to social upliftment.
4. **Predicts Future:** Research gathers data, analyses it and helps an organisation in predicting the future requirements for it.
5. **Creates Progressive Outlook:** Research creates progressive outlook in an organisation. It develops employees through logical thinking which ultimately results in overall success of an organisation.
6. **Uses Questionnaires:** Questionnaires serve as an important tool to collect data and information can be checked as they are recorded on questionnaire, thus elimination bias and increasing objectivity of research.
7. **Maintains Objectivity:** Objectivity is the ability to examine records as they are existing without any bias. Research maintains objectivity and gives proper solutions to problems specified.

1.10 LIMITATIONS OF RESEARCH

1. **Bias by Researcher:** Bias is a major issue in the success of any research work. Bias takes place at many levels like personal bias by researcher, biased questionnaire, biased respondent or improper sampling.
2. **Defective Data Collection:** When a researcher is not loyal towards his work, he may use faulty methods of data collection leading to faulty conclusions.
3. **Existence of Subjectivity:** Subjectivity occurs when researcher is inclined by likes and dislikes, beliefs, faith, etc. These factors may have a negative impact on the worth of research and cause damage thereby increasing subjectivity of the research work.
4. **Lengthy and Time-consuming:** Research is a lengthy process and a time-consuming activity. Even though carried out in systematic manner, exploratory research may require more time.
5. **Costly Process:** Research is costly process as it requires services of experts. Cost is also involved in data collection.

1.11 PROCESS OF RESEARCH

However, the following order concerning various steps provides a useful procedural guideline regarding the research process:

1. Formulating the research problem
2. Extensive literature survey
3. Development of working hypothesis
4. Preparing the research design

5. Determining sample design
6. Collecting the data
7. Execution of the project
8. Analysis of data
9. Hypothesis testing
10. Generalisations and interpretation
11. Preparation of the report or presentation of the results, i.e., formal write-up of conclusions reached.

1. Formulating the Research Problem

There are two types of research problems, viz., those which relate to states of nature and those which relate to relationships between variables. At the very outset, the researcher must single out the problem he wants to study, i.e., he must decide the general area of interest or aspect of a subject matter that he would like to inquire into. Initially, the problem may be stated in a broad general way and then the ambiguities, if any, relating to the problem be resolved.

Then, the feasibility of a particular solution has to be considered before a working formulation of the problem can be set up. The formulation of a general topic into a specific research problem, thus, constitutes the first step in a scientific enquiry.

Essentially, two steps are involved in formulating the research problem, viz., understanding the problem thoroughly, and rephrasing the same into meaningful terms from an analytical point of view. The best way of understanding the problem is to discuss it with one's own colleagues or with those having some expertise in the matter. In an academic institution, the researcher can seek the help from a guide who is usually an experienced man and has several research problems in mind.

Often, the guide puts forth the problem in general terms and it is up to the researcher to narrow it down and phrase the problem in operational terms. In private business units or in governmental organisations, the problem is usually earmarked by the administrative agencies with which the researcher can discuss as to how the problem originally came about and what considerations are involved in its possible solutions.

2. Extensive Literature Survey

Once the problem is formulated, a brief summary of it should be written down. It is compulsory for a research worker writing a thesis for a Ph.D. degree to write a synopsis of the topic and submit it to the necessary Committee or the Research Board for approval.

At this juncture, the researcher should undertake extensive literature survey connected with the problem. For this purpose, the abstracting and indexing journals and published or unpublished bibliographies are the first place to go to. Academic journals, conference proceedings, government reports, books, etc. must be tapped depending on the nature of the problem. In this process, it should be remembered that one source will lead to another.

The earlier studies, if any, which are similar to the study in hand, should be carefully studied. A good library will be a great help to the researcher at this stage.

3. Development of Working Hypotheses

After extensive literature survey, researcher should state in clear terms the working hypothesis or hypotheses. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. As such, the manner in which research hypotheses are developed is particularly important since they provide the focal point for research. They also affect the manner in which tests must be conducted in the analysis of data and indirectly the quality of data which is required for the analysis. In most types of research, the development of working hypothesis plays an important role.

Hypothesis should be very specific and limited to the piece of research in hand because it has to be tested. The role of the hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track. It sharpens his thinking and focuses attention on the more important facets of the problem. It also indicates the type of data required and the type of methods of data analysis to be used.

How does one go about developing working hypotheses? The answer is by using the following approach:

- (a) Discussions with colleagues and experts about the problem, its origin and the objectives in seeking a solution;
- (b) Examination of data and records, if available, concerning the problem for possible trends, peculiarities and other clues;
- (c) Review of similar studies in the area or of the studies on similar problems; and
- (d) Exploratory personal investigation which involves original field interviews on a limited scale with interested parties and individuals with a view to secure greater insight into the practical aspects of the problem.

Thus, working hypotheses arise as a result of *a priori* thinking about the subject, examination of the available data and material including related studies and the counsel of experts and interested parties. Working hypotheses are more useful when stated in precise and clearly defined terms.

It may as well be remembered that occasionally we may encounter a problem where we do not need working hypotheses, especially in the case of exploratory or formulative researches which do not aim at testing the hypothesis. But as a general rule, specification of working hypotheses is another basic step of the research process in most research problems.

4. Preparing the Research Design

The research problem having been formulated in clear-cut terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted. The preparation of such a design facilitates research to be as efficient as possible yielding maximal information. In other words, the function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. But how all these can be achieved depends mainly on the research purpose. Research purposes may be grouped into four categories, viz.,

- (i) Exploration,
- (ii) Description,
- (iii) Diagnosis, and
- (iv) Experimentation.

A flexible research design which provides opportunity for considering many different aspects of a problem is considered appropriate if the purpose of the research study is that of exploration. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that minimises bias and maximises the reliability of the data collected and analysed.

5. Determining Sample Design

All the items under consideration in any field of inquiry constitute a 'universe' or 'population'. A complete enumeration of all the items in the 'population' is known as a census inquiry. It can be presumed that in such an inquiry when all the items are covered, no element of chance is left and highest accuracy is obtained. But in practice, this may not be true.

Even the slightest element of bias in such an inquiry will get larger and larger as the number of observations increases. Moreover, there is no way of checking the element of bias or its extent except through a resurvey or use of sample checks. Besides, this type of inquiry involves a great deal of time, money and energy. Not only this, census inquiry is not possible in practice under many circumstances.

For instance, blood testing is done only on sample basis. Hence, quite often, we select only a few items from the universe for our study purposes. The items so selected constitute what is technically called a sample. The researcher must decide the way of selecting a sample or what is popularly known as the sample design.

6. Collecting the Data

In dealing with any real-life problem, it is often found that data at hand are inadequate, and hence, it becomes necessary to collect data that are appropriate. There are several ways of collecting the appropriate data which differ considerably in context of money costs, time and other resources at the disposal of the researcher.

Primary data can be collected either through experiment or through survey. If the researcher conducts an experiment, he observes some quantitative measurements, or the data, with the help of which he examines the truth contained in his hypothesis.

7. Execution of the Project

Execution of the project is a very important step in the research process. If the execution of the project proceeds on correct lines, the data to be collected would be adequate and dependable. The researcher should see that the project is executed in a systematic manner and in time. If the survey is to be conducted by means of structured questionnaires, data can be readily machine-processed. In such a situation, questions as well as the possible answers may be coded. If the data are to be collected through interviewers, arrangements should be made for proper selection and training of the interviewers.

The training may be given with the help of instruction manuals which clearly explains the job of the interviewers at each step. Occasional field checks should be made to ensure that the interviewers are doing their assigned job sincerely and efficiently. A careful watch should be kept for unanticipated factors in order to keep the survey as much realistic as possible. This, in other words, means that steps should be taken to ensure that the survey is under statistical control so that the collected information is in accordance with the pre-defined standard of accuracy. If some of the respondents do not cooperate, some suitable methods should be designed to tackle this problem. One method of dealing with the

non-response problem is to make a list of the non-respondents and take a small sub-sample of them, and then with the help of experts, vigorous efforts can be made for securing response.

8. Analysis of Data

After the data have been collected, the researcher turns to the task of analysing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences.

The unwieldy data should necessarily be condensed into a few manageable groups and tables for further analysis. Thus, researcher should classify the raw data into some purposeful and usable categories.

Coding operation is usually done at this stage through which the categories of data are transformed into symbols that may be tabulated and counted. *Editing* is the procedure that improves the quality of the data for coding. With coding, the stage is ready for tabulation.

Tabulation is a part of the technical procedure wherein the classified data are put in the form of tables. The mechanical devices can be made use of at this juncture. A great deal of data, especially in large inquiries, is tabulated by computers. Computers not only save time but also make it possible to study large number of variables affecting a problem simultaneously.

Analysis work after tabulation is generally based on the computation of various percentages, coefficients, etc. by applying various well-defined statistical formulae. In the process of analysis, relationships or differences supporting or conflicting with original or new hypotheses should be subjected to tests of significance to determine with what validity data can be said to indicate any conclusion(s).

9. Hypothesis Testing

After analysing the data as stated above, the researcher is in a position to test the hypotheses, if any, he had formulated earlier. Do the facts support the hypotheses or they happen to be contrary? This is the usual question which should be answered while testing hypotheses.

Various tests, such as Chi-square test, t-test, F-test, etc. have been developed by statisticians for the purpose. The hypotheses may be tested through the use of one or more of such tests, depending upon the nature and object of research inquiry. Hypothesis testing will result in either accepting the hypothesis or in rejecting it. If the researcher had no hypotheses to start with, generalisations established on the basis of data may be stated as hypotheses to be tested by subsequent researches in times to come.

10. Generalisations and Interpretation

If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalisation, i.e., to build a theory. As a matter of fact, the real value of research lies in its ability to arrive at certain generalisations. If the researcher had no hypothesis to start with, he might seek to explain his findings on the basis of some theory. It is known as interpretation. The process of interpretation may quite often trigger off new questions which in turn may lead to further researches.

11. Preparation of the Report or the Thesis

Finally, the researcher has to prepare the report of what has been done by him. Writing of report must be done with great care keeping in view the following:

1. The layout of the report should be as follows:
 - (i) The preliminary pages,

- (ii) The main text, and
- (iii) The end matter.

In its preliminary pages, the report should carry title and date followed by acknowledgements and foreword. Then there should be a table of contents followed by a list of tables and list of graphs and charts, if any, given in the report.

The main text of the report should have the following parts:

- (a) **Introduction:** It should contain a clear statement of the objective of the research and an explanation of the methodology adopted in accomplishing the research. The scope of the study along with various limitations should as well be stated in this part.
- (b) **Summary of Findings:** After introduction, there would appear a statement of findings and recommendations in non-technical language. If the findings are extensive, they should be summarised.
- (c) **Main Report:** The main body of the report should be presented in logical sequence and broken down into readily identifiable sections.
- (d) **Conclusion:** Towards the end of the main text, the researcher should again put down the results of his research clearly and precisely. In fact, it is the final summing up.

At the end of the report, appendices should be enlisted in respect of all technical data. Bibliography, i.e., list of books, journals, reports, etc. consulted, should also be given in the end. Index should also be given specially in a published research report.

- 2. Report should be written in a concise and objective style in simple language avoiding vague expressions such as 'it seems,' 'there may be', and the like.
- 3. Charts and illustrations in the main report should be used only if they present the information more clearly and forcibly.
- 4. Calculated 'confidence limits' must be mentioned and the various constraints experienced in conducting research operations may as well be stated.

1.12 PURPOSE OF RESEARCH

- 1. **Progress and Good Life:** The purpose of all research is progress and good life. Progress results if the space of ignorance is occupied by knowledge and wisdom. The latter are the results of good research. Knowledge and wisdom drive the mankind to live an orderly good life.
- 2. **Development of Scientific Attitude:** One of the purposes of research is to develop scientific attitude. Scientific attitude is one that asks 'Why' and 'How' and answers are found. This 'Know-why' and 'Know-how' attitude nurtures talents and such intellectual talents are the great assets of society.
- 3. **Creativity and Innovativeness:** One of the purposes of research is encouragement to creativity and innovation. New products, new processes and new uses are the means through which the world goes dynamic. A dynamic world is not possible without newness introduced every now and then in every walk of life. And this is possible only through creativity and innovation. Research kindles the creativity and innovative instincts of people and thus experiments on the possibility of new things instead of waiting for the accidental and slow experience path to creativity and innovation.

4. **Testing Hypothesis and Establishing Theories:** A very important purpose of research is testing of hypothesis and establishing theories. As was already pointed out, knowledge is power. That knowledge comes from testing hypotheses and establishing new theories. Proven hypotheses become theories.
5. **Prediction and Control:** Applied research has a great say in prediction and control in almost all walks of human endeavour. Prediction is jumping into the future and the theories constitute the launchpad. Control looks for deviation between actual happening and predicted happening. In the process, the theories get reevaluated and redefined.
6. **Purposive Development:** Development = Growth + Change. Growth is uni-scaled while change is multi-scaled. In the natural process, development does take place through trial and error through casual observations, through actual exposure and the like. But this is evolutionary and time-consuming. Revolutionary development takes forth through discontinuous change. Research is the seed of such dichotomous change or even disruptive change which contributes to purposive development.
7. **Problem Solving:** The purpose of any research is problem solving. What is a problem? Problem is deprivation or depreciation of something. Knowledge deprivation, efficiency deprivation, productivity depreciation, etc. exist. How can these be solved? Research into the forces that cause deprivation and measures to contain them from causing deprivation is needed. Thus, problem solving is a great purpose of research.
8. **Schematic Evaluation:** Research is also carried out to systematically evaluate a process or practice of an organisation to know its strengths and weaknesses so that areas for improvement process can be identified.
9. **Impact Analysis:** Research is undertaken to assess the impact of certain measures or change introduced on relevant variables. Impact studies are useful for biological, social, business, economic and other areas of decision-making.
10. **Methodological Improvement:** Another purpose of research is improving research methodology itself. Developments in the field of measurement and scaling are immense. Whether these can be appropriately used in the case of particular research areas? To answer the question, research needs to be done. Validation, revalidation and devalidation of methodological aspects, thus, constitute good piece of research. And this is one of the purposes of research. In fact, any research has a responsibility towards contribution to methodological enrichment.

Questions:

1. What is research? State the objectives of research?
2. Discuss the types of research ?
3. Enumerate in detail the research plan / design to be followed by the researcher.
4. Short notes on:
 - Qualities of a good researcher
 - Advantages of research
 - Limitations of research