

RESEARCH METHODOLOGY

PAPER-IV

M.A. POLITICAL SCIENCE, II SEMESTER



Director, I/c

PROF.V. VENKATESWARLU

MA.,M.P.S., M.S.W., M.Phil., Ph.D.

CENTRE FOR DISTANCE EDUCATION

ACHARAYA NAGARJUNA UNIVERSITY

NAGARJUN NAGAR – 522 510

Ph:0863-2346222,2346208,

0863-2346259 (Study Material)

Website: www.anucde.info

e-mail:anucdedirector@gmail.com

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Semester – II

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(Common for both M.A. Political Science & M.A. Public Administration students
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Unit - I

Social Research and Methods

1. Traditional Methods
2. Scientific Method
3. Importance of Social Research

Unit – II

Theory Formation

1. Theory
2. Facts and Values
3. Concept Formation

Unit-III

Hypothesis and Research Design

1. Formation of Hypothesis
2. Testing of Hypothesis
3. Research Design

Unit – IV

Collection and Analysis of Data and Report Writing

1. Sampling, Observation, Interview and Questionnaire
2. Analysis of Data
3. Report Writing

Reading List:

1. W.J. Goode & P.K. Hatt: Methods of Social Research
2. Wilkinson & Bhandarkar: Methodology and Techniques of Social Research
3. Pauline Young: Scientific Social Surveys.

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Head

Department of
Political Science and Public Administration
Acharya Nagarjuna University
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LESSON-01**RESEARCH METHODOLOGY: TRADITIONAL
METHOD****Structure:**

11.0	Objectives
11.1	Introduction
11.2	What is Research?
11.3	Meaning of the Research
11.4	Research Objectives
11.5	Research Motivation
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1.0 Objectives:

1. Students would know about the research, meaning and its methodology.
2. Students would be able to learn about the traditional methods.

1.1 Introduction:

It actually give the concept of research and as understood in the academic world differentiate, it the free way the 'research', is used in everyday usage. Even though, in the academic world the nature of the research is the subject, the great part of discussion. The procedure of research is to find out a research problem. What a research problem is, and how to find, solution to it.

1.2 What is Research?

It is the word used in everyday life to term a number of actions like collecting information, investigating into obscure theories, and developing new invention. The word research, can be used in common language to state the events frequently, termed research which are not in its actual meaning and at some of the sensitive language that environments the word.

1.3 Meaning of the Research:

Research is the manner of speaking generally, refers to search for knowledge and it can also define research as, ‘a scientific and systematic search for related to the information on a particular topic’. Actually research is the art used to investigate scientifically on a particular area or topic. According to the Advanced Lerner’s Dictionary of Current English, “A careful investigation or inquiry specially through search for new facts in any branch of knowledge”. At the same time, according to Redman and Mory, they defined it as, “Systematized effort to gain new knowledge”. Some of the people think that, research is a kind of movement and it is from the known to unknown, it can be regarded as the journey to find out new discoveries. Inquisitiveness is the mother of knowledge and the process by which man employs for attaining the information of any kind of unknown, can be known as ‘research’.

Research is an academic activity and Clifford Woody stated as, “it includes protecting and redefining problems, framing hypothesis or by proposing answers; collecting, organizing and assessing data, making inferences and coming to the conclusions and finally testing the conclusions very carefully to estimate whether they can be formulate a hypothesis”. In the Encyclopedia of Social Sciences, D. Slesinger and M. Stephenson, defined research as, “The manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art”. Therefore, research is a unique involvement to the current standard of information making for its progress. It is the quest of the fact with the help of study, observation, contrast and experiment. In other words the quest of information by the help of aims and methodical procedure to find the solutions to a research problem. This methodical procedure regarding the overview and the making of theory is also research. Therefore, the word ‘research’ understood as the systematic procedure containing of enunciating the problem, formulating a hypothesis, collecting the data, analyzing the data and coming to the conclusions in the type of solutions about the problem or in the form of some theoretical interpretations.

1.4 Research Objectives:

The important reason to conduct research is to find out the solutions to the problems, by applying the scientific methods and to discover the reality which has not been yet discovered. To find out these answers one must have certain objectives.

1. To increase understanding with a phenomenon or attain new visions into it (it can be called as exploratory or formulative research studies)
2. To describe exactly the characteristics of specific person, condition or a group (this study with this object in view known as descriptive study)
3. To conclude the occurrence with which something occurs or it associates with some other thing (studies known as diagnostic research)
4. To examine a hypothesis of a causal relationship between variables (known as hypothesis testing studies).

1.5 Research Motivation:

The possible motives to do research are either of the following:

1. Wish to acquire a research degree along with its momentous benefits
2. Want to undertake the challenge of unsolved problem
3. Wish to get joy of intellectuality by doing novel research
4. Want to obtain respect in the society.

There may be other motivational factors like government directions, conditions in the employment, inquisitiveness to know about the novel things, social things and wakening and such other factors can motivate the people to do research.

1.6 Kinds of Research:

The important kinds of research are as follows:

Descriptive vs analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical and some other kinds of research.

1.7 Approaches of Research:

Depending upon the kinds of research, there are mainly two important research approaches, and they are Quantitative approach and Qualitative approach. In the quantitative approach, the creation of data in quantitative kind which can have to undergo quantitative analysis in a form of stiff manner. This type of approach can be divided as 'inferential, experimental and stimulation approaches' to research. The importance of this inferential research is to create a data base by which infer the relationships of the population. By this method the sample of population is studied by using questions or observations to understand the characteristics and after that, it can be inferred to see whether the population has the same characters.

The other method experimental approach is well control on the research atmosphere and in this, some of the variables operated to witness their influence on the variables. In the stimulation approach, the construction of an artificial atmosphere within which applicable information and data can be created. This type of research can be useful in building models for understanding future situations.

Qualitative approach is mainly concerned with the assessments of attitudes, opinions and behaviour, by using this type of approach, create outcomes like in non-quantitative kind or in the form of which are not subjected to quantitative analysis. They use the techniques like, group interviews, projective techniques and depth interviews.

1.8 Research Methods and Methodology:

It is very important to understand the differences among the research methods and methodology. The methods of research might be agreed that, all the methods or the tactics used for the conduction of the research, or the procedures used by the researcher while, examining the research problem can be called as research methods. Depending upon the types, these methods can be of three types and they are as follows:

1. The methods which are related with the data collection, they are used only when the data is existing but is not appropriate to come to the conclusions.
2. The other one contains of statistical techniques which are used for establishing relationship among the data and unknowns

3. It contains of those procedures which are used to assess the correctness of the result they got.

1.9 Research Methodology:

By using this methodology, one can analytically resolve the research problem, it can be seen as a science of examining how research is completed scientifically. Here we study the different steps used by the researcher, while examining his research problem as well as the logic behind this problem. It is very important to know about the methodology along with the research methods, researcher has to understand how to calculate the mean, the mode, the median or the standard deviation. The researcher need to develop methodology so that, the research problem can be examined in scientific way. By using this methodology, researcher can specify what kind of decisions he choose and the need to choose.

The scope of methodology, is wider than the research methods, when one deals about the research methodology, then it also contains about the research methods the logic behind the methods and also talks about the use of specific method the reason for using such method, by using such method the outcomes are capable of being evaluated either by the researcher or by others.

1.10 Traditional Method:

The social science study is more than the learning of the discrete social sciences. Though it is factual that, to be a good social scientist need to see all of individual modules and at the same time need to identify how they interconnect. By way of specifying too quickly, several social scientists can miss the vision of the interdependence, that are so vital to accepting modern problems. That is why it is essential to take a course cover all the social sciences. To recognize how and when social science broke up, one need to study the earlier. In Greece in the sixth century B.C., we had the philosopher Socrates who walks around the streets of Athens, disputing with his friends. He probes them questions, and then other questions, leading those people to reason the way he needs them to reason (this became known as the Socratic Method). Reasoning is the procedure by which conclusion can be made by use of logical thinking, there are three fundamental kinds of reasoning. They are deductive, inductive and combination of both. The deductive reasoning was first started by the ancient Greek, and it was refined by Aristotle by his deductive ways. In this process an argument based on deduction starts with the general statements and by the arguments based on logics

by doing so they, come to a conclusion. Whereas, the inductive reasoning works opposite to it, it begins from the specific deduction and derives general conclusion from it. The logic which used in it not so summarized.

The value of inductive reasoning was revealed by Bacon in 1600, by the careful and systematic observations of the events in the world, number of theories have been developed to answer the rules of the nature. The theory of Darwin about the evolution of Species, and theory of Mendel on genetics are mainly developed from the induction reasoning only. However, deductive reasoning was restricted because it, unable to handle certain kind of statements and it looks be derived from the observation and experience. It was regarded that only inductive reasoning shown to be clumsy and messy and in practice, it hardly applied to latter. When both the induction and deduction reasoning joined to form inductive/deductive reasoning by such method, the hypothesis would be based on inductive observations only and charting their implications by deduction, examining them to refine or reject them on the base of outcomes, made a commendable for the growth of information particularly, of scientific knowledge. The combination of these, to give rise to the modern scientific research.

Times have changed since then; universities came up through the world and produced colleges within the universities. Oxford, one of the first universities, now has thirty colleges related with it, and the growth and validation of educational institutions has altered the acts of both students and faculty. As information accrued, it became more difficult for one person to learn, let alone retain, it all.

There are many examples by which traditional methods offer tremendous advantages, face to face group discussions allow the nature and the magnitude of the emotional reactions of the participants or to understand the palpability of the dynamics of the group. The traditional methods also works as an effective counter balance for those departments of research that are biased.

The first level research, understood as fundamental or traditional research, it is branded as an independent experimental research studies which are targeted at finding of 'fact' by which educational exercise may profit. It is mainly concerned with collecting information which would be beneficial to research and at the second level, the kind of traditional research which targeted directly, as an outcome of the study, at the development of some features of the total education programme.

Basic research is an examination on elementary principles and reasons for incidence of a specific occasion or procedure or phenomenon. It is also called theoretical research. Study or investigation of some natural phenomenon or concerning to pure science are called as basic research. Basic researches occasionally, might not clue to instant use or application. It is not worried with answering any practical problems of direct interest. It offers a methodical and profound vision into a difficult and helps taking out scientific and logical reason and conclusion on it. It aids to shape new boundaries of information. The results of basic research form the foundation for numerous applied research. Researchers working on applied research have to make the practice of the results of basic research and explore the usefulness of them. Research on enlightening a theory or a process, also mentioned as fundamental research. For example, presume a theory, valid to a system, if the system contents some exact circumstances. Altering the theory to rub in it to an overall state is a basic research. Efforts to find responses to the following queries truly form fundamental research.

- Why are materials like that?
- What are they?
- How does a crystal melt?
- Why is sound generated when water is heated?
- Why do we sense tough when walking on seashore?
- Why birds are position them in 'greater than (>)' shape when flying in a group?

The Fundamental research hints to a novel theory or a new property of matter or even the existence of a new matter, the information of which has not been known or stated before. For example, fundamental research on 1.Astronomy could hints to identification of fresh planets or stars in our galaxy, 2.Fundamental units results in identification of new units, 3.Compound meanings might clues to new designs or new things related with them, 4.Disparity comparisons grades in new kinds of solutions or new properties of solutions not known till now.

1.11 Conclusion:

It is the word used in everyday life to term a group of actions like collecting information, investigating into obscure theories, and developing new invention. Research is the manner of

speaking generally refers to search for knowledge and it can also define research as, ‘a scientific and systematic search for related to the information on a particular topic’. Actually research is the art, used to investigate scientifically on a particular area or topic. Therefore, research is a unique involvement to the current standard of information making for its progress. It is the quest of the fact with the help of study, observation, contrast and experiment. In other words the quest of information by the help of aims and methodical procedure to find the solutions to a research problem.

The important reason to conduct research is to find out the solutions to the problems by applying the scientific methods and to discover the reality which has not been yet discovered. The important kinds of research are as follows: Descriptive vs analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical and some other kinds of research. Depending upon the kinds of research there are mainly two important research approaches are there and they are Quantitative approach and Qualitative approach.

By using methodology, one can analytically resolve the research problem, it can be seen as a science of examining how research is completed scientifically. Here we study the different steps used by the researcher while examining his research problem as well as the logic behind this problem.

The social science study is more than the learning of the discrete social sciences. Though it is factual that to be a good social scientist need to see all of individual modules, and at the same time need also identify how they interconnect. By way of specifying too quickly, several social scientists can miss the vision of the interdependence that are so vital to accepting modern problems. That is why it is essential to take a course cover all the social sciences.

1.12 Model Questions:

1. Write in detail about the meaning of the research and its methodology?
2. Differentiate between the research methods and methodology?
3. Discuss about the traditional method of research?

1.13 References:

1. P. Saravanavel, Research Methodology KitabMahal, Allahabad, 1987.
2. C.R Khotari, Research Methodology Methods and Techniques, New Age International (P) Limited, Publishers, New Delhi.

3. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
4. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
5. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.
6. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi,2007.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-02**RESEARCH METHODS: SCIENTIFIC METHOD****Structure:**

2.0 Objectives

2.1 Introduction

2.2 Research and Scientific Method

2.3 Assumptions or Expectations

2.3.1 Order

2.3.2 External Reality

2.3.3 Reliability

2.3.4 Parsimony

2.3.5 Generality

2.4 Characteristics of Scientific Methods

2.5 Conclusion

2.6 Model Questions

2.7 References

2.0 Objectives:

- 1 Students would know about the meaning of scientific method.
- 2 Students would be able to learn about the scientific methods.

2.1 Introduction:

An area where the scientific subject uses a scientific procedure with methodical approach to a research problem and inquiries by an objective and correct observation, collection and analysis of data, straight experimentation and repetition of these methods. Researchers confirm collecting of information, observing the phenomena, conducting experiments and recording methods and results accurately.

The scientific process is the area which give rise to the base of the modern scientific enquiry, therefore, it is very much significant to state, some of the important expectations made in this procedure of enquiry, and to mention some of the characteristics. This scientific procedure is functional, to larger or smaller amount, in some of the disciplines of the research not mainly

thought as scientific like, psychology, sociology and education. Some of the scientist argues about the relevance of doing this. For instance, Medawar stated about it as, “I doubt very much whether a methodology based on the intellectual practices of physicists and biologists (supposing that methodology to be sound would be of any great use to sociologists’.

2.2 Research and Scientific Method:

It is important to know the meaning of scientific method the two words research and scientific, are very diligently connected, as it is understood that, research can be known as, according to Bernard Ostle and Richard W. Mensing, “an inquiry into the nature of, the reasons for, and the consequences of any particular set of circumstances are experimentally controlled or recorded just as they occur. Further research implies the researcher is interested in more than particular results; he is interested in the repeatability of the results and in their extension to more complicated and general situations”. Whereas, the philosophy is general to any research method but they might differ from one science to the other and it is generally given the name as, scientific method. Karl Pearson states about it as, “The scientific method is one and the same in the branches (science) and that method is the method of all logically trained minds...the unity of all sciences consists alone in its methods, not its material; the man who clarifies facts of any kind whatever, who sees their mutual relation and describes their sequences, is applying the Scientific Method and is a man of science”.

Scientific methods are a quest of fact as resolute by logical deliberations. The perfect model of science is, to attain a methodical interrelation of truths. Scientific method tries to accomplish, as stated by Ostle and Mensing, his ideal by experimentation, observation, logical arguments from accepted postulations and a combination of these three in varying proportions. In the research method of scientific way, logical helps in framing proposals openly and exactly, therefore, the conceivable substitutes become perfect. Additionally, reason is established as the concerns of substitutes and when these are related with the noticeable phenomena, it would be conceivable for researcher or scientist to deliberate which substitute, most in coherence with the elements which are observable ones. All these can be performed by research and survey investigations which makes the essential parts of scientific method.

Research is performed to examine the hypotheses and to find new relationships among the variables. But the conclusions which can be developed on the grounds of research data, are

usually condemned for defective expectations or poorly planned research, badly implemented research or defective explanations. As such, the researcher should take care, while evolving the investigational proposal and should mention only likely interventions. The drive of survey research may also be to offer scientifically collected evidence to work as a source for the researchers for their conclusions.

The scientific method is, created on definite elementary guesses which can be mentioned here under:

1. It banks on empirical proof
2. It uses applicable concepts
3. It is dedicated to only objective concerns
4. It assumes ethical impartiality, that is, it goals at nothing but creating only sufficient and accurate declarations about the population matters
5. It effects into probabilistic forecasts
6. The methodology of it is made known to all, apprehensive for acute inspection are for use in testing the conclusions through duplication
7. It targets at framing most overall axioms or what can be called as scientific theories.

2.3 Assumptions or Expectations:

Cohen and Manion stated that there are five important expectations essential of scientific procedure. They are, order, external reality, reliability, parsimony and generality.

2.3.1 Order:

The major expectation is the trust that, there is some sort of order in the universe, and it is likely to advance some consideration for this order. In fact it is connected to the notion of determinism, the expectation that proceedings have reasons, and the connections among proceedings and reasons can be exposed. This kind of regularity enables, some estimates to be done for the future proceedings, if some things like car is moving today then it can happen even tomorrow. The scientist would agree that the due to defective information, forecasts of different levels possibility often results.

2.3.2 External Reality:

The second expectation is that the, in order to permit us to advance understanding of the world, there should be accord among the people by which presence of external reality, and at the same time, individuals identify the similar reality, a public or collective reality. It is very barely essential to point out that ample viewpoints, discussions have been dedicated to the nature of the truth. However, scientific question trusts on the approval of the information of consistency, which is increased by the experience to deliver empirical proof, a proof verifiable by opinion backing or disprove the theory.

2.3.3 Reliability:

The third expectation is the dependability of the human insight and intelligence. In spite of the numerous means, in which the sense can be deceived, researchers rest on their intellects to record and measure their work consistently. Reasoning is a significant technique of forming data and notions and is considered, if used perfectly as a reliable tool of research.

2.3.4 Parsimony:

The fourth expectation is the principle of parsimony, the phenomena must be answered probably in the manner of economics. Needless complexity is abhorred and scientists target to attain the most graceful and modest theories.

2.3.5 Generality:

The fifth expectation is generality, in this, expectation can be effectively related among the specific cases examined by the researcher and the common condition in the world at large. It is acknowledged that, these relationships can be comparatively uncomplicated in some sciences like, physics and chemistry, whereas in other sciences with a greater number of unidentified elements, in sociology, there is weaker chance of generality.

2.4 Characteristics of Scientific Methods:

By agreeing these expectations, by using the scientific research procedure shows six characteristics which differentiates it from other procedures of question, and they are as follows:

1. It is created by question and we are enclosed by question, unexplained problems, with estimation and unverified opinions. A person having enquiries in his mind is the prerequisite for research. How, why, when do actually things occur. What is the meaning of procedures, what made them, all these are the queries which can be produce in the actions of research. Such a queries frequently referred as research problem.
2. It is required to clarify an objective, without an obvious statement of the aims and what is planned to be performed and without this, research cannot be fruitful.
3. It involves a detailed plan of work, it required to be sensibly intended so that it can be attained its aims and conclusions of the research work.
4. It is targeted at the growing, and understanding by inferring truths or notions and getting some decisions about the meaning, the importance of the truths and ideas rest on the method in which the intelligence can abstract meaning from it
5. It needs logical dispute to back inferences, so that to converse a methodical series of notions, a perfect logical dispute is needed.
6. It is comparative in its actions, progresses in information and explanations of truths are founded on earlier knowledge, in short, is extended by the improvements. Then determination of research problems frequently bounces to additional problems which wants to solve.

Along with this research, frequently, separates the main query or problem into more expected sub questions, these problems might be huge or abstract to study as entire. Separating them into module portions which allows them to be virtually examined. The other thing is that, it uncertainly directed by claims called hypotheses (learned deductions or unsure declarations). By examining these hypotheses, offers a direction for exploration. And finally, it needs measurable data in attempting to answer the questions which initiated the research.

Therefore, according to Carlos L. Lastrucci, “the scientific method encourages a rigorous, impersonal mode of procedure dictated by the demands of logic and objective procedure”. Hence, scientific method suggests an unbiased, logical and organised method, which means, a process open form individual partiality or prejudice, a system in which the researcher is directed by the rules of logical thinking, a method in which the study ensues in an organized way and a method that suggests inside steadiness.

2.5 Conclusion:

An area where the scientific subject uses a scientific procedure, which is methodical approach to research problem and inquiries by an objective and correct observation, collection and analysis of data, straight experimentation and repetition of these methods. The scientific process is the area which give rise to the base of the modern scientific enquiry, therefore, it is very much significant to state some of the important expectations made in this procedure of enquiry and to mention some of the characteristics.

Scientific methods, a quest of fact as resolute by logical deliberations. The perfect model of science is to attain a methodical interrelation of truths. Scientific method tries to accomplish, as stated by Ostle and Mensing, his ideal by experimentation, observation, logical arguments from accepted postulates and a combination of these three in varying proportions. Assumptions or Expectations, according to, Cohen and Manion stated that there are five important expectations essential of scientific procedure. They are, order, external reality, reliability, parsimony and generality.

2.6 Model Questions:

1. Discuss about the meaning of the scientific methods?
2. Write in detail about the scientific method used in the research process?

2.7 References:

7. P. Saravanavel, Research Methodology KitabMahal, Allahabad, 1987.
8. C.R Khotari, Research Methodology Methods and Techniques, New Age International (P) Limited, Publishers, New Delhi.
9. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
10. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
11. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.
12. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi, 2007.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-03

IMPORTANCE OF SOCIAL RESEARCH

Structure:

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Importance of Research
- 3.3 Research in Social Science
- 3.4 Collect Needed Information
- 3.5 Create Alterations in the Research
- 3.6 Refining the Standard of Human Living
 - 3.6.1 Secured Life
 - 3.6.2 Understand Reality
 - 3.6.3 Explore History
 - 3.6.4 Knowing Arts
 - 3.6.5 How Research is performed
- 3.7 Research Procedure
- 3.8 Conclusion
- 3.9 Model Questions
- 3.10 References

3.0 Objectives:

1. Students would know about the importance of the social research.
2. Students would be able to learn about the broader perspective of the social research.

3.1 Introduction:

The examination of research methodology provides the researcher or the student, the required training in assimilating material and arranging them and involvement of field work is essential, and training in the techniques for collecting the information for a specific problem, use of statistics, preparation of questionnaire, organizing the research work and recording the proofs, sorting it out and interpreting it.

Research is considered as the process of examining something very widely, so as to achieve in depth information in same area. To get research a success, it must be planned in a systematic manner, record data carefully to come to clear conclusions. This research cares for the individuals, scholars, or any other person, who has the interest in research to get specific information on it. In fact it is very artistic, exploring, it can affect a matter both positively and negatively as well, which can be constructive and destructive also. Hence, one required to recognize that the outcomes are not merely from the research that determines, in fact it is persons who tackles the results.

3.2 Importance of Research:

Hudson Maxim's well known context regarding the importance of research is, "All progress is born of inquiry. Doubt is often better than overconfidence, for its leads to inquiry, and inquiry leads to invention". The upsurge in the quantity of research brands and development is possible by it. The part of research in numerous areas of applied economics, connected to business or to the entire economy has amplified in the present times. The progressively multifaceted nature of business and emphasis of the government and its consideration on the use of research in answering working problems. It helps in making economic policies therefore, it obtained further importance both in the government and the private areas of business. Research offers the ground for the most of the government policies in our system, for example, the welfare scheme of the government relies on, the analysis of requirements and wishes of the individuals and on the availability of revenues to meet these needs. The cost of needs has to be associated, likely revenues and for this to be done properly it requires the research. By the help of such research work, we can stratagem substitute policies and one can study the outcomes of each substitutes.

Making the decision based on such research works is important aspect, in fact research certainly helps the policy makers' decisions. At the same time, government has to write out packages to treat with all sides of the existence of the country and most of these would be connected directly or indirectly to the situations of the nation. The condition of growers, the difficulties of small and big industries, environment work, actions of the trade unions, the dispersal difficulties, the magnitude and nature of the defense services are the substances, needing research. Consequently, research is measured essential to allocate resources of the country. The other discipline, where the research is very much needed is, gathering evidence on the economic and social structure of the country, those facts specifies, what is occurring in

the country's economy and what modifications are captivating and what type of alterations are needed. Accumulating such statistical evidence is by no means, a monotonous task, but it includes a diversity of research difficulties. Presently, the government have huge staff of research technicians or experts to carry on this work. So, in this background of government, and the tool as the research, so that, policies has three separate stages of procedure like, 1. Examination of economic structure over constant compiling of truths; 2. Analysis of proceedings that are taking place and the investigation of the powers underlying them; 3. The forecast of forthcoming expansions.

Research has its superior importance in resolving several difficulties of operations and planning's. The research areas like operational research and beside with motivational research are viewed as the vital outcomes of these helps, in more than one manner while making the decisions. Market research is the examination of the construction and expansion of a market, for the drive of framing effective policies for the sake of purchase, production and sales. Operational research mentions to the use of mathematical, logical and analytical techniques to answer, for business problems of cost minimization or maximization of the profit and they can be called as optimization problems. Whereas, the motivational research, control, why the people behave as they like, is the chief distress of the characteristics. It can be stated as, it is anxious with the purposes of the motivations underlying the human behaviour. All these, help in people to take in the decision makings. Research with respect to the demand and market elements has great usefulness in business, give the evidence about the demand in the future. Presently, it has become an interior device of business policy, budgeting of the business, which eventually outcomes in a probable profit and loss, is mostly founded on the sales evaluations which in turn rest on business research. Once sales predicting is completed, proficient production and investment programmes can be set up around which are gathered the purchasing and financing plans. Research, so, substitutes instinctive business choices by more logical and scientific decisions.

3.3 Research in Social Science:

It is very much important for social scientists reviewing social relationships and in looking for replies to many social problems. It offers the intelligent fulfillment of significant few things just for the sake of information and also has practical value for the scientists of the social science to identify for the sake of being capable to do somewhat improved or in more effective way. Research in social sciences is worried both understanding for its own sake

with information for what it can donate to practical apprehensions. According to Marie Jahoda, Morton Deutsch and Stuart W. Cook, “This double emphasis is perhaps specially appropriate in the case of social science. On the one hand, its responsibility as a science is to develop a body of principles that may possible the understanding and prediction of the whole range of human interaction. On the other hand, because of its social orientation, it is increasingly being looked to for practical guidance in solving immediate problems of human relations”.

In tallying to what has been mentioned above, the importance of research can also be assumed observing the following points:

1. To those students who are to do a masters or Ph.D. theses, research is a careerism or a method to achieve a high position in the social structure.
2. For the specialists in research methodology, research might be a source of livelihood.
3. For the philosophers and thinkers, research might be the channel of new notions and visions.
4. For the literary women and men, research might be the growth of new styles and imaginative works.
5. For analysts and intelligentsias, it might be the generalizations of new theories.

So, research is the spout of the information for the sake of understanding and significant source offering the strategies for answering diverse business, governmental and social difficulties. It is the sort of official exercise which allows one, to know the new growths in once field in an improved manner.

In a broad way research can be done, so as to achieve following results, which can be very much useful in the society to find out the problems and to know the outcome of the some of the important welfare schemes introduced by the government.

3.4 Collect Needed Information:

It is obvious that research offers all the needed information in the area, where a researcher examines, government before implementing any of the welfare scheme throughout the nation they take specific areas and study the results of scheme, whether it is providing good results,

so that, it can be implemented in the entire nation successfully. Such information really helps the government to make changes if it is not become popular.

3.5 Create Alterations in the Research:

Occasionally, there must be some difficulties inside the procedure or project and sometimes it will be difficult to find out such problems. With the aid of research works, such problems can be identified and they can be altered accordingly, for instance there are number of U N projects when they found problems they have changes accordingly.

3.6 Refining the Standard of Human Living:

It is evident that, because of the research work it become possible to find new results which may be in the form of discoveries or inventions. It was the research of Graham Bell, who invented the telephone, now it become the important tool in the area of communication. The other invention was electric bulb by Edison, which is very much useful in the present day by illuminating the entire world. The other important discovery by Columbus, he paved the way to India by sea, because of this now the economic development in the progress by transporting goods from India and into India. These things really uplifted the living standards of the people.

3.6.1 Secured Life:

By the help of research one can attain more safe and secured life to its citizens. It is in the area of health, policing and army, in reality they are utmost needed to have safer life. The discoveries in the field of medicine really given the opportunity so that most of the diseases can be cured. And in the area of policing and army they provide internal security to its citizens by the help of new research works in the field of information and technology provide them to nab certain unconstitutional activities.

3.6.2 Understand Reality:

To find out the reality in any area either in the government or public it has become necessary tool to find out truth. There are several cases where blatant lies cover up the reality in such cases it explores the truth and gives the clear picture.

3.6.3 Explore History:

Research generally provided the history and nature of the human on the planets, it actually gives us the information to understand the ancient history so that one can explore the entire history of any kind by the use of research. By the help of such research activities today we found about the global warming, climate pattern in the Mars etc.

3.6.4 Knowing Arts:

It really helps in knowing about the works of the artists in the area of literature, sculpture and excavation. If there was no research in these areas then we would not have known about the ancient literature, ancient civilization like Sindh, Harappa and Mohenjo-Daro and the Egyptian and Aryan civilization.

3.6.5 How Research is performed:

How the research is performed from the following considerations.

1. Those who are making a career of carrying research, the importance of knowing research methodology and research techniques is very important because the same founds the tools of the research skill. The information of methodology delivers good preparation particularly to the new researcher and permits to do improved research. It aids in grow well-organized thoughtfulness or a “set of mind” to witness the zone accurately. Hence, those hopeful to conduct research should understand the techniques and the logics.
2. Information of how to do research would teach the skill to assess and use research outcomes with sensible assurance. In other words, we can mention that, the information of research methodology is supportive in many fields like, government or business administration, community development and social work where persons are gradually called upon to assess and use research outcomes for actions.

3.7 Research Procedure:

Before embarking on the details of research methodology and techniques, it seems appropriate to present a brief overview of the research process.

3.8 Conclusion:

Research is considered as the process of examining something very widely so as to achieve in depth information in same area. To get research a success it must be planned in a systematic manner record data carefully to come to clear conclusions. The upsurge in the quantity of research brands and development is possible by it. The part of research in numerous areas of applied economics, connected to business or to the entire economy has amplified in the present times. The progressively multifaceted nature of business and emphasis of the government and its consideration on the use of research in answering working problems.

Making of the decision based on such research works is important aspect, in fact research certainly helps the policy makers' decisions. At the same time government has to write out packages to treat with all sides of the existence of the country and most of these would be connected directly or indirectly to the situations of the nation. It is very much important for social scientists reviewing social relationships and in looking for replies to many social problems. It offers the intelligent fulfillment of significant few things just for the sake of information and also has practical value for the scientists of the social science to identify for the sake of being capable to do somewhat improved or in more effective way. Research in social sciences is worried both understanding for its own sake with information for what it can donate to practical apprehensions.

3.9 Model Questions:

1. Discuss about the Importance of the social research in our daily life?
2. Write about the broader perspective of the social research in our life?

3.10 References:

1. P. Saravanavel, Research Methodology KitabMahal, Allahabad, 1987.
2. C.R Khotari, Research Methodology Methods and Techniques, New Age International (P) Limited, Publishers, New Delhi.
3. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
4. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
5. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.

6. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi,2007.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-04**THEORY FORMATION, FACTS, VALUES AND
CONCEPT FORMATION****Structure:**

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Formation of Theory, Facts and Values
- 4.3 Important Characteristics of a Good Theory
- 4.4 Set of Laws Theory
- 4.5 Axiomatic Theory
- 4.6 Causal Process Theory
- 4.7 Conceptual Scheme Theory
- 4.8 Concept Formation
- 4.9 Abstract and Concrete Concept
- 4.10 Measurement of the Concept
- 4.11 Quantification of Concept
- 4.12 Conclusion
- 4.13 Model Questions
- 4.14 References

4.0 Objectives:

1. Students would know about the formation of theory.
2. Students would be able to learn about the facts and values.
3. Students would understand the concept formation.

4.1 Introduction:

Research studies in general and others concentrates on particular cases, differences between research studies and abstracts are very obvious. By the help of theory and concept formation, will make easier to communicate more scientifically when deliberation and assessing the problem in such area. This would aid to define the problem more correctly and aids to inform what kind of research is needed in that area.

4.2 Formation of Theory, Facts and Values:

It is for the researchers from science, it is observed as a manner of understanding the globe, according to Cohen and Manion, by the worth of clarification and thoughtfulness of forecast and govern. The final aim is theory and theories are conveyed in the way of statements which means theoretical statements. According to Kerlinger, who defined theory as, “a set of interrelated constructs (concepts) definitions and propositions that presents a systematic view of phenomena by specifying relations among variables, with a purpose of explaining and predicting phenomena”. The Theory effectively combines diverse and isolated pieces of empirical data to create an intelligible conceptual model which can be capable of applied more generally. Mouly, stated about it as, “If nothing else, a theory is convenience- a necessity, really- organizing a whole slough of unsorted facts, laws concepts, constructs, principles, into a meaningful and manageable form. It constitutes an attempt to make sense out of what we know concerning a given phenomenon”.

Theory provides a useful platform by which, to launch a quest for information and discoveries, and impetus for research. A fresh hypotheses can be suggested and new queries can be exposed. Formulation of theory would leads to identify the significant disciplines which need additional research, plugs out where knowledge is lacking, and brands it conceivable for a scientist to suggest the presence of previously unknown phenomena. Formulation of theory differs in position and quality on the base of different kinds of subject areas. In the areas of natural science, for instance in chemistry, these theories are improved and refined but in other cases such as in social sciences, they can be regarded as unimproved, less agreed extensively and even the qualityz also very less. This is because of the inventive quality of much theoretical effort carried out in relatively in new area of subjects. In the social sciences, according to Silverman, observes these theories, as living entities, improved and refined by good research. Conversely, because they instruct us to observe at the phenomena in specific manner, theories, the concepts by which they are grounded, they are self-confirming, which means that they cannot invalid, like in natural science, but only seen more or less fruitful. The nature of a theory is strongly predisposed by the level of the maturity of the specific specialty. The beginning phases of the science should be dominated by empirical efforts, the assimilation and cataloguing of the data only as the subject mellows can a suitable body of theory can be established.

4.3 Important Characteristics of a Good Theory:

1. A theoretical method should allow deductions which can be examined empirically, which means, it should offer means for its approval or refusal. Individual can examine the legitimacy of a theory by the validity of the prepositions (hypotheses) that can be developed from it. If continue tries to disconfirm its different flops, then larger confidence can be put in its legitimacy. This may go further indeterminately, till feasibly some hypothesis verifies unsustainable. This may create unintended proof of insufficiency of the theory and can lead to its refusal or generally replaced with more sufficient theory.
2. The theory should be friendly by the observation and earlier legalized theories. It should be based on the empirical data which was verified and relies on thorough guesses and hypothesis. Improved the theory, the more sufficiently it can be described the phenomenon under thoughtfulness, and the more fact it can combine into an expressive structure of ever grater generalizability.
3. The theories must be examined in simple terms; that theory is paramount that clarifies the most humblest manner. This is the law of parsimony. A theory must express the data sufficiently and however, must not be so broad as to be bulky. At the same time, it should not overcome the variables merely because they are problematic to express (Mouly and Cohen and Manion).

This seems to be good in the case of natural sciences but, in the social science, some of these situations unable to attain. For instance, the number 2, aspect could not be base the theory on the empirical data, which was tested in the logic of size and constant opinions. It would be very problematic to examine objectively the legality of its different hypothesis as commanded in number 1 aspect. What is significant to emphasize by its relationship among the theory developing and earlier legalized theory as stated in the aspect number 2. The context of theory to one's investigations will govern, how one sees at the world. In the year 1969, Quine, contended that, our experience of the global facts does not impose any single theory on us. Theories are under governed by the facts, and not factual information of the outside globe, is talented of backup various diverse interpretations of it. The reply to the query what present? Can only receive the reply "what be present is what theory suggests". As there are diverse theories, these would suggest diverse things, there will constantly be more than one logically alike theory reliable with the proof we have. This is due to the proof is inadequate,

but due to the similar facts could be put up in dissimilar manners by the way of changes in the configuration of the theory.

4.4 Set of Laws Theory:

The stable base on which most scientific inquiry is grounded, generally stated as a system of laws. Fundamentally, a law is a statement that defines relationship by which scientist have so much assurance that, they deliberate it a complete “truth” or “fact”. For instance, one of these is the law of gravity. Most declarations that are known as laws, comprise of concepts, that could be identified in actual sets, and several scientists claim that they must define an associational or improved, a causative relationship among the concepts. Therefore, a theory can consist a set of distinct, yet interconnected, laws. The fruitfulness of set of laws theory for attaining the aims of the science could be gauged by examining to what extent the theory can be useful to categorize and organize the aspects of the phenomenon under the study, whether can it offer logical expressions and dependable expectations. The important drawback of this concept of the theory is that, in spite of attaining most of the elementary aims of the science, it unable to lead to ‘sense of understanding’ of the phenomena.

4.5 Axiomatic Theory:

The other concept of the theory is known as ‘axiomatic theory’, this kind of theory consist as preliminary set of declarations (axioms or self-evident truths), every individual of others (they say diverse things), and by which it is likely to develop logically all the other statements (propositions) of the theory. Not like that of set of laws kind of theory, the preliminary declarations (axioms) are not necessary to be “laws”, thoroughly, backed by the empirical proof. In reality, the most conversant kind of axiomatic theory, Pythagorean geometry, the axioms are abstract and independent of the factual world. The axiomatic type could be used to categorize and organize phenomena and to logically resulting explanations and forecasts. Likewise, it also flops to offer the means of attaining a sense of thoughtful of the phenomena, except the declarations are put in a causal method.

4.6 Causal Process Theory:

Disparate the earlier two concepts the theory, the casual process theory is intended to encourage and considerate of the proceedings studied. It contains of an interconnected set of definitions and statements which defines the theory, but terms when and where the causal

procedure are probable, to happen and clarify the causal process or casual mechanisms by recognizing, the outcome of the independent variables on the dependent variables. All the declarations are considered as of equal significance, unlike in the type of axiomatic in which there are two classes of declarations (axioms and prepositions), and they are expressed as a causal sequence. In this type, as an axiomatic type, unmeasurable concepts are permitted and restrictions should be drawn on the possibility of application to which theory would be applicable. The causal process concept of theory, bonds with the other two kinds, the capability to categorize and organize phenomena and sensibly to effort explanations and forecasts. Its extra power is that it upholds thoughtfulness of how and why proceedings happen as they do. One chief benefit of the casual process is that it looks to be resulting obviously from mutual approaches of examining and emerging notions, mainly in the social sciences, by probing how and why this happen.

One more concept of theory which takes a straight behavior on social sciences, the difficulty of finding “facts” inside the study of the humanity and society brands the positivists tactic to theory, which is founded on outlined noticeable and frequently assessable phenomena and problematic to follow. If the notion thought is completely theoretically unbiased, matter is dared, then it follows that the viewer is a constituent in the structure of the information.

4.7 Conceptual Scheme Theory:

An investigation to fabricate social ‘facts’ is not possible in order to dare social theories, similar theories are improved realized as conceptual schemes, labeling or even suggesting, what can find the characteristics of these facts. Theories offers the stimulus for research as alive beings.

4.8 Concept Formation:

They are common expressions of specific phenomenon, for instance monkey, cow, happy, accomplishment, alienation, intelligence and socialism. If we inspect them carefully, it is obvious that each one is, a word, which signifies a notion. Cohen and Manion uttered this more correctly; “a concept is the relationship between the word (symbol) and an idea or conception”. Everyone, all over marks usage of concepts, still are used and understood by minor sets of people, experts or followers of occupations, for instance, idioglossia, (a private language invented by a child) interstitial (in between the spaces) condensation, and preventive socialization. It is by the practice of concepts that, are capable to levy some kind

of intelligible sense on the word; it is over them that brand logic of truth, and observe order and unity. We practice concepts to communicate our knowledge, the atmosphere from place to place. The insight of environments is reliant on the gauge of our information and awareness with an extensive range of concepts.

The scientist of natural sciences, would attempt to define the meaning of the concepts very exactly and is possible within the terms of the research in most of the cases. Social scientist, frequently identify that the concept in their model may be founded on feelings, emotions, values, traditions rules etc., and incapable to pin down in the similar manner.

Statement:

The usage of concept on their individual in research is restricted, if individual take up that the goals of the research are to offer a method of grouping (a typology), deal clarifications, brand forecasts, and obtain a logic of understanding then it is obvious that, it is merely the first providing a typology, which could be attained by means of concepts alone. The remaining goals (proposing clarifications, creating forecasts and obtaining a logic of understanding) should be conveyed in the form of declarations- statements comprise concepts. It shadows that, in utmost research actions, the meaning and value of concepts cannot be evaluated a portion from their usage in statements. Reynolds stated about it as, “The scientific value of concepts can only be judged in terms of the scientific utility of the statement containing them”. Though, it is likely to assess concepts by a valuation of the lucidity with which are pronounced. Lucidity can be gauged by the amount of pact about a concept’s usage and its importance amongst the users of the concept.

Symbol:

Concepts, which can perhaps be defined as a unit of understanding, are expressed and communicated through symbols in the form of language, spoken or written, natural or artificial like mathematics. To convey meanings accurately it is obviously essential that the sender and receiver of the symbols must agree on their meaning.

Term:

Symbols, in the method of words in spoken or written language, they are generally mentioned as ‘terms’, while the word ‘symbol’ is usually kept for a mathematical sign for instance, +, %, \$, etc. It is likely to classify two types of terms used in any language, natural or artificial. Firstly,

there are basic terms. These cannot be called with other terms, but trust on a common contract as to their meaning. Instances of these are, interaction, hope, and stone, individual. Secondly, there are derived terms, these can be described by the use of primitive terms, for example, group, curtain, wall, and organization. Apparently, the meaning of primitive terms is more problematic to carry than that of resulting terms, as one can clarify them only by representing examples and non-examples of the term.

It is seen that the confusion happens when the term or symbol, carefully defined and is used in a specific framework but has dissimilar meanings in other backgrounds. For instance, the term 'architecture' has two different meanings, it has one meaning in discipline of engineering and has totally different meaning in the social science or information technology. The symbol 'pie' in the mathematics has one meaning and has different meaning for Greek scholar. It is very much common of the difficulties in the research and specifically, if the term or symbol is used as concepts in daily language. Frequently this additional meaning unintentional by the writer could vividly substitute the meaning of a statement. To fadeout such difficulties researchers use abstract symbols which are invented are rarely used ones or sometimes Greek or Latin phrases marked as concepts. Hence, these symbols are frequently condemned as abstracts and they are difficult to read. Most of the readers prefer for easy language which can be easy to read. The other kind of definition must be mentioned, is form of dictionary definitions. This actually tries to illustrate the concept mentioned by the term.

4.9 Abstract and Concrete Concept:

These concepts can be defined as 'abstract' and 'concrete' because of their characteristics. Reynolds states that, abstract concepts are those concepts that are totally autonomous of a particular time or place. Which means, the concept of abstract are not related to any unique spatial (location) or temporal (historical time) situation. They frequently developed by and closely linked with specific kind of research, for example, marginality (ethnographic research), rhetorical organization (discourse analysis). Reynolds stated that, if a concept is particular to a specific time or place it is regarded as 'concrete'. When the concepts are used in the research it is vital that their amount of abstraction is sufficient to the kind of research started, concepts can be too abstract or too broad to be fruitful.

4.10 Measurement of the Concept:

It is very problematic to measure the concept particularly in the social sciences, it is not possible to be so exact while examining the subjects like, belief, customs behaviour and values. It is fact that there are dissimilarities in the positions of commitment, strength and belief etc. the measurements of these, relies on the communication of the person or persons or institutes. And the perceptions and the individual judgment of the research worker. Yet, the social data can be accumulated which are amenable to some kind of measurement for instance, economic data, statistics related to the population and so on. To determine the presence of the theoretical concept in actual life background, one must expedient extraordinary kind of definitions to offer required instructions and they are known as 'operational definitions'. Reynolds defined it as, "A set of procedures that describes the activities an observer should perform in order to receive sensory impressions (sounds, visual or tactile impressions etc.) that indicate the existence or degree of existence of a theoretical concept".

The important aspects of the operational definitions are, they are abstracts, which means they are independent of time and place. This makes them to be used dissimilar life conditions and at dissimilar times. For instance, it might be likely to measure a group of people's personal condition of fitness. The relationship among the theoretical concept and the suitability of operational; definitions for measuring the presence of theoretical concept is hugely on judgment. Reynolds assessed a single operational definition by two criteria and they are: 1. Gauge its suitability as a measurement procedure 2. Assess its relation to a theoretical concept.

4.11 Quantification of Concept:

The concept of quantification is generally linked with the operational definitions, for example, gauging attitudes on a scale from -3 to +3, but it can also be functional to theoretical concepts. When applied to operational definitions the diverse kind of quantification are usually called as 'levels of measurements'. S.S Stephens in the year 1946, recommended a level of hierarchy measurements have been extensively accepted by the statisticians and researchers. His system consist of four levels of measurements by which he states, as, nominal, ordinal, interval, and ratio level measurements.

Nominal Level:

The word nominal is generated from the 'Latin' word 'nomen', which means, 'name' this kind of measurement is very elementary and untreated, the function of it is to divide the data into distinct classes that can then be linked with each other. By first giving names to or cataloging the parts or states of concept or by naming discrete units of data. E.g. many theoretical concepts are considered on a nominal level of quantification. Many operational definitions are on a nominal level, e.g. sex, male or female, marital status, single or married, separated, divorced or widowed. Nominal data can be represented by certain graphic and statistical strategies. Bar graphs, for instance, can be suitably cast off to denote the relative measurement of nominal data. By measuring this type of data, with statistical methods, it is likely to find the mode, find a percentage relationship of one sub group to other, or one sub group to the whole group and compute the chi square.

Ordinal Level:

If the concept is observed to have a sum of states, or the data have a number of values that can be graded or ordered, it is expected that some meaning is carried by the comparative order of the states. The ordinal scale suggests that an object being measured, is quantified in relations of being more than or less than, or of a greater, or lesser order than a relative entity, regularly expressed by the symbols $>$, or $<$. For anybody studying at school or at university, the utmost conversant ordinal measures are the grades which are used to rate the performance of academics. An 'A' at all times means more than a 'B', and a 'B' all the time means more than a 'C', but the variance between A, and B may not be similar every time, the same as the variance between B and C in terms of academic attainments. Most of the theoretical concepts in the social sciences appear to be at an ordinal level of quantification. In summary, "ordinal level of quantification" put on concepts that differ in such a way that, dissimilar states of the concept can be rank ordered with admiration to some characteristics. The ordinal level scale of measurement magnifies the variety of statistical techniques that can be useful to data. Using this scale, one can discover mode, and the median, determine the percentage or percentile rank, and check by the chi square. We can also specify relationships by means of rank connection.

Interval Level:

The interval scale has two vital characteristics it has identical elements of measurement; and its 0 point, if existing, is arbitrary. Modest test for levels of measurements are as follows: 1. Thing is dissimilar from another, you have a normal scale 2. One object is larger, superior or more of anything than another, you have an ordinal scale. 3. One object is so many components (degrees, inches) more than another, you have interval scale 4. One object is so many times as large or bright, tall or weighty as another, we have a ratio scale.

It will be realized that, one of the principle benefits of with quantification is that, it allows the making of more accurate statements concerning the amount of relationship, or connection, among two or more concepts. Clarification of the relationship among the concepts repeatedly one of the vital actions in research. Diverse levels of quantification can be castoff to classify the dissimilar kinds of relationship among concepts. A nominal level of relationship is the same to the statement that two concepts are or not connected. The association of ordinal level is equivalent to the statements that concepts are not positive or negatively related. When the data are examined, such statements of relationship are normally linked to operational definitions. Levels of quantification if functional properly then it is mainly useful when deliberating the interrelations between more than two variables.

4.12 Conclusion:

It is for the researchers from science, it is observed as a manner of understanding the globe was according to Cohen and Manion, by the worth of clarification and thoughtfulness of forecast and govern. The final aim is theory and theories are conveyed in the way of statements which means theoretical statements. The Theory effectively combines diverse and isolated pieces of empirical data to create an intelligible conceptual model which can be capable of applied more generally. Theory provides a useful platform by which to launch a quest for information and discoveries, and impetus for research. A fresh hypotheses can be suggested and new queries can be exposed. Formulation of theory would leads to identify the significant disciplines which need additional research, plugs out where knowledge is lacking, and brands it conceivable for a scientist to suggest the presence of previously unknown phenomena.

They are common expressions of specific phenomenon, for instance monkey, cow, happy, accomplishment, alienation, intelligence and socialism. If we inspect them carefully, it is

obvious that each one is a word which signifies a notion. It is by the practice of concepts that are capable to levy some kind of intelligible sense on the word; it is over them that brand logic of truth, and observe order and unity. We practice concepts to communicate our knowledge the atmosphere from place to place. The insight of environments is reliant on the gauge of our information and awareness with an extensive range of concepts. S.S Stephens, recommended a levels of hierarchy measurements have been extensively accepted by the statisticians and researchers. His system consist of four levels of measurements by which he states, as, nominal, ordinal, interval, and ratio level measurements.

4.13 Model Questions:

1. Write in detail about the theory formation and its importance in research?
2. Analyze about the formation of concept and its significance in research?

4.14 References:

7. P. Saravanavel, Research Methodology Kitab Mahal, Allahabad, 1987.
8. C.R Khotari, Research Methodology Methods and Techniques, New Age International (P) Limited, Publishers, New Delhi.
9. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
10. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
11. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.
12. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi,2007.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-05

FORMATION OF HYPOTHESES, TESTING OF HYPOTHESES

Structure:

5.0 Objectives

5.1 Introduction

5.2 Nature of Hypothesis

5.3 Formulation of Hypothesis

5.4 Kind of Hypothesis

5.5 Testing of Hypothesis

5.6 Conclusion

5.7 Model Questions

5.8 References

5.0 Objectives:

1. Students would know about the formation of hypotheses.
2. Students would be able to learn about the testing of hypotheses.

5.1 Introduction:

The inseparable part of the research is hypotheses, in reality hypotheses is very closely related to scientific method which contains the theoretical treatments; factual expressions, empirical studies, and value judgments and all these factors are woven together in research. Moreover the part of hypotheses is vital in the research.

A Hypothesis, plural Hypotheses, is a suggested clarification for the phenomenon. A hypothesis to stand a scientific hypothesis, then the scientific procedures are needed to examine it properly. Usually, scientists base scientific hypotheses on earlier explanations that cannot adequately be clarified with the existing scientific theories. The words “hypothesis” and “theory” are repeatedly used synonymously, a scientific hypothesis is not the same as a scientific theory. A working hypothesis is a temporarily agreed hypothesis, planned for further research. A dissimilar meaning of the term ‘hypothesis’ is used in official logic, to signify the antecedent of a proposition; therefore, in the proposition “If A”, then B, A means the hypothesis or antecedent; B can be called a resultant. A is the hypothesis.

The usage of the hypothesis in the ancient ages referred to a summary of plot of a classical drama. The English word 'hypothesis' derived from the ancient Greek word "Hupothesis" which means "to put under" or "to suppose". Plato in his Meno, Socrates dissects virtue by a system used by mathematicians, that of "investigating from hypothesis". In this regard hypothesis refers to a clever notion or a convenient approach of mathematics that simplifies calculations.

5.2 Nature of Hypothesis:

A hypothesis can be treated as a proposition which can be verified in an empirical manner, the legitimacy can be shown by setting it to exam. A hypothesis is an unconvinced proposition, framed to be verified in an assumed condition, which shapes what the research eyeing for. Lundberg, stated it as an unclear impression. In this construction, Goode and Hatt, stated about it as, "A hypothesis looks forward. It is a proposition which can be put a test to determine its validity. It may seem contrary to, or in accord with, common sense. It may prove to be correct or incorrect. In any event, however, it leads to an empirical test. Whatever the outcome, the hypothesis is a question put in such a way that an answer of some kind can be forth coming. It is an example of the organized skepticism of science, the refusal to accept any statement without empirical verification".

An initial observation of Michael V.P, states that, "A close relationship, however exists between theory and hypothesis; and the later can be tested with help of an analysis of the data and facts. The hypothesis is, therefore, closely linked with both theory and facts, though it is neither. However, the testing and proving of the hypothesis lead to theory, though all hypothesis may not necessarily result in the formulation of theory". Whereas hypothesis is thru usage of variables, the connection of variables can be recognized in verifying the hypothesis. Likewise, the scientific way, which is carefully related with the hypothesis, is the source of theory, though theory relies on empirical studies, values judgments, and accurate terms.

However, analysis of a hypothesis might prove or disprove a theory, a theory could lead to the design of extra hypothesis. On the other hand, when hypothesis is verified and proved or disproved, it can make a considerable involvement to present theory or to the group of a new theory. Goode and Hatt have made a applicable thought in this respect.

5.3 Formulation of Hypothesis:

A hypothesis is proposition or hypothesis about a population parameter, which is suspiciously framed and is to be verified with the aid of data composed and analyzed. The identification of variables and their associations can be finished in the design of hypothesis.

There are problems in the formulation of a hypothesis, which the researcher has to overcome. Firstly, the nonexistence of a perfect theoretical outline, or insufficient information of theory is an obstruction to the design a perfect hypothesis. Secondly, even though some people might have adequate theoretical knowledge, they might not be capable to correctly use the information in framing a logical hypothesis in the background of the current or probable conditions. Thirdly, the incapability to classify the applicable variables, stand in the system of formulating a strong and complete hypothesis. Fourthly, some researchers never overhaul to develop and familiar with the techniques of research methods earlier they enter upon research. Fifthly, several researchers, absence real exposé to the difficult areas and hence, they incline to formulate hypothesis which have no relation with the real practical areas. This is possibly the most blocking barrier for a managerial researcher; regardless of the variances in the types of the hypothesis.

5.4 Kind of Hypothesis:

On the basis of the level of abstraction, hypothesis may be classified into three categories,

1. Hypothesis that clarifies the present empirical consistencies
2. Hypothesis that treats with the multifaceted presence of logically resulting relationships between empirical uniformities and
3. Hypothesis which are anxious with the relation of logical variables.

The first type of hypothesis state that, there must be certain amount of equality between the empirical phenomena. The second type of hypothesis target at, examine the presence of sensibly derived relationships between empirical uniformities. The third type of hypothesis treats with the study of analytical variables, the alterations in one property and alter in another.

Hypothesis offers the base for examination, and guarantees the course in which the study must continue. It enables the gathering of acceptable truths, and aids to reach at a suitable

conclusions, suggestions and observations. In order to pull implications, convinced approaches are customarily hired, these are approaches of agreement, approaches of differences, joint approaches, approaches of residues and statistical approaches. Regardless of dissimilarities in approaches the hypothesis might have definite universal characteristics and they are as follows:

1. It must be conceptually perfect
2. It must have empirical mention
3. It must be precise
4. It must be connected to existing techniques
5. It must connected to the body of the theory
6. It must be applicable to the current environmental situations for the purpose of testing and
7. It must recognize the exact variables and their associations

A hypothesis that gratifies these characteristics makes a considerable influence to the theory and the body of the knowledge if it is verified, an empirical testing of hypothesis is as significant as formulation of hypothesis.

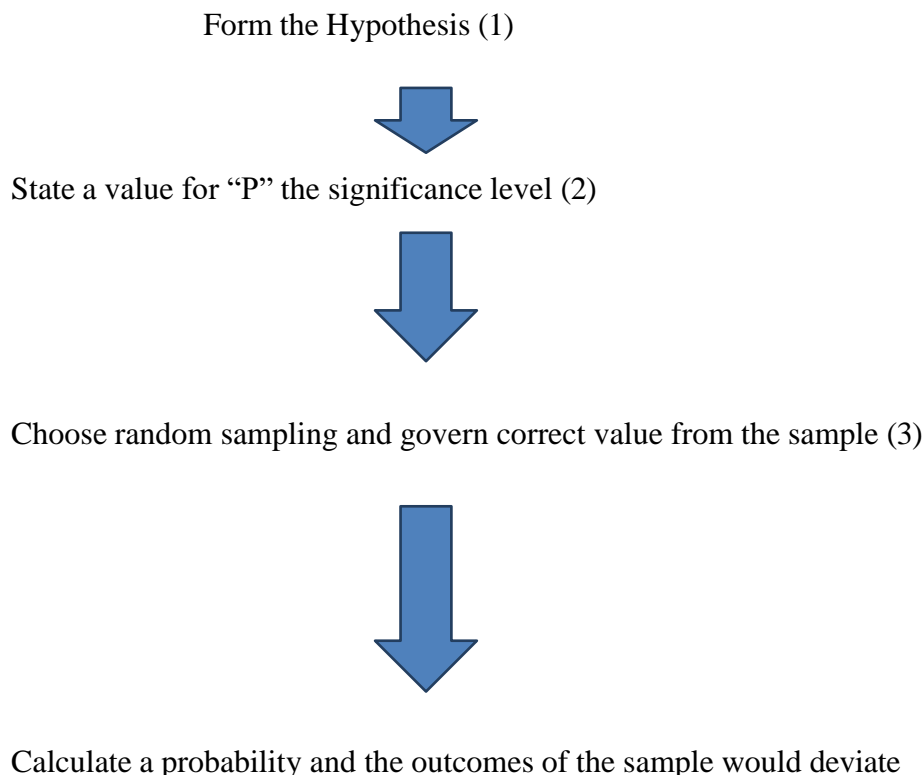
5.5 Testing of Hypothesis:

The exact association among the phenomena or variables which is suspiciously formulated must be empirically established by the hypothesis when it is tested. This requires an organized research and empirical investigation, which outcomes in evidencing the hypothesis and enable theorizing of the observation. Which means the researcher agrees on the base of the observed facts that, he has composed whether or not a hypothesis is valid. An instance of the test of the hypothesis in the dominion of management science is its routine application in the part of statistical quality control. Test have been condensed to usual process which allows the management to see disparities in the quality of production or the quality of goods supplied by the suppliers. It facilitates the determination of an acceptable quality level for all incoming lots.

To test the hypothesis about an established data, a sample selected at random is matter to a detailed analysis, for it might not likely to assess the universe as a whole. The outcomes

attained in then, related with what one would expect if the hypothesis had been factual. The larger the inequality between the sample result and the probable result, the larger the uncertainty of the legitimacy of the original hypothesis, it can be disallowed and this level of distrust might be stated as a probability. Therefore, on the base of probability, a hypothesis might be established or disallowed after it has been tested. According to Croxton, Cowden and Bolch, “Hypothesis is tested by making use of pre-defined decision rule, which is applied to sample data and which guides the experimenter in deciding whether to accept or to reject the hypothesis on the basis of the outcomes of the sample or samples drawn. The rejection of the hypothesis presumably leads to one kind of consequence and the acceptance of a hypothesis leads to another kind of consequence”.

The statistical process, mathematical method, operational research, experimental method, econometric method so on are valuable apparatuses in testing a hypothesis. Hence, the optimism that, a common process will be followed for testing a hypothesis is a distant probability. The technique to be accepted rest upon the suitability, the obtain ability of data, and exposure to the several methods so on. A common process containing of a few steps in the form of a flow diagram will give correct picture.



As broadly as from expectation (if hypothesis is correct) (4)



Is this probability equal to or smaller than “P” (5)

YES



Reject the Hypothesis (6 a)

NO



Accept the Hypothesis (6 b)

There are three circumstances where the hypothesis is demonstrated to be false, they are as follows:

1. The sample is biased and hence the designed probability for this effect exactly minimizes its possibility
2. Both the sample outcomes and the hypothesis are precise and the extensive difference between them is owing to the incidence of a occasional result and
3. Whichever the sample effect is incorrect or the hypothesis is incorrect.

In any case the likelihoods for fault should be small if the hypothesis is to be established. One should decide upon the significance level before we move ahead to examine the hypothesis for this purpose. An upright test should reject or accept the valueless hypothesis on the base of the prearranged position.

5.6 Conclusion:

Hypothesis is singular form and plural is Hypotheses, is a suggested clarification for the phenomenon. A hypothesis to stand a scientific hypothesis, then the scientific procedures are needed to examine it properly. The words “hypothesis” and “theory” are repeatedly used

synonymously, a scientific hypothesis is not the same as a scientific theory. A working hypothesis is a temporarily agreed hypothesis planned for further research. The English word 'hypothesis' derived from the ancient Greek word "Hupothesis" which means "to put under or "to suppose". Plato in his Meno, Socrates dissects virtue by a system used by mathematicians, that of "investigating from hypothesis".

Hypothesis make use of variables, the connection of variables can be recognized in ascertaining the hypothesis. Likewise, the scientific method, which is carefully related with the hypothesis, is the base of theory, while theory depends on empirical examination, values judgments, and factual expressions. While testing of a hypothesis might prove or disprove a theory, a theory could lead to the design of extra hypothesis. On the other hand, when hypothesis is tested and proved or disproved, it can make a considerable involvement to current theory or to the cohort of a fresh theory. A hypothesis is proposition or assumption about a population parameter, which is suspiciously framed and is to be tested with the aid of data composed and analyzed. The credentials of variables and their relations can be ended in the formulation of hypothesis.

5.7 Model Questions:

1. Discuss in detail about the formation of the hypothesis?
2. Write about the testing of the hypothesis?

5.8 References:

1. Methods in Social Research, Goode and Hatt, McGraw-Hill International editions, sociology series.
2. Communication and research for management, V.P Michael, Himalaya Publishing house, Bombay-4.
3. Research Methodology, C.R Kothari, New age International (P) Limited Publishers, new Delhi.
4. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
5. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
6. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006

7.

8. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi,2007.

**Dr. C. Vinod Kumar,
Lesson Writer**

LESSON-06

RESEARCH DESIGNING

Structure:

- 6.0 Objectives
- 6.1 Introduction
- 6.3 Selection of Research Problem
- 6.4 Declaration of the Problem
- 6.5 Choosing a Research Problem
- 6.6 Stages in Research Design
- 6.7 Sample Size and Design
- 6.8 Data Collection
- 6.9 Execution of Project
- 6.10 Analysis of the Data
- 6.11 Testing of Hypothesis
- 6.12 Interpretations
- 6.13 Preparation of report
- 6.14 Aspects Disturbing Research Design
- 6.15 Conclusion
- 6.16 Model Questions
- 6.17 references

6.0 Objectives:

1. Students would know about the research design.
2. Students would be able to learn about the stating research problem.
3. Students would be able to understand the elements affecting research design.

6.1 Introduction:

The designing of the research is one of the vital part of the researcher, to plan the research operations very actively and accurately. It is the plan made by the mental thinking or a scheme. Any research need to have a proper design before the starting of the research work

and should be planned for the project. Because of this reason the designing of the project becomes very significant in the research work.

V.P Michael, stated about it as, “A research design is a plan of action to be carried out in connection with a research project. It is, however, not an unbreakable rule, nor a hard and fast strategy. On the contrary, it is only a guideline for the researcher to enable him to keep track of his actions and to know that he is moving in the right direction to achieve his goals”. The research design would consists of a selection of research problem, the statement of the problem, the preparing of the hypothesis, testing of hypothesis, a particular methodology of the study, analysis and interpretation.

6.3 Selection of Research Problem:

In fact the choosing of the research problem starts with an observation, controlled observations are able to demonstrate empirically the probability or the non-probability of association among the phenomena on the grounds of formulation of the hypothesis. It is evident that, the vital part of the research design is the formation of the hypothesis and observation of the link between the variables in the hypothesis, and these can be agreed or disallowed on the grounds of the data collected and analyzed. According to Goode and Hatt, “A basic aspect of research design, therefore, is setting up the research so as to allow logical conclusions to be drawn”. Hence, the researcher has to come for the logical conclusion while designing the research study. Coming to the logical conclusions might be in the manner of “methods of agreement’ or methods of disagreement’. According to J.S Mill, looked it as, the connection between two or more variables can be of ‘positive canon of agreement’ or negative canon agreement’, which echoes a reason for operative connection of variables. The classical experimental design can be regarded as extension of both positive and negative canons, for which J.S Mill termed as, ‘methods of difference’.

There are weakness in the classical method of agreement and disagreement and to reduce these weaknesses the following steps has to be undertaken:

1. Identifying and governing the variables which are of vital in the research
2. The pivotal connection might not be perfect
3. The aspect of time might puzzle the experimental outcomes and

4. The design of classical study is mentioned in simplistic terms.

The certainty could be attained by the proper designing and improbability can be reduced by the help of more information and exposure to the problem. There are instances which are shifted their attention from proposed hypothesis, variables might not express extensive connection. Therefore, the statement of the problem and formulation of hypothesis must need utmost significance, while designing the research. It is evident that, during the analysis deviant cases might include some more data and throw more light on the problem and hypothetical approach to the problem. The most important difficulties faced during the stage of designing are as follows:

A. Delimitation of the aspects to be calculated

B. Observation of the variations

C. Conditions is the variations and

D. Additional variations in the research design

While, formulating the research design the delimitation variable could cause the difficulties and the recognized variables may have limiting attitude, although they appears to be very applicable during the designing phase. Therefore, the recognized variables might not be operative in another condition even the relevant variable may not be effective, as it seems to be. The researcher could not be of sure that, provided variable is unimportant. Goode and Hatt, recognized some of the elements which could be the ground for the eliminating one or another element and they are as follows:

1. Social theory particularly the common alignment to sociological phenomena

2. Primary empirical outcomes

3. Examination of conceptions and

4. Expense of time, energy and money

The above said element are essential in managing analysis as well, while a perfect observer with good skills will be helpful in dealing the delimitation difficulties to ensure the perfectness in the design. Sometimes, variation in the observation paves the way for perfect research design the quality of observation of one condition by diverse people might diverge

and hence, the statement of the problem, the tactic to it results in the disparity in the outcomes.

6.4 Declaration of the Problem:

It is the prime job of the researcher to recognize the area of the problem and the real problem in connection to the goals and objectives of the research. A perfect declaration of the statement of the research problem is the chief process in the research design. An academic research problem usually based on the academic thoughts, while, the socio-economic research problem grounds on the socio-economic considerations of the particular society. The researcher needs to identify the goals and objectives, identify the connection among the relevant variables, using the scientific processes and then recommending certain answers to the problem. The research problem is the domain of the research which is strongly connected with the objectives of the research problem.

A correctly declared research problem offers way and vision, it provides the researcher to concentrate very handy comments of the situation, which are influencing the problem and the persons who are connected with it. This gives a perfect inspiration to identify variables of independent and dependent which are connected with the research problem. The recognition of the hypothesis is relevant in this background. The researcher, able to recognize the hypothesis and variables linked with it which are relevant of the problem and the answers to the problem.

The difficulty of delimiting variables might not be the important aspect, but, definitely of equal significance, discovering which variables can be controlled. Therefore, the earlier recommendations to this end must be observed. 1. Examining the research literature on the subject 2. Scrutinizing the problem with colleagues, teachers, peers and with those who worked on the problem earlier 3. Trying to find unpublished materials or planned research subject 4. Trying to takeout correct steps in conceptual respecification 5. Evolving in piercing detail hypothesis, its relations with social theory and 6. Authentic agreement, where likely, with the phenomena being planned.

6.5 Choosing a Research Problem:

In the present scenario of economic development and the welfare schemes provided by the government and other NGOs, nationally and internationally, it is very much important to plan

and identify a social problem which is need of the hour in the environment, it can be of social, economic, scientific or business areas. According to V. P Michael, he stated about the choosing a research problem said that, “open your eyes, and see, you are surrounded by problems”. The choosing of the research problem establishes the relations between the objects and the resources within a given situation when they are identified as the limitations the aim and the objectives of research should be prepared to accept with the aims and objects of the purposeful area as a whole in general. The objectives of the problem should be simply of academic interest, in the analysis, because it is estimated to serve the purpose. It has the direct connection with the policy making and the decision making only result oriented, research will have an impact on the decision makings. Hence, the outcomes of the research should be the criteria for choosing of the research problem. Problems should be presented with the hypothesis before choosing the research design. The definitions of the concepts and variables, choosing of the correct methodology for collection of the data and its analysis, must be linked to the research problem statement and research design. It is very important to choose the correct problem, which is the elementary step in the making of the research design.

6.6 Stages in Research Design:

It is the prime duty of the researcher to complete the research project therefore, he has to forecast how to be completed with success within stipulated time, within the financial resources, for these reasons one must design an exact research design. These are some of the stages involved in the research design.

1. Recognizing and stating the research problem and the targeting area
2. Restarting the problem as the research problem
3. Identifying and integrating with the research aims and the objectives
4. Guaranteeing the observation specifically controlled observation, empirically validates the likelihood or non-probability of the connection between the phenomena
5. Making a hypothesis or more than one, conforming the variables, and suspiciously validating the link between the variables including independent and dependent.
6. Making very clear about the objective's drives, logic and possibility of research

7. Framing a research project
8. Recognizing the kinds and sources of data including primary, secondary data
9. Stating the process of data collection and analysis
10. Stating the time, manpower, and financial needs and its sources
11. Assessing the probable outcomes and relating it with needs of the problem resolving and decision making.
12. Defining the value of the project on the grounds of contrast of the probable outcomes with the factual requirements
13. Confirming the tentative manner of going ahead with the research.

All the mentioned stages might not be essential every time, the design may be planned according to the convenience and usage of the research. These stages has to be confirmed by the researcher according to the situations and needs taking into account the different elements.

6.7 Sample Size and Design:

It is the duty of the researcher to choose the sample and the sample design by which the data would be collected for getting a sample from a given population. The sample can be probable or non-probable samples in the sample of probability, each aspect has known probability added to the sample, whereas, in the non-probability, it will not permit to determine the probability. Probability samples are, random sampling, systematic sampling, stratified sampling and cluster/ area sampling. Non-probability sampling are, convenience sampling, judgment sampling and quota sampling methods.

1. Deliberate Sampling: It is also called as ‘purposive or non-probability sampling, this process contains purposive or deliberate selection of specific units of the universe for making a sample which represents universe.
2. Simple Random Sampling: This is also called as, chance sampling or probability sampling, in which each and every item in the population has an equal opportunity for selection in the sample, in case of fixed universe has the similar probability of being chosen.

3. Systematic Sampling: In some cases the most practical process of choosing each 15th name from the list, each 10th house from one side of the street etc. this kind of sampling is called as, 'systematic sampling'.

4. Stratified Sampling: In this sampling, if the population from which a sample is to be drawn does not consists a homogenous set, in such case this sort of sampling is suggested to get the representative sample.

5. Quota Sampling: In this type, the stratified sampling cost of taking random samples from individual strata is regularly costly that, the interviewers are permitted quota to be filled from diverse strata, the real selection of items for sample being left to the decision of the interviewer, this is known as, quota sampling.

6. Cluster Sampling and Area Sampling: Cluster sampling includes grouping of the population and then choosing the sets or clusters instead of individuals for adding in the sample. In the area sampling, is almost like cluster sampling and it deliberates about the entire geographical area of interest happens to be big one. In this first divides the entire area into number of smaller non overlapping areas, called geographical clusters, then number of these smaller areas are chosen randomly and all the units of these areas are involved in the sample.

7. Multi Stage Sampling: This is actually further development of idea of cluster sampling. This method is used in the big inquires extending to a considerable huge geographical area such as a nation.

8. Sequential Sampling: This is more or less complex one, in which the final size is not fixed in before, instead it is determined according to decisions of the mathematics on the grounds of knowledge gained as survey develops.

6.8 Data Collection:

It is the prime job of the researcher to collect sufficient data and there are many paths to collect data which may differ considerably in the background of cost of money, time and manpower involved. Primary data can be collected by the means of experiment or through survey, if researcher conducts an experiment he must observe quantitative measures or by which he study the reality which consist in the hypothesis. The data can be collected by, observations, by personal interview, by telephone interview, by mailing the questionnaire and

by the help of schedules. The researcher has to choose any one of the process to collect the data.

6.9 Execution of Project:

This is important aspect in the research design, if it goes in the correct manner, then the collected data would be sufficient and becomes relevant to the research problem. Then it can be tested for the hypothesis, so he has seen that the execution must be systematic and with utmost accuracy.

6.10 Analysis of the Data:

Once the data been collected then this process starts, hence, give priority while designing the research. It involves strongly connected operations like, establishment of groups, the raw data to be coded, tabulated and then drawn for statistical inferences. This raw data must be shortened into manageable groups and tables for further analysis so that he can get useful and purposeful solutions.

6.11 Testing of Hypothesis:

Once the data is analyzed, the hypothesis must be tested with the analyzed data, so while designing the project, must give importance to it, if the data tested is accepted then interpretations and report writing to be followed. It can be tested by the use of test like, Chi Square test, t-test, F-test have developed by statisticians to check hypothesis.

6.12 Interpretations:

If the tested hypothesis passed the test then researcher need to interpret to build a theory, he must explain the findings in proper way.

6.13 Preparation of report:

It is the last part in the designing of research. Here he has to write his entire research report with suggestion, the report contains heading like, main text, introduction, summery of findings, main report and conclusions.

6.14 Aspects Disturbing Research Design:

Different aspects which are affecting the research design are as follows:

1. Anticipation about the possibility of the research, to aid in decision making, problem explaining or policy making
2. Recognition of hypothesis and variables, obtain ability of the data particularly primary data
3. Likelihood of covering to the genuine source of data, attitudes and tactics to the research and the outcomes
4. Availability of time, money and manpower, impact of different internal and external controlled variables of the research
5. Capability, skills, Information and practical background of the researcher

6.15 Conclusion:

The designing of the research is one of the vital part of the researcher to plan the research operations very actively and accurately. It is the plan made by the mental thinking or a scheme. Any research need to have a proper design before the starting of the research work and should be planned for the project. research design would consists of a selection of research problem, the statement of the problem, the preparing of the hypothesis, testing of hypothesis, a particular methodology of the study, analysis and interpretation.

The certainty could be attained by the proper designing and improbability can be reduced by the help of the more information and exposure to the problem. There are instances which are shifted their attention from proposed hypothesis, variables might not express extensive connection. The choosing of the research problem establishes the relations between the objects and the resources within a given situation when they are identified as the limitations and the aim and the objectives of research should be prepared to accept with the aims and objects of the purposeful area as a whole in general.

It is the duty of the researcher to choose the sample and the sample design by which the data would be collected for getting a sample from a given population. The sample can be probable or non-probable samples in the sample of probability each aspect has known probability added to the sample whereas, in the non-probability, it will not permit to determine the probability.

6.16 Model Questions:

1. Discuss in detail about the research designing?
2. Write about the stages in the research designing and the aspects disturbing research design?

6.17 References:

4. Methods in Social Research, Goode and Hatt, McGraw-Hill International editions, sociology series.
5. Communication and research for management, V.P Michael, Himalaya Publishing house, Bombay-4.
6. Research Methodology, C.R Khothari, New age International (P) Limited Publishers, new Delhi.
7. P. Saravanavel, Research Methodology KitabMahal, Allahabad, 1987.
8. Dipak Kumar Bhattacharyya, Research Methodology, Excel Books, New Delhi, 2009.
9. P.Narayana Reddy & Gvrk Acharyulu, Research Methodology and Statistical tools, Excel, New Delhi, 2009.
10. Dr.N.P Agarwal & Dr. Sonia Agarwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.
9. Nicholas Walliman, Your Researchh Project, 2nd edition, Vistaar Publications, New Delhi,2007.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-07**SAMPLING****Structure:**

7.0 Objectives

7.1 Introduction

7.2 Advantages and Problems of Sampling

7.3 Types of Sampling

7.3.1 Random Sampling

7.4 Conclusion

7.5 Model Questions

7.6 References

7.0 Objectives:

1. Students would know about the sampling and its advantages and problems
2. Students would be able to understand the types of sampling

7.1 Introduction:

Sample is regarded as portion of entire population, it is small portion which is being separated from the entire population is known as 'sample'. It presents the general qualities, as far as imaginable. It is small portion of values chosen from the population, replicating its features. Once the research topic is chosen and then it needs to conduct the survey for which the utmost significant factor is sample. It is a technique by which choosing of sample representation from the given population. Levin, stated about the sampling as, "Sampling is a systematic approach to selecting a few elements (a sample) from an entire collection of data (a population) in order to make some inferences about the total collection".

7.2 Advantages and Problems of Sampling:

It is very important to have sampling because it restricts the manpower, money and time required, it makes the researcher to conduct a comprehensive examination with restricted margin of error. It gives accurate results, administrative convenience are some of the advantages of the sample.

At the same time it has some problems as well, these problems does not restrict from going for the sample, and these problems are:

1. There is an opportunity for bias
2. There is a chance for some sort of inaccuracy
3. Sometimes problem of getting a representative sample is observed
4. Need of trained manpower, samples might suffer from error
5. Samples every time cannot be taken as representatives
6. Actual information might not be available frequently and
7. Sometimes the samples chosen may not be sufficient when the research problem is investigative.

Though it is very convenient to have sample procedure, but there is a prejudice likely perhaps by the investigator, because he can inspire the informer to back his biased opinions and the probability cannot be ruled out for the views of respondents to impact the data. It is fact that the accuracy of the data might be affected. The other important factor is that it might be problematic to obtain the representative sample. If the samples are representative then they can get accurate results. In this process, there must have trained manpower to get perfect sampling and it is fact that the trained manpower does not have too many. The other factors are the respondents who are selected randomly may not be available, and in such cases he has to select some other persons. Therefore, there will be some sort of bias and inadequacy of outcomes. It is also criticized that there will always a probability of error which result in the inferences. There is some reality in it as well. Whereas, if the investigator takes correct measures then this error could be minimized. If the large sample is chosen then it will have disadvantages of census process and the small sample may be insufficient and outcomes might not be correct.

7.3 Types of Sampling:

The way of data collection is known as sampling, when procedures such as, mean, median, mode, and standard deviation in fact illustrates the characteristics of sample and they are called as 'statistics'. When they state about the characteristics of population then they are said

as, 'parameters'. A statistic is a characteristic of a sample while the parameter is characteristic of population. The choosing of a sample from the population is very significant job of the researcher.

It is obvious that, the samples might be chosen from population from either by 'random sampling' or 'probability sampling'. The significance of random sampling is that, there is every item in the population has an opportunity of being selected for the sample. The probability of being chosen as a sample is judged on the grounds of personal knowledge, views, interest etc. of the researcher who is linked with researcher in judgment sampling.

There are two types of sampling are there they are:

1. Random Sampling and
2. Non-Random Samplings.

It is very evident that the Random Sampling method is most reliable representation of the entire population whereas, Non-Random Sampling method is depends on the judgments of the researcher and it cannot be usually be used to make generalizations about the entire population.

7.3.1 Random Sampling:

It is the simplest kind of sampling and used to represent all the items or units or elements of the population on slips of paper, put them in a hat and take out the slips one after one, among all the slips the bigger the sample the better. Before choosing sampling the researcher need to understand and find out, whether the nature of the population is homogeneous or distinction of classes of cases inside it? And then the other aspect researcher has to think is, which type of random sample to use? And depending upon the population there are different type of random Sampling techniques are stated below.

A. Simple Random Sampling:

This type of sampling should be used when the population is uniform or similar characteristics in all items for instance, if a sample of 10 items has to draw from the list of say 1000 persons, then numbers must be given from 0 to 1000 then open any page which has triplet number, and choose the first 10 numbers from the list which are less than 1000. The names of the candidates must be arranged in serially in a specific manner say alphabetically,

from there very 10th or any equal value might be taken, so that the person selected randomly can be chosen.

B .Stratified random Sampling:

Before, choosing this type, the population must be divided systematically into homogeneous portions called as, 'strata', and after that the samples could be chosen at random from the strata. A particular number of items corresponding to the segment of each stratum in the population are chosen randomly. This type of sampling assures that every item in the population has the opportunity of being chosen. This is most usually selected procedure in data collection.

If the stratification of population has done properly then the sample becomes very actual, and the strata becomes very homogeneous. The selected stratum should be big so that sufficient number of samples at random; and it will be good to have similar ratio in choosing the samples from all strata. This sampling can be categorized in three types they are:

1. Proportional stratified sample
2. Disproportional stratified sample
3. Stratified weighted sample.

In the first type, the number of items drawn from stratum will have similar portion as of universe, in the second case, an equal number of cases chosen from every strata without any such proportion and in the third case, and it contains the advantages of both the types.

C. Systematic Sampling:

In this kind of sampling, the matters cannot be on chances, the samples are drawn in systematic manner. In this, elements are chosen from the population at identical interval that is measured in order, time or space in systematic sampling. For example, if wants to interview every 20th person in a factory, then first select a random starting point among the first 20 names and later choose every 20th name after that. Which means the first unit is taken from the first chosen class interval and residual units are systematically and purposively chosen. Adolph Jenson stated about it as, "A purposive selection denotes the method of selecting a number of groups of units in such a way that the selected groups together yield, as nearly as possible, the same averages of proportions as the totality with respect to those

characteristics which are already a matter of statistical knowledge”. The purposive selection targets at gaining the most representative sample that contains the qualities of total universe.

Systematic sampling is different from simple random sampling, in later one, every item has the identical chance of being chosen but each sample will not have an identical chance of being chosen. The reliability of knowledge attain from systematic sampling will not be deprived of. Though it has the merit of economy of time and resources, there is difficulty of finding any mistake in the method of sampling in systematic sampling.

D. Sequential Sampling:

This type of sampling is useful in examining few units from a huge number of items, in this samples are chosen in a sequence and examined to study the validity of the population. It is very much useful in statistical quality, pilot studies and pre-tests. If the beginning sample does not allow to come to a decision then additional samples can be chosen.

E. Multi-Stage Sampling:

In some of the studies the method of choosing a sample is done in many stages, mainly, the universe is very huge. For instance, if a sample survey is steered of medical workers in the State, the Districts are chosen first, and this is followed, by few or more hospitals. Then from these hospitals sample units are selected, and from these units sample workers are chosen. Which means, the wide universe is first separated into homogeneous portions, top to the selection of primary sample area and later, to the selection of block groups or block clusters from the every primary sample area. The concluding samples chosen from every block groups by random for collection of preferred data. Hence, this multi-stage is give in which at different stages sampling is taken. Comprehensive knowledge should be available at every phase to make the multi-stage sampling operative.

F. Sampling with Probability Proportional to Size:

In fact the probability and sampling are inter-connected, in sampling distribution, the element of probability is assured to be engaged into interpretation. Whereas, probability statements perhaps be done on the presence of certain sample outcomes, if the legitimacy of the probability could be conserved. The researcher should be careful in choosing the sample that the real probabilities linked with sampling distribution and might not be altered.

Every sample must have the similar probability of being chosen. But sampling with a probability proportional size would crop uneven probabilities, according to the size of the probabilities of selection is chosen.

G. Quota Sampling:

A specified number of samples which are predetermined to be chosen from the given population, (either stratified or simple) may be regarded as quota. It is an effort to steady the sample, interviewed by taking answers from equal number of dissimilar respondents, example, equal number from dissimilar political parties. This is an unregulated form of sampling, as there is no knowledge of whether the respondents are typical of their parties. Once the quota is secured, the investigator is at freedom to collect data from any sample unit. The total number to be chosen from every strata or at every phase is fixed in advance in quota sampling.

H. Convenience Sampling:

In certain studies, or pilot studies when the sample is taken rendering to the convenience of the researcher without any methodical manner, it can be known as convenient sampling. This procedure is not scientific, if the value judgment of the researcher is correct it will harvest healthy outcomes. Sometimes, only convenience sampling is conceivable. For instance, when the universe is not visibly defined, or when the sampling unit is not clear or comprehensive source not available, or when scientific procedure cannot be operative due to the complexity of any of the features, convenience sampling is the final option.

It is clear that the probability and sampling are interdependent, the probability accepts that, in a case, specific one incident or another will happen; or there can be a situation where two (or more) events would happen. But for, sample there should be representative in nature and acceptable. These situations are carefully connected with each other. Then, at a conspicuous part of the sampling procedure rest on the probability theory. Likewise, random sampling is very common, which represents the equal probability of selection to each unit.

7.4 Conclusion:

Sample is regarded as portion of entire population, it is small portion which is being separated from the entire population is known as 'sample'. It present the general qualities, as far as imaginable. It is small portion of values chosen from the population replicating its

features. It is very important to have sampling because it restricts the manpower, money and time required, it makes the researcher to conduct a comprehensive examination with restricted margin of error.

There are two types of sampling are there they are 1. Random Sampling and 2. Non-Random Samplings. It is very evident that the Random Sampling method is most reliable representation of the entire population whereas, Non-Random Sampling method is depends on the judgments of the researcher. It is obvious that the samples might be chosen from population from either by 'random sampling' or 'probability sampling'. The significance of random sampling is that, there is every item in the population has an opportunity of being selected for the sample. The probability of being chosen as a sample is judged on the grounds of personal knowledge, views, interest etc.

7.5 Model Questions:

1. Write about the sampling and its advantages and problems?
2. Discuss about the need of sampling?
3. Discuss in detail about the sampling and different types of sampling methods?

7.6 References:

1. Goode and Hatt, Methods in Social Research, , McGraw-Hill International company, New Delhi, 1989.
2. V.P Michael, Communication and research for management, , Himalaya Publishing house, Bombay, 1992.
3. C.R Khothari, Research Methodology, , New age International (P) Limited Publishers, new Delhi, 2001.
4. Dipak Kumar Bhattacharya, Research Methodology, Excel Books, New Delhi, 2009.
5. P.Narayana Reddy & GVRK Acharyulu, Research Methodology and Statistical tools, Excel Books, New Delhi, 2009.
6. Pauline V. Young ,Calvin F. Schmid, Scientific Social Surveys and research, Prentice-Hall of India Private Limited, New Delhi, 2000.
7. Dr. N.P. Agarwal, Dr. Sonia Agsrwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.

Dr. C. Vinod Kumar, Lesson Writer

LESSON-08**OBSERVATION****Structure:**

8.0 Objectives

8.1 Introduction

8.2 Types of Observations

8.2.1 Participant Observation

8.2.2 Non-Participant Observation

8.2.3 Controlled Observation

8.2.4 Uncontrolled Observation

8.3 Perception and Interest of Researcher

8.4 Crystallization and the Statement of the Problem

8.5 Conclusion

8.6 Model Questions

8.7 References

9 Objectives:

1. Students would know about the importance of observation in research.
2. Students would be able to understand different types of observations in the process of research.

8.1 Introduction:

In fact the research process begins with the observations to attain the final legality, hence, the researcher must train well to observe very carefully, if a researcher is healthy observer then he can begin the study with good collection of data to work. It might take several types like casual, uncontrolled experiences and there are certain observation procedures as well. Observation perhaps be single-handed optical or directed and organized observation. Occasionally, a casual or linked observation indicates to extensive research and discovery. At the same time, deliberate and directed (guided) observation, could be the ground for the research also and observation indicates to the research, research gives rise to observation and conclusions or sometime extra research and these observation either can be subjective or objective types.

8.2 Types of Observations:

These observations are different types and they are:

1. Participant observation
2. Non-Participant Observation
3. Controlled Observation and
4. Uncontrolled Observation.

8.2.1 Participant Observation:

In this type of observation the researcher or the observer himself is the part of observation, this gives him to examine the group about the natural behaviour, without the knowing group. In this case, observation is nearer than non-participant observation. In this type there is probability that, the observer might grow some kind of uncertainties which can distress the aim of the observation. The involved observer, not essentially, have the expertise to perform as observer in some case, and he may not have the assurance of all members of the group hence, it have both merits and demerits.

8.2.2 Non-Participant Observation:

In this type of observation, it is completed by an individual, who is not contributor in the group observed. Which means, somebody who is not the member of the group is performing the observation activity. For instance, an expert researcher observes the behaviour pattern of staff in institute, who are members of a specific organization. It is evident that, there are certain advantages and disadvantages in this type also. The advantages are, independence and scientific method, neutrality, impartial observation, unbiased information, expertise and competence. The disadvantages are, problem of complete observation and weakness on the role of both observer and the observed to behave objectively in a specific condition.

8.2.3 Controlled Observation:

Controlled observation suffers from some limitations, it perhaps contain control over behaviour, control over wonders, control over atmospheres and observation. If the observation is done under the observed situations, then it is known as controlled observation. The best example is laboratory experiment, the observer sees the behaviour of the

phenomenon, variables, or respondent under the controlled environ of laboratory. To control these aspects several mechanism may be utilized. There can be, mechanical instruments, schedules and questionnaires, sociometric scales, detailed observation plans, team observation, control groups so on. Control in this case states to the calibration of observational procedures or control over variables.

8.2.4 Uncontrolled Observation:

In this type of observation, it is very much possible to observe different social relationships, in any research, there might be some aspect of uncontrolled and informed informal observation. This perhaps the reason, why Goode and Hatt stated: “Most of the knowledge which people have about social relations is derived from uncontrolled observation, whether participant or non-participant”. In this type, observation is uncontrolled which means that, the procedure of observation would not experience any calibration or the variables or the factors might not be under any control. When observe the social behaviour of people in a given condition or behaviour issues in a natural atmosphere devoid of any check from any source, that sort of observation can be called as, uncontrolled observation.

The previous comment of V. P Michael, about this sort of background is that, “The observation made in natural surroundings, without any control or influence by any external forces, is uncontrolled observation”. This type of observation is truthful, which overlays the approach for research and analysis. Field observations, examinations and group observations are also completed, to place basis of a research study. Most of the times scientific observations grow merely by casual observation of the conditions. It was in fact Louis Daguerre, a French man whose casual observation directed to the invention of the phenomenon of mercury vapour which makes the image on the plate. Similar case with the invention of rubber. The most important observation in the area of Medicine was by Alexander Fleming, while he was conducting experiment on bacteria. After few days he wanted to check the condition of bacteria, to his surprise he found all the bacteria were dead. Then he tried to find out the reason and finally came to the conclusion, the fungi which came into by accident were responsible to kill bacteria, this invention gave rise to the making of Penicillin, a powerful anti-biotic from which the new generation of anti-biotics developed.

These simple uncontrolled observation gives the basic information, knowledge, thoughts, actualities and relationships. It is one type of procedure for scientific investigations. There

may be either uncontrolled involved observation or uncontrolled non-participant observation. Whatever it may be the fact is that, observation has an important role in research and analysis.

It is evident that the observation procedure has some sort of restrictions, some of the happenings perhaps not open to observation, whereas, several happenings are open to observation, are unable to examine. It is fact, not all the happenings incline themselves to examine by the sort of observational procedure but due to defective insights, or the persons who observed are known about it, absence of system of observation so on. Hence, the procedure of observation is utilized extensively, due to its simplicity, usefulness in the making of hypothesis, its exactness, the probability of legality of the test etc. it is clear that, the methods of observation is usual method in all sciences, and that's the reason the applicability is agreed. In fact it can be regarded that the observation is the ground for any kind of research.

By using observation technique, the researcher can observe the area of problem, variables, the factual problem, and the phenomenon in specific condition. The researcher can observe that the specific problem provides scope for thorough examination, which might develop a correct outcome. The topic which has the prospective of making anticipated outcomes only will bring to mind the interest of the researcher and compel him to conduct an examination.

8.3 Perception and Interest of Researcher:

The observation of a specific problem or some happenings hints to the insight of the given condition in the mind of the researcher; and it is the perception which produces the attention for additional investigation. The interest in a subject matter or problem motivates the researcher to probe into it. Interest can be academic, making of policy, social interest or self-interest and this interest makes the way for the research crystallization.

8.4 Crystallization and the Statement of the Problem:

Actually, in the researcher, a kind of interest for additional research will develop. Hence, he can try to put some more burden to obtain more fitting and complete information so that the problem which is being examined crystallized. This sort of procedure of designing a definite kind of research to be carried out to examine the matter. By the help of this, researcher, can

make the statement of the problem of research and by this one can frame a hypothesis and recognize the variables included in the hypothesis.

8.5 Conclusion:

The research process begins with the observations to attain the final legality, hence, the researcher must train well to observe very carefully if a researcher is healthy observer then he can begin the study with good collection of data to work. Observation perhaps be single-handed optical or directed and organized observation. Occasionally, a casual or linked observation indicates to extensive research and discovery.

These observations are different types and they are, 1. Participant observation 2. Non-Participant Observation 3. Controlled Observation and 4. Uncontrolled Observation.

8.6 Model Questions:

1. Write about the significance of the observation in the process of research?
2. Discuss in detail about the different kinds of observation techniques and their impact on research?

8.7 References:

8. Goode and Hatt, Methods in Social Research, , McGraw-Hill International company, New Delhi,1989.
9. V.P Michael, Communication and research for management, , Himalaya Publishing house, Bombay, 1992.
10. C.R Khothari, Research Methodology, , New age International (P) Limited Publishers, new Delhi,2001.
11. Dipak Kumar Bhattacharya, Research Methodology, Excel Books, New Delhi, 2009.
12. P.Narayana Reddy & GVRK Acharyulu, Research Methodology and Statistical tools, Excel Books, New Delhi, 2009.
13. Pauline V. Young ,Calvin F. Schmid, Scientific Social Surveys and research, Prentice-Hall of India Private Limited, New Delhi, 2000.
14. Dr. N.P. Agarwal, Dr. Sonia Agsrwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur,2006.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-09

INTERVIEW AND QUESTIONNAIRE

Structure:

9.0 Objectives

9.1 Introduction

9.2 Interview Method

9.2.1 Structured Interviews

9.2.2 Unstructured Interviews

9.2.3 Focused Interviews

9.2.4 Open Interviews

9.2.5 Repetitive Interview

9.2.6 Formal Interviews

9.2.7 Informal Interviews

9.2.8 Standardized Interviews

9.2.9 An Interview Guide

9.3 Requirements of Interviewer

9.4 Questionnaires

9.4.1 Structured Questionnaires

9.4.2 Non-Structured Questionnaire

9.4.3 Codified Questionnaires

9.4.4 Uncodified Questionnaires

9.5 Merits of Questionnaires

9.6 Conclusion

9.7 Model Questions

9.8 References

9.0 Objectives:

- 1 Students would know about the importance and kind of interview techniques
- 2 Students would be able to learn about the making and implementing of questionnaire its merits and demerits.

9.1 Introduction:

The collection of data is one of the most important aspects in the process of research, this data may be primary or secondary data, the primary data is the fresh collection and the secondary data is already collected data by someone. The process of collecting primary data and secondary data is totally different and primary data is original data which is collected freshly by the researcher. The primary data can be collected by the methods of observation, by the help of interview and by the help of questionnaires, by schedules so on.

9.2 Interview Method:

With the help of interviews the data can be collected, it contains, of face to face deliberations or oral verbal talks. It is just similar to that of a doctor seeks information from the patient by the act of interview, employer does the same from employee and researcher from respondent. Some of the usual characteristics of the interview are as follows:

1. It is face to face procedure
2. By such process it would be possible by the interviewer and interviewee to notice each other
3. An understanding required between the interviewer and interviewee
4. This kind of interview is every time is with some purpose.
5. The interview needs for joint cooperation during the interview time.
6. The interview is the main source of knowledge and therefore, provoking response is vital.
7. A friendly environment in which interviewer and interviewee could able to express themselves and interact, is very much needed for the achievement of interview and
8. During the interview some kind of interaction will takes place with regard to the subject.

This kind of interviews can be either direct personal investigation or indirect oral investigation. During the personal interview the interviewer collects the required data from the person directly, he should go to the place and meet the individuals from whom the information need to be obtained. This kind of procedure, is very much useful in intensive investigations. Whereas, sometimes, it could not likely to meet directly the individuals

merely to collect extensive information, and in this kind of situations, indirect oral examination can be done by which interviewer has to cross-examine other individual who has correct knowledge about the research problem and this kind of indirect technique can be observed in commissions and committees appointed by governments to find out investigations by this method.

Interviews are usually, categorized as following, Structured Interviews, Unstructured Interviews, Focused Interviews, Open Interviews, Repetitive Interviews, Formal Interviews, Informal Interviews and Standardized Interviews.

9.2.1 Structured Interviews:

In this type, the questions are designed so as to get the answers, which mean the replies to the questions are preconceived and categorized into likely sects. In codified questions and likely replies are pre structured and codified.

9.2.2 Unstructured Interviews:

In this type, interviews do not place any control on the respondents, this perhaps be in the kind of free discussions. This sort of procedure done during pilot studies. While, the information is needed for in detail appreciation or in case of emotions expressed then this kind of interview is very much essential. For instance, if need to know details and to assess the effectiveness of certain welfare scheme then the respondents will be asked to state the events in response to some open ended questions.

9.2.3 Focused Interviews:

In this type the interviews will be stressed on the attention of the responded on certain features and try to obtain their reactions. By the help of this one can examine the influence of the incentive schemes and who is benefits from particular scheme must be asked to find out the reactions, attitudes, emotional replies so on.

9.2.4 Open Interviews:

In this kind of interviews, the respondents are given ample chance to talk freely on the related subject matter and thereby, the researcher would collect data which is essential for his study by open discussions. These kind of interviews are much required during pilot studies and observations.

9.2.5 Repetitive Interview:

This kind of interview is preferred when steady influence of some social, psychological or economic procedures is to understand. These interviews are conducted at regular intervals to know the steady influence of these aspects. Such studies are needed when to know the influence of advertising for industrial machinery a repetitive examination is much essential, to find out the steady impact for example, informative, educational or persuasive impact. In such cases one advertisement or one interview might not give considerable influence, and it is expensive and time consuming, still in some kind of studies it becomes very essential one.

9.2.6 Formal Interviews:

They are done in a formal manner by the aid of formal questionnaires or schedules at the appointed place and time. The samples are also chosen methodically in the formal interviews. They are very much systematically planned and conducted formally.

9.2.7 Informal Interviews:

These interviews are done to observe purpose so effectively. They might be in the procedure of casual discussion, and the researcher will collect the required data from this sort of interview.

9.2.8 Standardized Interviews:

They are usually conducted by the aid of structured schedules, the interviews regarding polling is the best example of it. In this type all the respondent asked formal questions in the similar form, in the similar order and without any deviation. A comparison, is likely in this kind of interviews, profound examination is usually not conceivable with such categorized interviews.

9.2.9 An Interview Guide:

It is also frequently used in interviews, it will be in the form of document which is written in brief which gives a framework of different components of the interview area. It provides a common strategy for the interviews, though it might collect the similar range of elements from different respondents. By this, unwarranted necessity on memory is evaded and it performs as a device for effective interview during early phases.

9.3 Requirements of Interviewer:

To conduct interview very accurately, the interviewer must have some sort of principles in mind, must be skillful to make contacts with the respondents which is very vital in this process.

It would be better if he takes a prior appointment before,

Must be polite and strait forward, and must generate interest so that they can give replies,

He must not put puzzling and inconvenience questions to them,

Probing and leading questions must be evaded, he must have ability to record all the necessary replies.

9.4 Questionnaires:

This is another type of data collection in which the interviewer uses questionnaire, it is very popular method specifically in case of large enquiries. A questionnaire is developed by framing series of questions which are connected to research problem, it usually provokes all the needed knowledge relating to the research, it consists of all acceptable outlines for the respondents to fill up appropriately. This kind of method is taken by researcher, workers, private individual, public and private organizations and government as well. If Questionnaire is usually mailed it is called as 'mailed questionnaires', in this questions are framed logically which are connected to the research problem, hence it will assist the informant at a distance to gain the interest in giving such information anticipated from him.

While making questionnaire the researcher must take proper care so that, interest may be generated and maintained in the respondents until it is returned. The qualities of good questionnaire is as follows:

1. It should be self-explanatory and the required information about the research must be given to respondent and respondent should get correct idea of the information needed from him.
2. Questionnaire must be short, the longer the questionnaire the bigger probability of not responding properly.
3. Simplicity must be assured, the questions must be simple so that the respondent can understand it well.

4. Questions must be clear so that respondent must reply easily.
5. The biased and leading questions must not be framed because those will give doubts in the minds of respondents
6. The sequential order should be maintained framing questions, so that the respondent can have sequential thoughts as well.
7. The questionnaire must be good-looking and graceful while presenting, it can also have the impact while answering.
8. Questions must be framed properly so that it can provide required information about the research work
9. Personal questions must not be included in it, if such type of questions are needed then it needs skilful and diplomatic method to elicit personal information.

Questionnaire can be categorized in four type and they are as follows;

1. Structured Questionnaire
2. Non-structured Questionnaire
3. Codified Questionnaire and
4. Uncodified Questionnaire.

9.4.1 Structured Questionnaires:

They consists of definite, concrete and pre-ordinate questions with extra questions restricted to those required to categorize insufficient replies or to elicit a more total response. To understand it can be defined as “the type of questionnaire which is segmented and planned to produce thorough and correct information under the given titles and sub-titles. It provided the researcher to save the time and energy in processing data”. This kind of questionnaire is aids when questionnaire of complex nature.

9.4.2 Non-Structured Questionnaire:

They are simple questionnaires without any segmentation or sub-division. A few questions are put in one after the other in a proper sequence, these questions must be simple. This type

is useful in conducting simple research works. The questionnaire of trade union may consist of name of the individual, age, education, name of the trade union, section or department, remarks so on.

9.4.3 Codified Questionnaires:

They are anticipated to give replies in code numbers against every question, in this, four or five expected replies are given and each reply is given with code numbers like 1,2,3,4 so on. The responded need to mark or circle the reply, it make the processing much easier particularly during processing by computer. This type is very simple and convenient to respondents because they can take little time to answer the questions.

9.4.4 Uncodified Questionnaires:

In this type queries are very simple but are not codified, in this the questions are not coded so the respondents has to provide their replies and after that they have to be codified while the data processing.

These questionnaire methods has merits and demerits as well. Even in the emailed questionnaires have difficulties like, incomplete replies, biased replies, illegible entries, poor response, absence of personal contact and observation so on.

9.5 Merits of Questionnaires;

1. The cost is low
2. It can be free from prejudice of the interviewer; replies are in own words of respondents
3. They will have enough time to think while replying
4. It has the validity,
5. Huge samples can be used and which results are more trustworthy and reliable.

Demerits of Questionnaire:

1. They are unreliable because non-response is often indeterminate
2. Very less filled questionnaires may be returned
3. It has to be given to those who are educated and cooperating

4. Scope is very restricted
5. There may be the probability of ambiguity of replies or omissions to some questions.
6. It would not be possible to know whether the respondents are truly representative
7. This procedure is possible to be sluggish of all.

It is very essential to conduct a pilot survey to test the questionnaire because it give the correct picture about the Questionnaire, if it gives any weakness then it can be improved otherwise same can be used to collect information.

9.6 Conclusion:

The collection of data is one of the most important aspect in the process of research, this data may be primary or secondary data, the primary data is the fresh collection and the secondary data is already collected data by someone. The primary data can be collected by the methods of observation, by the help of interview and by the help of questionnaires, by schedules so on.

With the help of interviews the data can be collected, it contains, of face to face deliberations or oral verbal talks. This kind of interviews can be either direct personal investigation or indirect oral investigation. During the personal interview the interviewer collects the required data from the person directly, he should go to the place and meet the individuals from whom the information need to be obtained. This kind of procedure is very much useful in intensive investigations. Interviews are usually categorized as following, Structured Interviews, Unstructured Interviews, Focused Interviews, Open Interviews, Repetitive Interviews, Formal Interviews, Informal Interviews and Standardized Interviews.

Questionnaire is another type of data collection in which the interviewer uses questionnaire, it is very popular method specifically in case of large enquiries. A questionnaire is developed by framing series of questions which are connected to research problem it usually provokes all the needed knowledge relating to the research, it consists of all acceptable outlines for the respondents to fill up appropriately. While making questionnaire the researcher must take proper care so that interest may be generated and maintained in the respondents until it is returned. Questionnaire can be categorized in four type and they are as follows; 1. Structured Questionnaire 2. Non-structured Questionnaire 3. Codified Questionnaire and 4. Uncodified Questionnaire.

9.7 Model Questions:

1. Discuss about the importance and different interview methods?
2. Write in detail about the procedure on Questionnaire? Merits and demerits?

9.8 References:

15. Goode and Hatt, Methods in Social Research, , McGraw-Hill International company, New Delhi,1989.
16. V.P Michael, Communication and research for management, , Himalaya Publishing house, Bombay, 1992.
17. C.R Khothari, Research Methodology, , New age International (P) Limited Publishers, new Delhi,2001.
18. Dipak Kumar Bhattacharya, Research Methodology, Excel Books, New Delhi, 2009.
19. P.Narayana Reddy & GVRK Acharyulu, Research Methodology and Statistical tools, Excel Books, New Delhi, 2009.
20. Pauline V. Young ,Calvin F. Schmid, Scientific Social Surveys and research, Prentice-Hall of India Private Limited, New Delhi, 2000.
21. Dr. N.P. Agarwal, Dr. Sonia Agsrwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur,2006.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-10

ANALYSIS OF DATA

Structure:

10.0 Objectives

10.1 Introduction

10.2 Necessity of Data Analyzing

10.3 Processing Operations

10.3.1 Editing

10.3.2 Coding

10.4 Classification

10.5 Determining factor of Classification

10.5.1 Classification According to Attributes

10.5.2 Arbitrary Nature of Classification

10.5.3 Classification According to Class Intervals

10.6 Tabulation

10.7 Difficulties in Processing

10.7.1 Difficulties of Don't Know Responses

10.7.2 Use of Percentages

10.8 Conclusion

10.9 Model Questions

10.10 References

10.0 Objectives:

1. Students would know about the necessity of analyzing data processing, operations like editing, coding
2. Students would be able to learn about the, classification of data entry and tabulation.
3. Students would be able to understand about some difficulties in processing

10.1 Introduction:

Once the data is collected by the researcher then it becomes very essential to process it and analyze it properly to get the needed information out of it. Technically, process means the editing, coding, classification and tabulation of the data collected so that it can be analyzed.

In fact the word analysis means computation of some sort of measures containing the searching of connection which present in data groups. Therefore, G.B. Giles stated about it as, “in the process of analysis, relationships or differences supporting or conflicting with original or new hypothesis should be subjected to statistical tests of significance to determine with what validity data can be said to indicate any conclusions”. Whereas, the researchers like, Selltitz and Jahoda, opined that there is no difference between processing and analysis, they stated that the analysis of data involves number of linked operation which can be done with a purpose of the shortening collected data and organise in such a way that replies can be obtained from research questions.

10.2 Necessity of Data Analyzing:

With the aid of the data analysis, researcher can get the required information to decide and to make necessary decisions based on this process, which are the main aims of the research problem. There are many reasons so that data can be analysed and some of them are mentioned below:

- 1 .To make measure,
2. To compare
3. To test the relationships or links
4. To predict or estimate
5. To examine the hypothesis
6. To make concepts and theories
7. To search for required information
8. To regulate any problems
9. To describe the reasons for difficulties so on.

10.3 Processing Operations:

The following stages are present in the processing of data and they are as follows:

10.3.1 Editing:

The collected data is processed then it is called as editing, so that one can find the errors, omissions and to correct them when required. It includes a cautious analysis of the done questionnaires or schedules. It is required to guarantee that the data is correct, consistent with other realities obtained, uniformly entered and are planned in perfect way to facilitate coding and tabulation. The editing can be done based on points or stages one can state about the field editing and central editing.

Field editing means, the evaluation of the reporting forms by the investigator for completing, what the latter has written in shortened and or illegible type during the recording of the replies from respondents. This kind of editing is very essential in view of the reality that, the writing styles of a person sometime problematic to translate and it must be completed when the interview is done. The investigator should confine himself and should not correct errors of omission by merely predicting what respondent will say if the queries has been asked.

In Central editing, must take place during all forms have been finished and reverted to the office. In this kind of editing all the forms will undergo complete and detailed editing by a single editor, in small studies and more editors, if the study is large. Editors would make corrections if the wrong entries, for, inappropriate and missing answers, they can determine the correct replies, sometimes the respondent can be contacted for clarification. If the reply is similar then he can strike out and inappropriate but he cannot do anything for correct reply in such case the editing entry of 'no answer' is called for. The wrong replies will be deleted.

When editors on work they need to look in certain points and they are;

1. They must know the instruction given to interviewers and coders, and other instructions given to them
2. When crossing out single entry for any reason they must draw a single line only
3. They must enter on the form with different colours and that to in proper way.
4. They should put initial all replies which they alter or provided
5. The initial of concerned editor must be put on with date.

10.3.2 Coding:

It is the procedure of assigning numerals or other kind of symbols to replies so that the answers can be restricted to number of classes or categories. These classes should be suitable to the problem of research under concern and they should contain characteristics of exhaustiveness and also that of joint solely means, that particular reply could be placed in one and only cell in given class group. The other rule is that unidimensionality must be maintained. This coding is very essential for perfect analysis, all the replies are condensed to small number of groups which have the required information for analysis. The decision regarding coding should be taken while the making of questionnaire. This will enable to pre-code and will assist in tabulation stage by the help of computer. Whereas, with manual coding standard measures must be utilized. One of which is, coding with colour markers or pencils and the other is to record data from the questionnaire to a coding sheet. It is needed to see the errors of the coding and must be removed or decreased to minimum.

10.4 Classification:

The classification will have several aims and they are as follows:

1. To recognize the resemblance in the collected data
2. To maintain homogeneity
3. To enable operative contrast
4. To present compound disorganized and dispersed data in a brief reasonable and understandable manner
5. To uphold transparency
6. To recognize independent and dependent variables and establish their connections
7. To make data as simple from the complex one
8. To identify multiplicity and unanimity of the data for the purpose of analysis
9. To attain actual quantifications and
10. To enable easy appearance and understanding of the data.

10.5 Determining factor of Classification:

Apart from the above mentioned aims there are different determinants of classification and they are as follows. These determinants might be the general feature of quantitative or qualitative types. The ground for the qualitative is descriptive whereas, quantitative elements are from numericals. The gratification of job of the workers, their morale, and self-actualization so on may be stated in qualitative manner. Increase in the wage, attainment of sales, bonus, quota, compensation so on can be treated as the instances for numerical or quantitative base for classification. In the qualitative or descriptive determinants the attributes can be studied and class intervals are generally used in quantitative or numerical factors.

10.5.1 Classification According to Attributes:

This kind of classification is considered as the simple classification, manifold or arbitrary classification. Got such name because in this type the classification is mainly based on attributes or qualities in modest manner, hence, it is regarded as simple classification. All the units or persons with specific characteristics are joined together, and who do not have similar characteristics are put alone in other group. In this type of classification there may be two kinds of groups

1. The sect with common characteristics and
2. Group did not have similar characters.

It also known as class depending on dichotomy. For instance, if we want to classify the consumers of soft drink, example mango drink, we can divide population into two groups, one consumer with mango lovers and the other who do not like mango juice. If more than one quality is tested simultaneously, then classification have to be made into, many groups for instance, income group and consumer loyalty for mango juice, income level of male and female, the urban and rural pattern of consumption so on. In this case there are several attributes simultaneously evaluated hence, it can be called as 'manifold classification'. Each class of data could be subject to extra classification with aims and scope of the test.

10.5.2 Arbitrary Nature of Classification:

The arbitrary classification becomes apparent, when the variations are not clearly defined in different sects. For instance, the universe is separated into two groups like high income and

low income then it becomes arbitrary classification, because it needs to know the exact definition of sects. In this the researcher gives arbitrarily defines, depending upon his own convenience. For example, the income group of mango juice can be defined based on their levels, a group with RS 5,000 and another with RS 10,000, the first one as low income and second one as high income groups. This definition is arbitrary for any other reason; and it will not give a clear picture of separation in total terms. It will vary from position to position. It can be used for the demand analysis of the mango juice, the low income does not buy the mango juice because of its high cost but the high income group prefer this.

10.5.3 Classification According to Class Intervals:

It is another kind of classification in this classification, resolute by class intervals, on every occasion a measure of quantitative and data presentation are necessary then it can be used for convenient presentation and analysis. This type of classification is done on the base of 'values or quantities'. For instance, the data of 100 workers in a factory can be classified in the following class intervals:

Income Group (Class Intervals)	Number of Workers (Frequency)
Below Rs. 2500	25
Rs. 2500-4500	30
Rs. 4,500-6,500	20
Rs. 6,500-8,500	15
Rs. 8,500-10,500	6
Rs. 10,500 and above	3
Total	100

The limit in the class interval is known as, 'class limit', which means, in the class interval of 2500-4,500, the lower limit is Rs.2000 and the upper limit is Rs.4,550. The difference among these two classes, limit is known as, 'class magnitude' or 'magnitude of the class interval'. The number of items which falls under every class is known as 'class frequency'. The primary thought in classification according to class intervals are as follows:

1. Choice of class limits
2. Magnitude and number of cases

3. Counting of number in every class and
4. Relevance of the class interval to the circumstances.

On the grounds, total number of items in the series, classes are scheduled in a dispersal of frequency. It is the prime duty of researcher to make classes and class interval and the all-out accurateness, unambiguity, steadiness, and significance must be upheld. The entire dispersal must not have a huge number of classes, it becomes difficult to understand the reader, at the same time the number of classes must not be less also (less than 5). It would be better to have frequency distribution between 5-15 classes. While, taking into account about the magnitude of intervals, must considered about range of data, forecast of accuracy, and number of classes. It would be better to have equal magnitude in all the class intervals. The utmost significant standard to be followed while, selecting the class limits, the mid-point of class interval and real average of items in that class interval, must be as close by to each one as likely with evading anonymity in class limits.

The number of items coming under the class are known as 'frequency' might be resolute by the aid of tally sheets, punch cards, and mathematical instruments. Computers have the major role in Analyzing huge data. The effective features of classification are as follows:

1. Uniformity must be maintained
2. Comparability must be assured
3. Unambiguity must be assured
4. The classification must be upheld in class interval
5. Constancy should be protected
6. Homogeneity is the strength of classification
7. There must be clear and proper attributes and
8. Class intervals, limits and magnitudes should be proper and correct and constant as far as necessary.

10.6 Tabulation:

It is regarded as the systematic preparation of data in columns and rows in a table. It is orderly presentation of classified data on the grounds of the analysis and examination. Tabulation can be regarded as, the appropriate planning of data in accord with classification in proper tabular form, which enables correct analysis. It make the researcher to simplify the complex data so as to understanding becomes easier. Economy of space and time will be probable, by the aid of tabulation and also it become easier to interpret, generation, inference and conclusion. By the help of tabulation the complex data can be put into complete form, if the table is simple then it can be understood easily. While preparing tables following elements can be taken into consideration.

1. A strong, precise and transparent title is required for a table.
2. The units used in it must be clearly mentioned
3. The row headings and column headings must be mentioned correctly
4. The table must contain all related information
5. A precise form of huge figures must be utilized for the reader to get exact image.
6. A perfect footnote must be used to specify some aspects and clear some points
7. Head notes are required under the main title.
8. Methodical planning of data is needed, means, chronologically, alphabetically, geographically, this would make the reader to understand different elements easily
9. The special care must be taken to those items needs care by marking
10. Sufficient space should be given between column and rows
11. Need to state about the source of the data
12. Percentages, standard deviations, coefficients of correlation so on might be calculated and put in the table whenever needed
13. Significant connections among the variables must be presented in table
14. Table must be very attractively presented.

10.7 Difficulties in Processing:

The following are the difficulties.....

10.7.1 Difficulties of Don't Know Responses:

During the processing of data researcher come with some sort of difficulties like 'don't know' or DK, if this sect is very little then it can have very small importance, in case if it very huge then, it will be a concern for researcher. If want to occasion the DK answers useless, then he has two options, the respondent might not know the answer or researcher might fail in getting the correct information. In the former, the related query is said to be alright and DK, answer is treated as genuine DK answer, but in later case, DK answer, is seems to be failure of the questioning procedure.

To deal this problem the better manner is to prepare good kind of questions, good intimacy with respondents will give correct outcomes in this regard. It is better to keep DK questions from the other data in the questionnaire.

10.7.2 Use of Percentages:

The percentages used in data are merely numbers, ranging from 0 to 100. By using the percentage data is simplified in correct form from the base equal to 100 which give the relative comparison. When percentages are used then one must follow following conditions.

1. The average of two or more percentages must not be taken unless each is weighed by the size of the group which has been resultant.
2. Use of too big percentage must be evaded
3. The percentage hide the base from which they have been computed
4. The decreases of percentage can never be exceed 100%.
5. Percentage must be calculated in the way of the casual factor in the case of two dimension tables.

10.8 Conclusion:

Once the data is collected by the researcher then it becomes very essential to process it and analyze it properly to get the needed information out of it. Technically process means the

editing, coding, classification and tabulation of the data collected so that it can be analyzed. There are many reasons so that data can be analyzed and some of them are mentioned: To make measure, To compare, To test the relationships or links To examine the hypothesis, To make concepts and theories, To search for required information, To regulate any problems, To describe the reasons for difficulties so on.

It has stages like editing, coding, classification and tabulation. There are certain problems while dealing with some of the aspects like DK and percentages.

10.9 Model Questions:

1. Discuss about the necessity of analyzing data processing, operations like editing, coding?
2. Write about the classification of data entry and tabulation.
3. Write about the difficulties in the processing of data?

10.10 References:

22. Goode and Hatt, Methods in Social Research, , McGraw-Hill International company, New Delhi,1989.
23. V.P Michael, Communication and research for management, , Himalaya Publishing house, Bombay, 1992.
24. C.R Khothari, Research Methodology, , New age International (P) Limited Publishers, new Delhi,2001.
25. Dipak Kumar Bhattacharya, Research Methodology, Excel Books, New Delhi, 2009.
26. P.Narayana Reddy & GVRK Acharyulu, Research Methodology and Statistical tools, Excel Books, New Delhi, 2009.
27. Pauline V. Young ,Calvin F. Schmid, Scientific Social Surveys and research, Prentice-Hall of India Private Limited, New Delhi, 2000.
28. Dr. N.P. Agarwal, Dr. Sonia Agsrwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur,2006.

Dr. C. Vinod Kumar
Lesson Writer

LESSON-11**REPORT WRITING****Structure:**

11.0 Objectives

11.1 Introduction

11.2 Interpretation Meaning

11.3 Need of Interpretation

11.4 Method of Interpretation

11.5 Importance of Report Writing

11.6 Various Stages in Report Writing

11.7 Conclusions

11.8 Model Questions

11.9 References

11.0 Objectives:

1. Students would know about the meaning of interpretation, methods, precautions of interpretation
2. Students would be able to learn about the importance and various stages in report writings
3. Students would be able to understand the layout of research report writing

11.1 Introduction:

Once the data is analyzed and complete the process of inferences, making tables, the complex matter is simplified into understandable matter, then the utmost important job of the researcher is to write the report of the research work done. This have to be completed very perfectly, if not, misleading conclusions might develop and the entire concern of the research will become meaningless. It is by the aid of interpretations the research can put forward relations and procedures that emphasize the findings. If the hypothesis is tested and maintained many times, then it would give proper overviews. All the analytical information and consequential inferences must be communicated properly in the report.

11.2 Interpretation Meaning:

It is in fact the duty, to develop inferences from the collected data after the analysis of the research study, which means the search for broader meaning of research findings. The interpretation has two kinds of features such as, 1. The determination to find continuousness in research through connecting the outcomes of a particular study with another one, 2. The creation of some explanatory concept. According to C. William Emory, who stated about interpretation as, “In one sense, interpretation is concerned with relationships within the collected data, partially overlapping analysis. Interpretation also extends beyond the data of the study to include the results of the research, theory and hypothesis”. Therefore, it can be treated as the mechanism by which, the aspects that looks to clarify whatever, observed by an investigator during the examination can be understood properly, and also offers a theoretical concept which can help as direction for advance in the research.

11.3 Need of Interpretation:

It is very much evident that, the need for a proper interpretation is very essential because utility of the findings of any research depends upon the exact interpretations. There are some principal aspects for the research methods and they are as follows:

1. It is by the correct interpretation researcher can be able to recognize the main theoretical source that makes his findings. By the help of this he can connect findings with other works. New enquiries can be tested and assumed later.
2. By the help of interpretations, one can develop explanatory concepts which can work as a direction for future research works, it provides new avenues in the research arena.
3. A researcher can be estimated by his excellent interpretations why his findings are factual of his work.
4. The interpretation of the findings of explanatory research study frequently, results in hypotheses for experimental research and as such interpretation is involved in the transition from explanatory to experimental studies. Explanatory study does not have a hypothesis to begin with, in this case findings interpreted on ‘post-factum’ grounds and this interpretation is called as ‘post factum’ interpretation.

11.4 Method of Interpretation:

The interpretation is not easy assignment, it needs a countless skills and handiness on researcher, it can be developed by experience and practice. Researcher may take some sort of help from the experts in the field for completion of his research interpretations. The methods to be followed when interpretation is carried out:

1. Researcher should provide sensible clarifications about his findings and the connections which need to be interpreted and highlight the procedure and try to find uniformity in the research work, by this the generalization can be done and concepts be framed.
2. Irrelevant information, if collected should be regarded while interpreting because sometimes it may be useful in understanding the problem.
3. It is always better to take the guidance of expert in the field before making final interpretations, such consultations would give correct interpretations and exact results.
4. The Investigator should complete the job of interpretation, only taking into account of all applicable elements affecting the problem to evade the false generalization. Should not be in hurry while doing interpretations, and conclusions which looks to be all in the perfect condition in the starting, but it may not be the same in reality, hence, need to check properly.

11.5 Importance of Report Writing:

Research report is regarded as the main feature of the research work and it will not be complete, unless the report writing has been done properly. In fact the study whatever significance it has, or containing highlighting generalizations and important findings but it becomes valueless, if it is not presented in a proper manner, so that one can understand it properly. The purpose of such study will not be useful and it became futile when it is not utilized for further research works. To get significance about his research work, the report writing must be the prime part of research work and it must be done very positively and effectively. It is the final step of the research work and needs group of skills which are totally different from the previous part of the research study. Every part has its own significance in this research work no part can be ignored and the final part has significance because, it actually give the exact picture of the study and the findings and relevance of the study, with other such studies so on. It can also be direction provider for additional research studies.

11.6 Various Stages in Report Writing:

The art of report writing is very painful, slow, perfect and inductive process, the general stages which are involved in the report writing are as follows:

1. Analysis of logics of the research subject
2. Making of final sketch
3. Making of the rough draft
4. Redrafting and improving rough draft
5. Making of final bibliography and
6. Final writing. By the help of these stages a researcher can make a comprehensive report writing.

Analysis of logics of the research subject:

It is the first stage which is main concern of the development of a subject. There are two types of subject expansion.

1. Logical and
2. Chronological manner.

The logical expansion is chiefly based on the grounds of mental links and relationship between one thing and another by the worth of analysis. Logical treatment mainly consists of developing material from a simple probable to compound structure. The second chronological growth is grounded on a link or sequence in time or incidence. The way for doing or making something generally follow the chronological order.

Making of Final Sketch:

It is the second stage in the report writing according to Elliott S.M. Gatner and Francesco Cordasco, stated about it as, "Outlines are the framework upon which long written words are constructed. They are in aid to the logical organization of the material and a reminder of the points to be stressed in the report".

Making of the Rough Draft:

This actually involves the logical analysis of subject and the making of the final outline. This is the utmost important stage because researcher has to write, what he has done in the background of the research. In this stage, write about the method accepted by him in collecting the material for his study along with several restrictions encountered by him, the method taken by him for analysis, the extensive findings, generalizations and different recommendations he needs to make in this context.

Redrafting and Improving Rough Draft:

It can be regarded as the most significant and difficult part of all formal writings, actually this stage needs extra time than that of writing rough draft. The watchful reviews makes the variance between a mediocre and excellent writing. During writing and improving, it is good to check the weakness of the report in logical progress and presentation. The researcher must also (Ibid), “See whether or not the material, as it is presented, has unity and cohesion; does the report stand upright and firm and exhibit a definite pattern, like a marble arch? Or does it resemble an old wall of moldering cement and loose brick”. Along with this the researcher must pay proper care to the reality that in the rough draft which was not been regarded. He must consider and look in for the grammar, spelling and usage.

Making of Final Bibliography:

The next thing in report making is making of bibliography, it is usually added to the research report like list of books in some manner pertinent to the research which has been done. It must consist of all the works which the researcher has consulted, it must be planned in alphabetically and can be separated in two parts. The first part consists of names of books and pamphlets and the second part with name of magazine and newspaper articles.

Final Writing:

This is regarded as the final stage, in the report writing the final draft must be written in a concise and objective style and with simple understandable language. And it should not use the words such as, “it seems” “there may be” and similar type of words. During the final draft, the researcher must not use the nonconcrete terminology. Illustrations and instances must be based on common experiences, which can be very effective and communicating the research findings to other persons. The research report must inspire the individuals and

upholds the interest and contain the reality. It should be recalled that each report must try to resolve some intellectual difficulty and should contribute to the solution of a problem and should give information to researcher and reader.

Layout of the Research Report:

Any person who reads such research report, should be taken sufficient information about the study so that he can put it in its scientific background, evaluate the aptness of its procedures and then come to an estimation that the findings are very carefully done, and to do this it needs a perfect layout of the report. A perfect layout of the research report contains three steps and they are;

1. Preliminary pages
2. The main text and
3. The end matter.

Preliminary Pages:

In the preliminary pages the report must contain a title, date and then acknowledgements in the form of 'Preface' or 'Foreword'. After this, it must contain 'table of contents', then 'list of tables' and 'illustrations'. By seeing this one must be inspired to read the report and can find the needed information from the report.

Main Text:

It contains the entire outline of the research report along with needed information. At the top of the first page the title of the research study is repeated, of the main text and later the other details on the pages numbered consecutively, starting with second page. Even main section of the report must start with fresh page. The main text of the report must have following sections like:

1. Introduction
2. Statement of Findings and suggestion
3. The results or outcomes
4. Implications drawn from the outcomes and

5. Summary.

Introduction:

The main aspect of the introduction is to introduce the research project to the readers, it gives the exact statement of the aims and objectives of the research, background should be mentioned so that, the reader would get the correct reasons for the selection of the problem and investigations. A precise summary must be mentioned indicating about the current study, the hypothesis of the study definitions of the major concepts of the study must be openly mentioned.

The methodology agreed in conducting the study, should be explained very well and the readers must be able to know about such information. It must contain, the way of study carried out, the primary plan, in case the study is of experimental type, then the experimental controls, the way of data collection by questionnaire or schedule type must be mentioned. In case measurements are grounded on observation, then the kind of instructions given to observers, the way in which sample used, the questions are vital for estimating the likely restrictions, generalization of findings, the statistical analysis agreed must be correctly stated. Along with this it is evident to state about the scope of the study, the different restrictions by which the research was undertaken and completed.

Statement of Findings and Suggestions:

It is very important to mention after the introduction the research report should be consist of findings and suggestions in non-technical language, so that it can be understood to all the readers. In case the findings are very broad at the point must be summarized form.

Results:

It must contain the findings of the study which must support the data in the form of tables and charts together with proof of results. It mainly consist of main body of the report including all the chapters, the result part of the report must have the statistical details, and reduction of data instead of raw data. The result must be presented in logical sequence and separated into readily recognizable parts. All the related result must be stated in the report. According to Selltiz, Jahoda, Deutsch and Cook, stated about it as, “Nevertheless, it is still necessary that he states clearly the problem with which he was concerned, the procedure by which he worked on the problem, the conclusions which he arrived, and the bases for his conclusion”.

Implications Drawn From the Outcomes:

At the end of the main text, it should be better to mention about the results of the research correctly and briefly. In this, must be mentioned about the implications that, flow from the results of the study, it is clear that, by the help of these implication result easier to understand the human behaviour. This implication contains three aspects, such as:

1. A statement of inferences drawn from the current study and which can be predictable to put on in same conditions.
2. The circumstances of the current examination, which might restrict the amount of legal generalizations of the inferences drawn from the study.
3. The relevant questions that are unanswered, or fresh questions put forward by the study and the recommendations for the problem.

It would be better to complete the report with a short conclusions which recaps the important points of the study. The conclusions must be clearly linked to the hypothesis, and the prediction of the likely future of the subject should be mentioned.

It has become the tradition to conclude the report with a precise summary resulting in brief about the research problem, the selected methodology, findings, and the conclusions emerged from it.

End Matter:

At the end of the report it must be clearly mentioned about appendices, in respect to all related data of questionnaires, sample information, derivations so on. Bibliography of sources with whom consulted, index, contains alphabetical list of names, topics and places, number of pages of book or report, mentioned and discussed. The value of index rest on the fact that it actually guides the reader to the contents of the report.

11.7 Conclusions:

As soon as the data is analyzed and complete the process of inferences and making tables the complex matter is simplified into understandable matter, then the utmost important job of the researcher is to write the report of the research work done. It is in fact mentions the duty of developing inferences from the collected data after the analysis of the research study, which

means the search for broader meaning of research findings. It is very much evident that the need for a proper interpretation is very essential because utility of the findings of any research depends upon the exact interpretations.

Research report is regarded as the chief feature of the research work and it will not be complete unless the report writing has been done properly. In fact the study whatever significance it has, or containing highlighting generalizations and important findings but it becomes valueless if it is not presented in a proper manner so that one can understand it properly. The general stages which are involved in the report writing are, 1. Analysis of logics of the research subject 2. Making of final sketch 3. Making of the rough draft 4. Redrafting and improving rough draft 5. Making of final bibliography and 6. Final writing. By the help of these stages a researcher can make a comprehensive report writing.

11.8 Model Questions:

1. Write about the meaning of interpretation, methods, precautions of interpretation?
2. Discuss about the importance and various stages in report writings?
3. Write in detail about the layout of research report writing?

11.9 References:

29. Goode and Hatt, Methods in Social Research, , McGraw-Hill International company, New Delhi, 1989.
30. V.P Michael, Communication and research for management, , Himalaya Publishing house, Bombay, 1992.
31. C.R Khothari, Research Methodology, , New age International (P) Limited Publishers, new Delhi, 2001.
32. Dipak Kumar Bhattacharya, Research Methodology, Excel Books, New Delhi, 2009.
33. P.Narayana Reddy & GVRK Acharyulu, Research Methodology and Statistical tools, Excel Books, New Delhi, 2009.
34. Pauline V. Young ,Calvin F. Schmid, Scientific Social Surveys and research, Prentice-Hall of India Private Limited, New Delhi, 2000.
35. Dr. N.P. Agarwal, Dr. Sonia Agsrwal, Sampling Methods and Hypothesis Testing, RBSA Publishers, Jaipur, 2006.

Dr. C. Vinod Kumar
Lesson Writer