SOCIAL RESEARCH METHODOLOGY (AN OVERVIEW) VOL 3

Chief Editor

Distinguished Prof. Dr. Mukesh Kanaskar
Professor and Academic Head (Research, Publications and Documentation),
Rank of Deputy Director General
All India Institute of Local Self-Government.

Co-Editors

Ms. Shweta Gupta
Executive Director
International Centre of Equity and Inclusion for Transformation
All India Institute of Local Self-Government.

Dr. V. V. Kulkarni
Dean of the Faculty of Arts and Social Science,
Bharati Vidyapeeth Deemed University,
Pune.

SOCIAL RESEARCH METHODOLOGY (AN OVERVIEW)

Chief Editor

Distinguished Prof. Dr. Mukesh Kanaskar
Professor and Academic Head (Research, Publications and Documentation),
Rank of Deputy Director General
All India Institute of Local Self-Government.

Co-Editors

Ms. Shweta Gupta
Executive Director
International Centre of Equity and Inclusion for Transformation
All India Institute of Local Self-Government.

Dr. V. V. Kulkarni
Dean of the Faculty of Arts and Social Science,
Bharati Vidyapeeth Deemed University,
Pune.

Kripa-Drishti Publications, Pune.

Book Title: **Social Research Methodology (An Overview)**

Author's: Prof. Ambalika Sinha, Buike Oparaugo, Pramod Kumar, Sourav Kumar, Dr. Shailendra Kumar, Ashok Kumar Dewangan, Abhishek Chakraborty, Sunil Kushwaha, Sushma Singh, Neelam Pawar, Dr. Sunita Tanwar, Dr. C. S. Yadav, Dr. Lokesh Jain, Shri. Sumarlang O. Lyngskor, Dipti Nandkishor Hajari, Chandrakant Govind Gojegave, Shrawani Renukadas Deshpande, Jivika Shivaji Chavan and Anamika Delip Utekar

1st Edition

ISBN: **978-81-948755-8-1**

Published: **January 2021**

Publisher:

Kripa-Drishti Publications

A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,

Pune – 411021, Maharashtra, India.

Mob: +91-8007068686

Email: editor@kdpublications.in

Web: https://www.kdpublications.in

©Copyright KRIPA-DRISHTI PUBLICATIONS

All Rights Reserved. No part of this publication can be stored in any retrieval system or reproduced in any form or by any means without the prior written permission of the publisher. Any person who does any unauthorized act in relation to this publication may be liable to criminal prosecution and civil claims for damages. [The responsibility for the facts stated, conclusions reached, etc., is entirely that of the author. The publisher is not responsible for them, whatsoever.]

INDEX

ISBN: 978-81-948755-8-1

1. Social Research: An Introduction

Prof. Ambalika Sinha

Director,
Shambhunath Institute of Management,
Jhalwa, Prayagraj.

1.1 Introduction:

John W. Best has rightly said "The secret of our cultural development has been research, pushing back the areas of ignorance by discovering new truths, which in turn, lead to better ways of doing things and better products. Through research we have been able to investigate the gradual developments from the ancient time till the present phase. Inventions and discoveries which have come up have only been possible through intensive researches by the various researchers from time to time. Still, it is continuing. New inventions, new discoveries, new theories all have come up in physical, biological, social and economic spheres.

The businessmen, agriculturists, sociologists, economists, academicians in every sphere are carrying out research in their respective fields. Social Research is a method used by social scientists and researchers to gain knowledge about people living in various societies so that their understanding may guide them to serve the people better by giving right services and providing appropriate products to match the requirements of persons. People from different countries, having different societal norms perceive every aspect of their society differently, hence the same topic or issue may be dealt differently by different people of different regions. Which can be done using Social Research. Any topic can trigger social research – new feature, new market trend or an upgrade in old technology or change in fashions, education system Etc.

1.2 Definitions of Research:

a. C.C. Crawford: "Research is simply a systematic and refined technique of thinking, employing specialized tools, instruments & procedures in order to obtain a more adequate solution of a problem than would be possible under ordinary means."

Research usually starts with a problem to be studied, a gap in the topic of study which should be filled logically. Next review of past theories, facts, studies in that area have to be made to think in terms of how to remove the gap, solve the problem. For this purpose, variables to be studied have to be generated, next independent and dependent variables are pinpointed on the basis of review of past literature, next relationship between the variables is studied, data has to be collected to test the relationship between the variables. Next the data has to be analysed using the quantitative or qualitative analysis, and on the basis of analysis interpretation is given which reveals the new finding which is evolved from the findings.

b. Webster Dictionary: "A careful inquiry or examination in seeking facts or principles, diligent investigation in order to ascertain something."

c. Francis Bacon: "Research is a power of suspending judgement with patience of meditating with pleasures of asserting with caution, of correcting with readiness of arranging thought with scrupulous plan.

1.3 Historical Context of Research:

In modern times, a number of sociologists have made extensive historical studies of various social institutions. This type of research is based on going through past records in chronological method of a specific institution, for example study of family as an institution has studied families in ancient period, when joint family system prevailed. Especially in India oldest male member was the master of the house, all reported to him? All earning members gave their earnings to the head of the family and took money from him for all expenditures. This continued for a long time, especially in rural background, but gradually people started educating the children, next industries started emerging, these two conditions revolutionized the family system and brought significant changes in the family system Joint family system a staunch sense gradually became extended family, next now what is prevalent is nuclear family. Another significant example is the study of gradual evolution of marriage system as studied by Western Mark. Many social scientists have used historical approach in studying in their social studies, political & cultural development (Karl Marx, Max Weber, C. Wright Mills, Raymond Aproned al.

1.4 Background for Historical Study:

Darwin's biological studies started the study of impact of social environment in the development of human beings from pure biological creatures moving on four limbs to Socio-physiologically developed creature moving about on two feet and using hands for other activities much above the ground. Historical research evolved from the philosophy of Hegel and Darwin. The historical method usually initiated from the origin of the topic in concern till the gradual development up tol the modern period.

Theory of evolution was introduced by Darwin in the biological arena. As new and new discoveries and inventions came up human beings grew socially, physically and economically. This led to the study of historical graph of human development. All these studies are based on subjective observations. There is no objective assessment of this development. Documents, relics & historical materials that are kept in archives & museums and stored inscriptions, coins & articles obtained from excavations have been the records through which social scientists have unearthed the gradual historical development of the various societal issues. Historical study unveils old values and traditions which become the base for the present state of values and traditions. The historical records are always helpful in reviewing old picture which existed and has led to the appearance of variables which have generated new avenues for research. Max Weber, the founder of bureaucratic approach made partial utilization of historical approach. This approach has scope in review but cannot be used for scientific investigation. After review researchers are depending on other methods like building assumptions after review of historical records and testing these assumptions to prove their points of view in more significant manner. Till today researchers start first with using historical approach to assess evolution of the topic for study. But beyond review researchers depend on other methods. Today modern researchers are not in favour of wholesale application of historical method & the study of institutions in the background of entire human history. They are however, not opposed to the study of particular institutions in their evolutionary aspect.

Max Weber has studied capitalism, modern government & religions in the light of economic determinism i.e., he has tried to see the role of economic factors on these. For these studies of popular institutions, it is essential to study them in connection with other institutions. The historical context of research has proved useful in the study of particular human institutions. But there are limitations of historical method.

1.5 Drawback of Historical Studies:

The credibility of the sources for collecting records should be high and should be studied from various angles to prove that whatever was studied would be true. Until it is proved similarly from various angles it cannot be considered factual and theoretical base may be absent. Hard work is expected from persons attempting historical research for proving their points. Such methods may not work for scientific researches as they have to be studied quantitatively to get significant findings. Usually, archaeological survey departments are set up in various countries to search out ancient inscriptions, books, etc.

Society is a complex system. It has to depend on other research techniques to get better understanding of various social phenomenon. The most popular and standardized method of research is as follows:

Choose a topic for study based on your interest area, Next review old records on that topic or nearby topics to get enlightened about what gaps exist on the topic to be studied. After gaps are assessed one thinks in terms of how they can be filled up, i.e the variables which should be studied for filling the gaps, and which are the cause of problems. The variables may be studied as independent and dependent variables and think of methods to study them to find solutions to problems and filling the gaps in the researched topic. Hypotheses have to be set up which researcher plans to test using the independent and dependent variables. Next Samples for data collections are defined. Next step involves generating tools for data collection (Questionnaire, Inventories, case study methods or projective techniques). Next data is collected from the sample. Appropriate analysis is done and interpretations are given to reach the logical conclusion.

1.6 Perspectives in Social Research:

1.6.1 Weber's Methodology:

Max Weber tried to study social topics through applicable systematic scientific method. Scientific research method was applied to social topics to prove the significance of these topics in a significant quantitative manner as far as it was possible. Weber's laws of the scientific study of sociology are based on two fundamental characteristics namely meaningful social action and logical interpretation of social action. He has kept his methodology situation specific. Societies in different parts of the world are different hence one should study each different area population from the local perspective. One should not apply internationally standardized methods to judge any society in different continents. The measurement tool should be specific to the society it taps. He accepted that human being are different from each other and even one person may vary from time to time. Their value system, their behavior patterns may vary from time to time. Hence absolute prediction was not possible in studying social aspects, but a significance level may be used to say with surety that differences observed

or relationship observed are probably possible. He has tried to study the rationality in social actions which is only possible by assessing cause of social actions and if the cause affect relationship is harmful than research may be undertaken to overcome the negative effects. This is how evolution has been possible and so many changes have been possible in the social systems like removal of sati system, child marriage, slave system, etc. These social evils could only be possible through rational understanding which was created in the thinking of common man.

Rational Interpretation:

Sociology interprets situations or phenomenon as it is most important in the society. This interpretation may be of the following two types: 1) Layman types of interpretation which explain benefit of following one tradition and loss of not following the tradition which is emotionally churned to make people accept the novel change.; and 2) The Metaphysical explanation where following a tradition is linked religiously with right or wrong doing and its impact on their future life and life beyond death. If people understand the logic behind holding or not holding a view and feel satisfied with the logical explanation than they accept new changes and propagate them to common men in simple terms to make them accept the right or wrong of any value, attitude or behaviour.

1.6.2 Comte's Methodology:

Method of Inquiry: B. Comte's came up with natural science methods. They include Observation, Experimentation and Comparison.

a. **Observation:** It is the way of collecting data, usually the researcher has to participate in the setting where observation has to be made. As per B. Comte's methodology observation is based on the theory which has to be tested. Theory will specify what points have to be observed for relating to the facts given in the theory. Without theory the observation will not have a base for scientific testing. Observation must align with facts stated in the theory to give findings which are predicted.
b. **Experimentation:** It is a tentative procedure or operation for the purpose of discovering cause effect relationship, this helps in testing a principle, supposition, etc. It is a scientific procedure of studying the relationship between independent and dependent variables using controls to use categories of treatments of independent variables and studying the different effects of different treatments on dependent variables.
c. **Comparison:** In 1954 psychologist studied that individuals determine their own worth based on how they appear in comparison to others. According to some researches 10% of our thought involves comparing oneself with others of the same level. By comparing with others we can assess similarities and differences (Robert Frost). Through comparative analysis one can check differences which are prevailing in various states, societies, families, siblings, etc. and give account of equalization, differentiation existing among various data. By comparing the different co-existing states of human society particularly by comparing primitive societies with the gradually developing societies the phases of development of the human race can be known.

As per B Comte These three elements may help in making all phenomena tested scientifically but accepts that there are some aspects which cannot be studied absolutely.

This applies to social phenomena. There are some aspects which cannot be penetrated scientifically as in physical sciences. They are mysterious and cannot be tested objectively. For example, the ultimate source of gravitation, constitution of matter, origins of life, first prompting of love. We cannot verify these social aspects and look for causes of such aspects. Reality as it is should be accepted as that is God's creation and there must be a purpose for it. If uniformities are observed in any social issues they may be observed and understanding should be used for giving realistic verdicts about them. Comet's positivism should study phenomena as they are and trying to go into specifics about them and becoming more knowledgeable about realistic picture.

1.7 Taylor's Scientific Approach:

At the turn of the 20th C, Fedrick Winslow Taylor who was named as father of scientific management applied scientific approach to study management from the labourer's point of view and his motto was creating maximum out of minimum. He carried out research in industries in USA. Taylor believed that the principle "best management is a true science" is applicable to all kinds of human activities. Taylor attempted to bring the precision of science to the analysis & management of measurement of work. He came up with principles of management which were scientifically tested and could be used on employees to make their work more efficient and effective. All the principles of scientific management were such that they could be applied internationally. Taylor was famous because he used experimental methods under controlled conditions.

He came up with the piece rate system and time and motion study which are used by many industries all over the world. He proposed a new system consisting of four parts:

a. Observation using stop watch to assess how many steps each product manufacturing involved and how much time each step took. On the basis of this study he generated a system of getting the product manufactured in minimum time using least steps. This led to getting the product made in the shortest time in lesser time. This generated economical method of manufacturing. This method is taught to employees doing that work so they learnt to do in the standard manner. This made the workers expert in that way of working and thus their speed of work escalated. This method is still practiced in various industries.
b. a differential rate‟ system of piece work was initiated to motivated energetic and hardworking employees to improve their working skill. It meant that if an employee produced at the average rate of working he would get the standard piece rate payment but if he produced more than the target set he would be paid at a higher rate.
c. This motivated employees to give their best.
d. Wages were given to employees based on their performance and not on the basis of the positions they held.
e. Management don't use the thumb method but the scientific method to train the employees on doing their work. Next they were also trained to work long term using the scientific methods. They did not have to change ways of working daily.

Whatever scientific change was applied was for long periods. As American way of working was changing to overcome day to day problems of labour management conflict which was because of quantity of product to be manufactured the demand for unified system of manufacturing was the demand in industries this enabled to find out the need to recruit right man for the right job.

1.8 Scope of Social Research:

Systematic study of social research was perceived as not applicable to social sciences, but when scientific study and analysis came up as new knowledge all became sceptical about its appropriateness in application to social issues. This is like a new born baby whose growth and development are governed by unknown factors hence ambiguity is attached to it. But it may prove to have positive impact moving towards maturity and having a solid base for proving new findings. If negative impact occurs that also gives alarm signal about something not right. That is also learning. Management may check and apply corrections. Hence scientific study of social issues have been done. To some extent success was achieved. But now there is a movement towards qualitative analysis of social topics. One may wait and watch. The basic scope of social research is to understand sooner or later but correctly the nature of social events & processes & though this is done without any motive of particular reforms the conclusions cannot be ruled out. To summate scientific study of social phenomena by various researchers may help in developing generalization. Next knowledge building is only possible by further investigations in a systematic way. In brief, following are the scope of social research.

1.8.1 Theory Building:

Generalizations drawn have a certain effect on the established corpus of knowledge. A general picture presented by many researchers may convert the common views held into factual knowledge. This when observed again and again by many researchers may develop theoretical proposition as an outcome of research which enhance knowledge base for further interpretations about social phenomena. If findings do not fit the picture created by past learning than scientists may be guided to study using different approaches to get modifications,

1.8.2 Character Building:

If the generalization fits the established workings of social phenomena than they may be propagated for stronger hold, as seen in cases of values like honesty, sincerity, respect, etc. They have been observed to enhance a person's personality, hence should be taught to persons from the cradle days.

1.9 Ethical Approach to Social Research:

As per Belmont report ethics which should be considered in social Research are.

a. **Respect for Persons**: While caring research on people individuals should be treated respectfully and may be allowed to express their views openly. They should not be degraded. Then only the genuine study is possible. Only when people agree to talk, they should be interviewed.
b. **Protection:** If independence for narrating their views are allowed than they should also be protected from any harm to them if they say something which is not socially desirable. They should also benefit from research which are applied as reforms.
c. **Impartiality:** Whatever benefit occurs from research should be distributed fairly to all, for example if few learned men from a tribe raise their voce against some injustice being done to the tribe, then the outcomes of the research should be shared by all tribal members, not only by few ones who were in the front row.

ISBN: 978-81-948755-8-1

2. Research Methods in Mass Communication

Buike Oparaugo

Lecturer in Mass Communication Department,
The Polytechnic of Sokoto State,
Sokoto Nigeria.

2.1 Introduction:

Just as the human body needs nutritious food for its healthy existence and healthy and brilliant functioning, so does the mind need knowledge. Knowledge is therefore, considered as the food of mind, thus Plato considered it as justified true belief. Knowledge can be defined as a familiarity awareness or understanding of someone or something such as facts, information, descriptions or skills, which is acquired through experiences or education by perceiving, discovering or learning. In research there are many ways of knowing. They are: authority, tenacity, and scientific method. However, research can be defined as a systematic and logical pursuit made by human beings to find out knowledge from any "phenomenon or relationship".

However, in the field of mass communication, there are basically two research methods: the survey research method and the content analysis research method. However, others include observation, case studies, experimental, qualitative and quantitative, etc.

2.2 Survey Research Method:

Surveys are often used to collect information from large groups of people using scales that have been tested for validity and reliability. A researcher might be curious about how a supervisor sharing personal information with his or her subordinate affects way the subordinate perceives his or her supervisor. Survey research is a quantitative and qualitative method with two important characteristics. First, the variables of interest are measured using self-reports. In essence, survey researchers ask their participants (who are often called respondents in survey research) to report directly on their own thoughts, feelings, and behaviours. Second, considerable attention is paid to the issue of sampling.

The data is usually obtained through the use of standardized procedures to ensure that each respondent can answer the questions at a level playing field to avoid biased opinions that could influence the outcome of the research or study. The process involves asking people for information through a questionnaire, which can be either online or offline. However, with the arrival of new technologies, it is common to distribute those using digital media such as social networks, email, QR codes, or URLs.

The essence of survey method can be explained as "questioning individuals on a topic or topics and then describing their responses" (Jackson, 2011, p.17). In business studies survey method of primary data collection is used in order to test concepts, reflect attitude of people, establish the level of customer satisfaction, and conduct segmentation research and a set of other purposes.

2.3 Content Analysis Research Method:

Malik (n.d) avers that content analysis is used to count the number of occurrences of a phenomenon within a source of media (e.g., books, magazines, commercials, movies, etc.). Content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of texts. Researchers quantify and analyze the presence, meanings and relationships of such words and concepts, then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language. Content analysis is a research method used to identify patterns in recorded communication. To conduct content analysis, you systematically collect data from a set of texts, which can be written, oral, or visual:

- Books, newspapers and magazines
- Speeches and interviews
- Web content and social media posts
- Photographs and films

Content analysis can be both qualitative (focused on counting and measuring) and quantitative (focused on interpreting and understanding). In both types, you categorize or "code" words, themes, and concepts within the texts and then analyze the results.

Advantages of Content Analysis:

- Directly examines communication using text.
- Allows for both qualitative and quantitative analysis.
- Provides valuable historical and cultural insights over time.
- Allows a closeness to data.
- Coded form of the text can be statistically analyzed.

Disadvantages of Content Analysis:

- Can be extremely time consuming.
- Is subject to increased error, particularly when relational analysis is used to attain a higher level of interpretation.
- Is often devoid of theoretical base or attempts to liberally to draw meaningful inferences about the relationships and impacts implied in a study.

2.3.1 Case Study Research:

A case study is a research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context. It is an established research design that is used extensively in a wide variety of disciplines, particularly in the social sciences. A case study can be defined in a variety of ways, the central tenet being the need to explore an event or phenomenon in depth and in its natural context.

It is for this reason sometimes referred to as a "naturalistic" design; this is in contrast to an "experimental" design (such as a randomized controlled trial) in which the investigator seeks to exert control over and manipulate the variable(s) of interest (Crowe, cress well, Huby, Avery and Sheikh, 2011).

Case study research has grown in reputation as an effective methodology to investigate and understand complex issues in real world settings. Case study designs have been used across a number of disciplines, particularly the social sciences, education, business, law, and health, to address a wide range of research questions. Consequently, over the last 40 years, through the application of a variety of methodological approaches, case study research has undergone substantial development (Harrison, Birks, Franklin and Mills, 2017). As a result, while case study research has evolved to be a pragmatic, flexible research approach, the variation in definition, application, validity, and purposefulness can create a confusing platform for its use (Anthony and Jack, 2009).

2.3.2 Observation Research:

Observation, as the name implies, is a way of collecting data through observing. Observation data collection method is classified as a participatory study, because the researcher has to immerse herself in the setting where her respondents are, while taking notes and/or recording.

Observational research is a social research technique that involves the direct observation of phenomena in their natural setting. This differentiates it from experimental research in which a quasi-artificial environment is created to control for spurious factors, and where at least one of the variables is manipulated as part of the experiment.

Observation as a data collection method can be structured or unstructured. In structured or systematic observation, data collection is conducted using specific variables and according to a pre-defined schedule. Unstructured observation, on the other hand, is conducted in an open and free manner in a sense that there would be no pre-determined variables or objectives.

Advantages of observation data collection method include direct access to research phenomena, high levels of flexibility in terms of application and generating a permanent record of phenomena to be referred to later. At the same time, observation method is disadvantaged with longer time requirements, high levels of observer bias, and impact of observer on primary data, in a way that presence of observer may influence the behaviour of sample group elements.

2.3.3 Experimental Research:

Experimental research is the most familiar type of research design for individuals in the physical sciences and a host of other fields. This is mainly because experimental research is a classical scientific experiment, similar to those performed in high school science classes. Imagine taking 2 samples of the same plant and exposing one of them to sunlight, while the other is kept away from sunlight. Let the plant exposed to sunlight be called sample A, while the latter is called sample B. If after the duration of the research, we find out that sample A grows and sample B dies, even though they are both regularly wetted and given the same treatment. Therefore, we can conclude that sunlight will aid growth in all similar plants.

Experimental research is a study that strictly adheres to a scientific research design. It includes a hypothesis, a variable that can be manipulated by the researcher, and variables that can be measured, calculated and compared.

Most importantly, experimental research is completed in a controlled environment. The researcher collects data and results will either support or reject the hypothesis. This method of research is referred to a hypothesis testing or a deductive research method (Babbie 1998).

Experimental research involves the differentiation of two basic conditions: exposure and non-exposure to the treatment condition of the independent variable (Tanner, 2018).

2.4 Population, Sample and Other Terminologies Used in Research:

Population: In research terminology the population can be explained as a comprehensive group of individuals, institutions, objects and so forth with have a common characteristics that are the interest of a researcher. Nwagbara (2011, p.16) sees population as "the aggregate or totality of objects (both animate and inanimate) relevant to a specific area of investigation".

Sample: Sample is the small part or portion of the population that is subjected to detail and critical/varied examination (Akpakwu and Adikwu, 2013, p.80). A population commonly contains too many individuals to study conveniently, so an investigation is often restricted to one or more samples drawn from it.

Sampling and Sampling Techniques: The process of selection or the drawing of the accurate representation of a unit, group, or sample from a population of interest is called as sampling. Thus, Orga (2009) opined that sampling "is the process of selecting a group of objects for study for the purpose of making inference about the whole population from which the group is drawn" (p.11).

Sampling can be done through various sampling techniques in accordance with the nature of the sample as well as the subject matter of the study. It is the Sampling procedure, which will decide the accurate representation of the sample selected for the study as well as the relevance of generalization made from the research.

Agbo and Ugwu (2015, p.20) and Eze and Agbo (2005, p.8) listed the following as reasons for sampling:

- To avoid bias in the selection
- Reduce cost of research works.
- Spread the process of research.
- Collect representative specimen of recorded observations where the whole population cannot be easily reached.

Hypotheses: A hypothesis (plural – hypotheses) is a specific statement of prediction. It describes in concrete (rather than theoretical) terms what you expect will happen in your study. Not all studies have hypotheses. The six most common forms of hypotheses are:

a. Simple Hypothesis
b. Complex Hypothesis
c. Empirical Hypothesis
d. Null Hypothesis (Denoted by "HO")
e. Alternative Hypothesis (Denoted by "H1")
f. Logical Hypothesis
g. Statistical Hypothesis

Theory: A theory consists of a set of assumptions (or hypotheses), and conclusions derived from those assumptions. Theories are logical exercises: if the assumptions hold, then the results follow.

Theoretical Framework: A theoretical framework is used to limit the scope of the relevant data by focusing on specific variables and defining the specific viewpoint [framework] that the researcher will take in analyzing and interpreting the data to be gathered.

Error: Error is the collective noun for any departure of the result from the "true" value.

Abstract: A clear and concise summary that communicates the essential information about the study. In research journals, it is usually located at the beginning of an article.

Operational Definition: Refers to the way in which the researcher defines the variables under investigation. Operational definition are stated in such way by the investigator specifying how the study variables will be measured in the actual research situation.

Assumption: Basic principle that is being true on the basis of logic or reason, without proof or verification.

Variables: A variable is a quantity of something which varies and you are interested in. According to Okoro and Liman (2009, p.43) “variables refer to the characteristics whereby the members of a group or set differ from one another”. There are two types of variables: the dependent variable and independent variable.

Validity: Validity refers to an accuracy of a measure. A measurement is valid when it measures what the researchers supposed to measure (Gregory, 2007). For example, IQ tests are supposed to measure intelligence and depression tests are supposed to measure depression level or symptoms of respondents. Normally, the inferences drawn from a valid test are appropriate, meaningful, and useful.

Reliability: Reliability is important because it enables researchers to have some confidence that the measure, they taken are close to the true measure. Reliability is synonym of repeatability and consistency. The degree of reliability can decide whether the scores or data that researchers obtained can be relied to measure a variable or construct (Essays, 2018).

Construct: In the context of survey research, a construct is the abstract idea, underlying theme, or subject matter that one wishes to measure using survey questions. Constructs are broad concepts or topics for a study.

Concepts: This refers to a mental idea of a phenomenon. Concepts are words or terms that symbolize some aspects of reality. E.g., Love, pain. A concept is "an abstraction based on characteristics of perceived reality."

Fact: In science, an observation that has been repeatedly confirmed and for all practical purposes is accepted as "true." Truth in science, however, is never final and what is accepted as a fact today may be modified or even discarded tomorrow (NCSE, 2016).

Conceptual Framework: This is interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. It is also referred to as theoretical framework.

Measurement: Measurement is the process of observing and recording the observations that are collected as part of a research effort.

2.5 Data Collection, Presentation and Analysis:

Data can be defined as a systematic record of a particular quantity. It is the different values of that quantity represented together in a set. Data may be qualitative or quantitative. Once you know the difference between them, you can know how to use them.

Data analysis is the process of developing answers to questions through the examination and interpretation of data. The basic steps in the analytic process consist of identifying issues, determining the availability of suitable data, deciding on which methods are appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and communicating the results.

Coding is a process in which quantitative or qualitative data is categorized to help analysis. This can be used by geographers to help analyse questionnaires results, newspaper articles or interview transcripts. The coding process involves searching the text for similar themes, ideas, concepts and key words and then marking those passages with a code colour.

Test of Hypothesis and Result

The Chi-square formula is:

$$X^2=\sum \frac{(O-E)^2}{E}$$

Where X^2 = calculated chi-square value

$\sum$ = summation sign
O = Observed frequency
E= Expected frequency

NB: the level of significance = 5% or 0.05 and degree of freedom (d.f) = 1.

The expected frequency (E) is calculated by adding all the observed frequency (O) and dividing by the number of observations.

Decision Rule: If the calculated Chi-square value (x^2) is greater than or equal to the table at 0.05 level of significance, the alternated hypothesis (H1) is accepted, but if the calculated Chi-square value is less than the table value, the null hypothesis (H0) is accepted.

2.6 Conclusion:

The centrality of communication in modern life makes knowledge about communication processes crucially important. Research, especially in the field of communication, is conducted to help people understand complex and challenging communication phenomena as well as the mundane and apparently simple everyday routines like ordinary conversation. Many areas of communication research demonstrate the complex, multifaceted nature of communication. Systematic and rigorous research means that researchers study worthwhile topics, ask relevant questions, build on previous theory and research, design and conduct careful research, analyze data appropriately, and discuss the significance of the findings. Systematic communication inquiry adds to the body of communication knowledge by providing meaningful descriptions and trustworthy explanations about complex communication phenomena. Research about communication is thus needed for two reasons: to extend the growth of the Communication discipline and to apply what we know.

2.7 References:

1. Agbo, B. & Ugwu, B. (2015). Introduction to research methods. (2nd Ed). Enugu, Enugu: Rhyce-Kerex Publishers.
2. Akpakwu, M.A. & Adikwu, P.U. (2013). Introduction to research methodology. Makurdi, Benue: Global Press.
3. Anthony, S. & Jack, S. (2009). Qualitative case study methodology in nursing research: An integrative review. Journal of Advanced Nursing, 65(6), 1171-1181. Doi: 10.1111/j.1365-2648.2009.04998.x
4. Babbie, E. (1998). The practice of social research. (8th ed). Detroit: Wadsworth Publishing Company.
5. Crowe, S., Creswell, K., Huby, G., Avery, A. & Sheikh, A. (2011). The case study approach. BMC Medical Research Methodology volume 11, Article number: 100
6. Eze, O. & Agbo, B. (2005). Research method: Basic issues and methodology. Enugu, Enugu: Benalice Publishers.
7. Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. Journal of Personality and Social Psychology, 78, 350-365.
8. Harrison, H., Birks, M., Franklin R. and Mills, J. (2017). Case Study Research: Foundations and Methodological Orientations. Journal of Qualitative Social Research, 18(1), http://www.qualitative-research.net/index.php/fqs/article/view/2655/4079
9. Jackson, S.L. (2011) "Research methods and statistics: a critical approach", 4th edition, Cengage Learning, p.17
10. Malik, C. (n.d). Guide to Communication Research Methodologies: Quantitative, Qualitative and Rhetorical Research. Retrieved from

https://www.mastersincommunications.com/features/guide-to-communication-research-methodologies#:~:text=of%20new%20theories.-, Communication%20Research%20Methods, more%20often%20than%20the%20others.
11. National Center for Science Education (2016). Definitions of fact, theory, and law in scientific work. https://ncse.ngo/definitions-fact-theory-and-law-scientific-work
12. Nwagbara, C.CP. (2011). Statistics: An introductory approach. (Revised Edition). Enugu, Enugu: Horse throne Concepts.
13. Orga, C.C (2009). Statistical techniques for business decisions. Enugu, Enugu: Maanishyn Prints.
14. Tanner, K. (2018). Research methods (Second Edition). Retrieved from https://www.sciencedirect.com/topics/social-sciences/experimental-research

ISBN: 978-81-948755-8-1

3. Exploratory Study on Social Research

Pramod Kumar and Sourav Kumar

Department of Mechanical Engineering,
Vivekananda Global University, Jaipur, Rajasthan,
India.

Abstract:

Curiosity or inquisitiveness is a unique characteristic of human beings. We are curious to recognize ourselves, our environment, our institution, our planet and even the universe. Whenever any questions arise in our mind, we seek answer to them. Whenever we come across a problem, we attempt to find out keys to address them. Research seeks answer to certain questions which have not been answered so far and which depend upon human efforts but research answers only those questions of which the answers are not available in literature.

Social research focuses to discover the casual relationships in human behavior, and it is systematic and critical investigation into a social phenomenon through scientific methods. It is generally acknowledged that in human behavior as much as a natural phenomenon, a large degree of measurable and predictable sets of associations occurs. Social research, like a research in physical and natural sciences, seeks to establish measure, analyze and predict these associations in their variety and intensity. Social research assumes a distinct character of its own in a significant measure when it comes to its applications scientific process, characteristics of research in natural and physical sciences to social phenomena. Unlike physical and natural sciences, the objects are conscious and active human beings. This chapter covers the definition, objectives, importance, scope and characteristics, types and methods of social research.

3.1 Meaning and Significance of Social Research:

According to C. A. Moser "Social research is systemized investigation to gain new knowledge about social phenomena and problems."

According to PV Young "Social research is scientific undertaking which by means of logical methods, aim to discover new facts or old facts and to analyze their sequences, interrelationships, casual explanations and natural laws which govern them".

Social Research is a technique used by social scientists, scholars, and researchers to examine about the people and humanities so that they can design products/services that will cater to various desires of the people. Different socio-economic groups and sections belonging to different parts of a county think in different ways. Various aspects of human behaviors need to be addressed to understand their thoughts and feedback about the social world, which can be done using Social Research. Any topic could trigger social research – new feature, new market trend or an upgrade in old technology.

Social research concerns with social data which are much more complex than that of physical data. Most of the subject matter of social research is qualitative and doesn't admit quantitative measurement.

Social research is not a mere compilation, but a purposive investigation it aims at describing, interpreting and explaining a phenomenon. It is objective and logical, applying possible tests to validate the measuring tools and the conclusions reached. Social research is based on observable experiences or empirical evidence and directed towards finding answers to pertinent questions and solutions to the problems.

Social research emphasizes the development of generalization, principles or theories. The purpose of social research is not to arrive at an answer which is personally pleasing to the researcher, but rather one which will stand up the test of criticism.

3.2 Objectives of Social Research:

The purpose of the research is to find out answer to the questions by the applications of scientific procedures. The main aim of the social research is to find out the truth which is hidden and which is not been discovered as yet (Brooks et al., 2020). Though each research study has its own specific purpose, Social research extends the knowledge of human beings, social life and environment. Researcher and scientists build up wealth of knowledge through the research findings. They search answers for various types of questions –what, when, where, how and why of various phenomena and enlighteners the body of knowledge have been developed by research in general and pure or fundamental research in particular. Objectives of social research are shown in Figure 3.1.

Figure 3.1: Objectives of Social Research

Social research brings to light information that might never be discovered fully during the ordinary course of life. For example-marketing research could result in discovery of new users for an old product.

Social research establishes generalizations and general laws and contributes to theory building in various field of knowledge. Our knowledge of separately known events, is connected together to draw generalizations and general laws.

Law of gravitation, law of demand, the theories of consumer behavior, motivation, and learning are some examples of such generalizations and theories.

Social research verifies and tests the existing facts and theories and these help in improving our knowledge and ability to handle situation and events. Robert K Merton argues that empirical research goes far beyond the passive role of verifying and testing theory. Research plays active role, it performs four main functions-Initiates, formulates, deflects and clarifies theory.

General laws developed by social research may enable us to make reliable predictions of events yet to happen.

Social research aims to analyze interrelationships between the variables and to derive casual explanations and thus enables us to have a better understanding of the world in which we are living.

Social research focuses to finding solutions socio-economic problems such as social unrest, unemployment, poverty, health and human relations.

Social research develops new tools, concepts and theories for better study of unknown phenomenon.

Social research aids planning and thus contributes to national development and brings out the factual data on prevailing situations and problems for drying up plans and schemes on realistic basis, it uncovers needed facts on which sound decision can be made before committing the resources. Studies open up the possibility of testing the validity of planning assumptions or premises (Hall and Wise, 2019). Research studies enable the planners to evaluate alternative strategies and choose the most appropriate strategy for development of the various sectors like agriculture, industry, education, health and social welfare.

3.3 Scope and Importance of Social Research:

Research is essential to diffuse knowledge and to expand its horizon. Social research is an important source of knowledge which opens new ways of knowledge and wisdom. Social research plays an important role in improving the quality of life through new experimentation and discovery.

Social research helps to confirm or reject the existing theories. Industries, business firms can get a lot of information about the society by conducting social research before launching new products in the market (Akanle et al., 2020).

Social research can provide all the facts to administrators to adopt and undertake appropriate policies and program. Social research provides new insights in to the organized society and its social structure.

Social research also provides a new horizon in scientific explanation, advanced and tested principles of procedure and suggested new concepts. Another scope of social research is that exemplified by studies and attempt to test and challenge existing theories and revise them.

3.4 Nature or Characteristics of Social Research:

Social research is directed towards the solution of the problems. The ultimate goal is to discover cause-effect relationships between the problems.

It emphasis the development of generalizations, principles or theories that will be helpful in predicting future occurrences. It is based on observable or empirical experience.

It demands accurate observations and descriptions. Researchers may choose from a variety or non-qualitative descriptions of their observations.

Main characteristics of social research are shown in Figure 3.2.

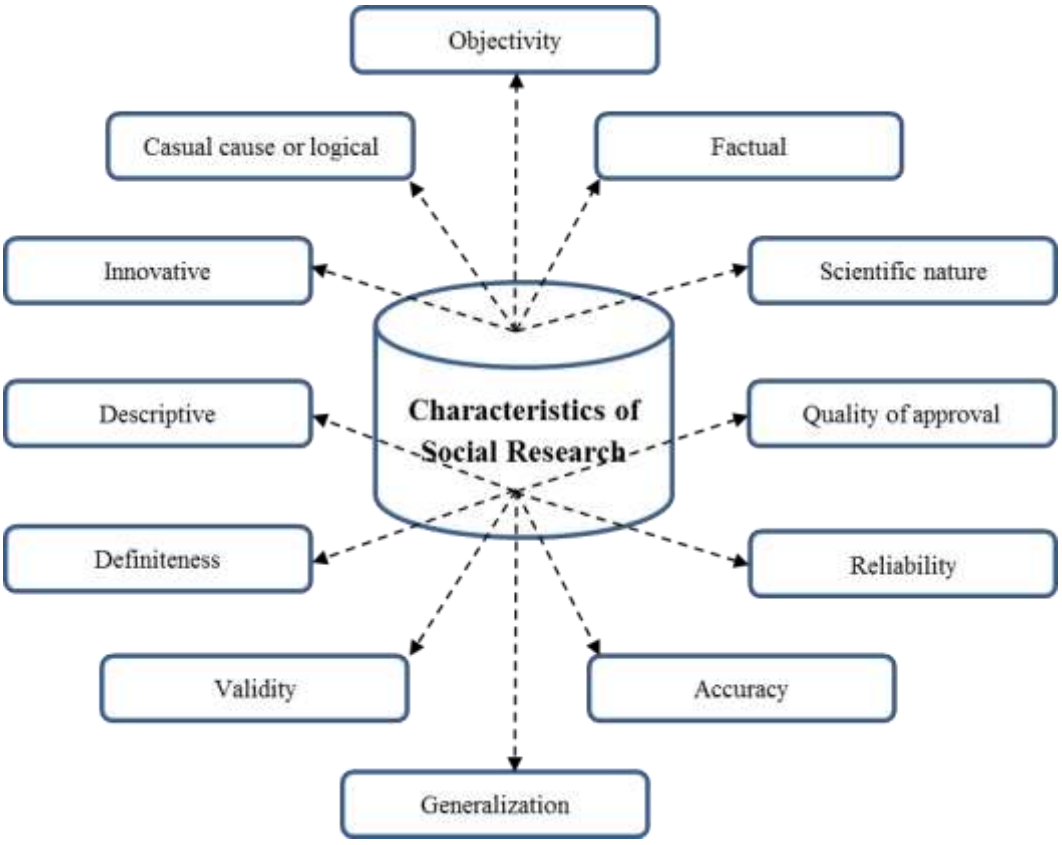


Figure 3.2: Characteristics of Social Research

3.5 Process or Steps of Social Research:

Steps of social research are shown in Figure 3.3. After realization of the problem, the problem is identified, and theoretical framework is designed.

In the third stage of social research hypothesis is formulated followed by research design. Further, study area is selected. Other steps are also shown in Figure 3.17%

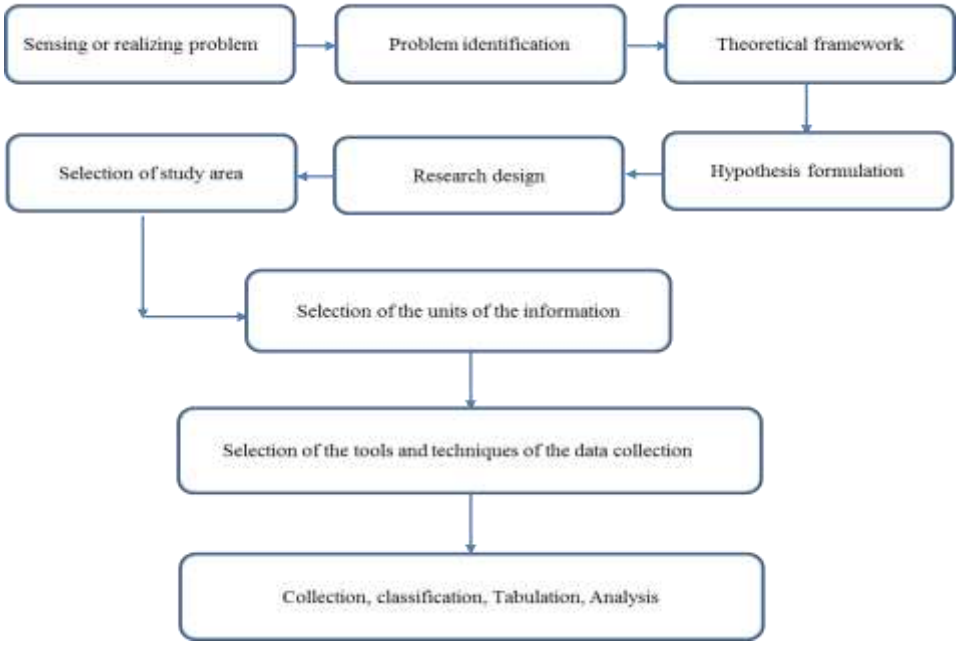


Figure 3.3: Steps in Social Research

3.6 Types of Social Research:

There are four main types of Social Research:

3.6.1 Qualitative Research:

Qualitative Research is method used to accumulate data through open-ended and conversational deliberations; there are five main qualitative research methods- ethnographic research, focus groups, one-on-one online interview, content analysis and case study research. Usually, participants are not taken out of their ecosystem for qualitative data collection to gather information in real-time which helps in building trust. Researchers depend on multiple methods to gather qualitative data for complex issues.

3.6.2 Quantitative Research:

Quantitative Research is an extremely instructive source of data collection steered through mediums such as surveys, polls, and questionnaires. The gathered data can be analyzed to conclude numerical or statistical results. There are four distinct quantitative research methods: survey research, correlational research, causal-comparative research and experimental research. This research is carried out on a sample that is representative of the target market usually using close-ended questions and data is presented in tables, charts, graphs etc. For example, a survey can be conducted to understand Climate change awareness among the general population. Such a survey will give in-depth information about people's perception about climate change and also the behaviors that impact positive behavior. Such a questionnaire will enable the researcher to understand what needs to be done to create more awareness among the public.

3.6.3 Primary Research:

Primary Research is conducted by the researchers themselves. There are a list of questions that a researcher intends to ask which need to be customized according to the target market.

These questions are sent to the respondents via surveys, polls or questionnaires so that analyzing them becomes convenient for the researcher. Since data is collected first-hand, it's highly accurate according to the requirement of research.

For example:

There are tens of thousands of deaths and injuries related to gun violence in the United States. We keep hearing about people carrying weapons attacking general public in the news. There is quite a debate in the American public as to understand if possession of guns is the cause to this.

Institutions related to public health or governmental organizations are carrying out studies to find the cause. A lot of policies are also influenced by the opinion of the general population and gun control policies are no different.

Hence a gun control questionnaire can be carried out to gather data to understand what people think about gun violence, gun control, factors and effects of possession of firearms. Such a survey can help these institutions to make valid reforms on the basis of the data gathered.

3.6.4 Secondary Research:

Secondary Research is a method where information has already been collected by research organizations or marketers. Newspapers, online communities, reports, audio-visual evidence etc. fall under the category of secondary data.

After identifying the topic of research and research sources, a researcher can collect existing information available from the noted sources.

They can then combine all the information to compare and analyze it to derive final conclusions.

3.7 Social Research Methods:

Surveys: A survey is conducted by sending a set of pre-decided questions to a sample of individuals from a target market. It leads to a collection of information and feedback from individuals that belong to various backgrounds, ethnicities, age-groups etc.

Surveys can be conducted via online and offline mediums/platforms (Goode and Hatt, 1952).

Due to the improvement in technological mediums and their reach, online mediums have flourished and there is an increase in the number of people depending on online survey software to conduct regular surveys and polls.

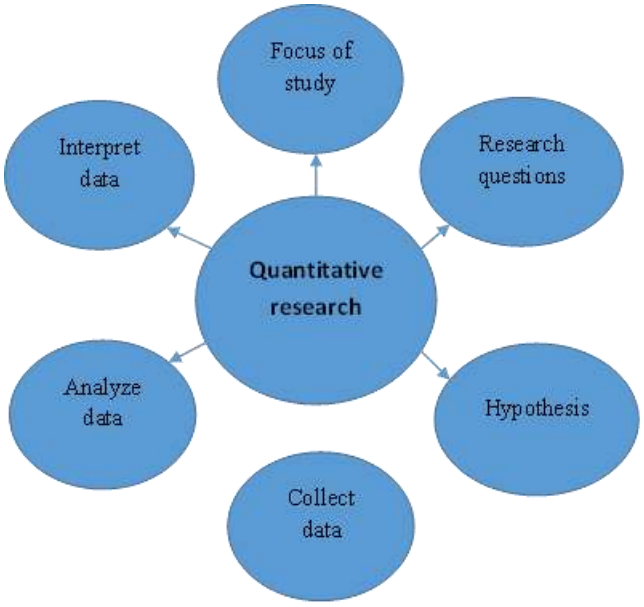


Figure 3.4: Steps of Quantitative Research

There Are Various Types of Social Research Surveys:

Longitudinal, Cross-sectional, Correlational Research. Longitudinal and Cross-sectional social research surveys are observational methods while Correlational is a non-experimental research method. Longitudinal social research surveys are conducted with the same sample over a course of time while Cross-sectional surveys are conducted with different samples.

For example: It has been observed in recent times, that there is an increase in the number of divorces, or failed relationships. The number of couples visiting marriage counselors or psychiatrists is increasing. Sometimes it gets tricky to understand what the cause for a relationship falling apart is. A screening process to understand an overview of the relationship can be an easy method. A marriage counselor can use a relationship survey to understand the chemistry in a relationship, the factors that influence the health of a relationship, the challenges faced in a relationship and expectations in a relationship. Such a survey can be very useful to deduce various findings in a patient and treatment can be done accordingly.

a. **Experiments:** An experimental research is conducted by researchers to observe the change in one variable on another, i.e., to establish the cause and effects of a variable. In experiments, there is a theory which needs to be proved or disproved by careful observation and analysis. An efficient experiment will be successful in building a cause-effect relationship while proving, rejecting or disproving a theory. Laboratory and field experiments are preferred by researchers.
b. **Interviews:** The technique of garnering opinions and feedback by asking selected questions face-to-face, via telephone or online mediums is called interview research. There are formal and informal interviews – formal interviews are the ones which are organized by the researcher with structured open-ended and closed-ended questions and format while informal interviews are the ones which are more of conversations with the participants and are extremely flexible to collect as much information as possible.

Examples of interviews in social research are sociological studies that are conducted to understand how religious people are. To this effect, a Church survey can be used by a pastor or priest to understand from the laity the reasons they attend Church and if it meets their spiritual needs.56%

c. **Observation:** In observational research, a researcher is expected to be involved in the daily life of all the participants to understand their routine, their decision-making skills, their capability to handle pressure and their overall likes and dislikes. These factors and recorded and careful observations are made to decide factors such as whether a change in law will impact their lifestyle or whether a new feature will be accepted by individuals.

3.7.1 Quantitative Method:

A. Quantitative Observation Definition:

Quantitative observation is an objective collection of data which is primarily focused on numbers and values – it suggests "associated to, of or depicted in terms of a quantity". Results of quantitative observation are derived using statistical and numerical analysis methods. It implies observation of any entity that can be associated with a numeric value such as age, shape, weight, volume, scale etc.

This technique is conducted on a sample which best represents the target market. It is important to have a larger sample size so that the observations can be made considering most of the diversities that exist in a population.

By considering a large population, the observation results are most likely to have higher credibility. Once a market researcher collects data from the sample, the process of analysis begins and observed results are obtained.

The University of South Alabama has termed Quantitative Observation as "Standardized Observation" and it is mostly used in scientific research as it produces statistically observed information. Quantitative observation is usually conducted by sending out surveys, questionnaires or polls.

B. Quantitative Observation Characteristics:

- **Accuracy:** Under quantitative observation, data can be quantified and so, it produces accurate results in comparison to other methods such as qualitative observation which produce results that can't be quantified. For example, the boiling temperature of water at sea level is 100°C is a quantitative observation.
- **Constant Results:** Results of this observation method are constant – the boiling point of water at sea level will be 100°C and will not change with other variables remaining constant.
- **Sample Creation:** A sample should be formed for quantitative observation and the size of this sample should be considerably large for researchers to generalize the observation to the entire population.
- **Scientific Research:** This method measures and "quantifies" multiple aspects mainly for scientific research.

- **Bias-free Results:** As the results are quantified, the observations derived from those are free from bias but have a margin of error involved and is usually based on a hypothesis.
- **Improve Reliability of Results:** For a marketer to have a quantity linked to his/her qualitative observation, he/she needs to conduct quantitative observation as well. A quantitative result can be derived for the qualitative observation to increase reliability on the results.
- **Conduct statistical analysis:** Quantitative observation verifies details by conducting statistical analysis of a statement.
- **Numerical Results:** All the results of quantitative observation are numerical.
- **Use Various Instruments:** Instruments such as rulers, thermometers, balances etc. are used for quantitative observation.

C. Methods to Process and Analyze Data:

There are various methods and to process and analyze collected information. Rich quantitative observational data could be processed using codes/scores, for example, evaluation scales, checklists, tables etc. can be created to analyze collected data.

- **Create A Plan:** Based on the purpose of observation, a quantitative observation plan is created. On this basis of this plan, settings are changed and method of conducting this observation is decided.

D. Quantitative Observation Examples:

There are several situations under which quantitative observation can be implemented. Here are some examples of quantitative observation:

If a market researcher intends to understand his/her brand share ability, they can ask a Net Promoter Score question: "Considering your complete experience with our company, how likely would you be to recommend us to a friend or colleague?" with a scale from 0-10. 0 indicates highly unlikely and 10 indicate highly likely.

Respondents will be divided into three categories: Promoters (9-10), Passives (7-8) and Detractors.

Net Promoter Score can be calculated using formula = %Promoters – %Detractors * 100

The result will be a quantitative observation, i.e., a numerical value which will depict customer loyalty and brand share ability.

Another example of quantitative observation is a customer satisfaction survey. "How satisfied are you with our products/services?" This question can be asked on a four, five, six or seven-point Likert Scale– where 1 shows strongly disagree, 2 shows disagree, 3 means neutral, 4 means agree and 5 means strongly agree. Four and six-point scale will not have the neutral point and the seven-point Likert scale will have slightly agree/disagree. Here opinions are directly converted into numbers by connecting them to different numbers, making analysis a simple task for marketers.

3.7.2 Qualitative Observation:

Qualitative Observation is the research method of using subjective methodologies to gather information or data. Since the focus on qualitative observation is to equate quality differences, it is a lot more time consuming than quantitative observation, but the sample size used is much smaller and the research is extensive and a lot more personal.

Qualitative observation deals with the 5 major sensory organs and their functioning – sight, smell, touch, taste and hearing. This doesn't involve measurements or numbers but instead characteristics.

A. Characteristics of Qualitative Observation:

Characteristics of qualitative observational research can very broadly be bucketed under ten overlapping themes that researchers should know of when they analyze the data that has been collected. They are:

- **Inductive analysis:** This characteristic is a major part of qualitative observational research because the interviewer or the researchers immerses himself/herself with the group and gets in sync with the topic. The questions evolve during the research process. The researcher can form any hypothesis through the answers and work backwards to prove or disprove it or even build on it. Another component of this is the researcher evaluates a lot of content which is known as inductive content analysis. This analysis to is used to form hypothesis and act as a primary content type. This approach allows for the findings to emerge from raw data without the restraints of structured methodologies of significant, dominant or repetitive themes.

  For example, when someone borrows a book from you. They say they will return it in 2 weeks but don't. And then do that a few more times. Every time a date is decided on, that is a premise. But if the book isn't returned after a few such instances, you assume that you are never getting the book back. That is the conclusion.

- **Personal Contact and Insight:** The researcher has to be aware of the "Halo effect" during a research study. Whilst it is important to immerse yourself with the subjects for a study, it is also counter-productive to form a bias. Being emotionally vested in a study helps to derive better answers but it is also a slippery slope if the researcher lets the topic get biased.

  A good example for this would be an influencer being the researcher for a sports shoe manufacturer's study with current and prospective customers. The researcher can offer important inputs toward the research but offering personal suggestions or product tweaks would bias the study and the corresponding research.

- **Naturalism or naturalistic inquiry:** This type of qualitative observation and qualitative research is the type of research that focuses on how people react or behave when they are put in a real life situation in a natural environment. This characteristic hinges on the reality that things in general are coherent, consistent and predictable.

Hence the researcher here would try every extent to control the contours of the environment the research study is happening in so that the study happens in context.

For example, if you wanted to understand from students how many of them use e-learning modules, you cannot do this in a cafeteria where all the students may not be taking online courses. It would have to be done in online forums or through video conferencing.

- **Dynamic Systems:** Qualitative observational research focuses on getting multiple answers. There's no right or wrong answer and hence the researcher must prod for every possible aspect towards the study. It is also imperative that the researcher motivates the participants to provide every variant of the answer that they think is right.

  An example would be in a sample research with a few participants to discuss a new mobile phone features, the researcher should push the respondents to talk about every feature they think is important or not or add something that is still only on the drawing board.

- **Holistic Perspective:** It approaches that the whole is greater than the sum of all the parts. This means that every action or communication in a research study has to be accounted for as part of their culture or community. But. But if not careful, the researcher assumes every little thing to be relevant and that leads the researcher down the wrong path.

  A very good example of this is the use of plastic bags in a certain country. If a lot of the people are interviewed about their plastic usage and discuss how to reduce the usage, the usage would never reduce.

- **Unique Case Orientation:** Researchers must never lose focus of the fact that each research study is different from another and equal importance and time and emotions must be devoted to each research. Researchers must also realize no matter what outcome of a study is required; the same amount of time has to be devoted to the research.

  An example of this is a focus group on the color of a clothing item is as important as the focus group on the design, fabric and fit.

- **Context Sensitivity:** The researcher must be sensitive to the fact that different people respond to the same question very differently and he/she should not negate an opinion or thought on the basis of a personal bias. They must also realize that certain demographics, geographical locations or even cultural behavior can influence the variables for each question. The researchers should be able to account for them and see patterns and map them in the analysis.

  Focus groups with various people of different ethnicities being asked about their food preferences is an example of this characteristic. People of different religions and different geographies respond to different ways to food because of their upbringing, the nutritional value of the food, religious beliefs etc.

- **Empathetic Neutrality:** Ideally, researchers should be non-judgmental while compiling findings of a research study. But being completely neutral is not possible for a human being, this concept is a controversial topic in qualitative research.

For example, an orthopedic surgeon who was the researcher for a study cannot be biased towards orthopedic doctors who were respondents of the research study whilst putting down the other medical professionals.

- **Qualitative Data:** Many methodologies like interviews, samples and research reports can help triangulate the cultural orientation of a group in a research study. This is summation of the culture the way it is. A researcher can do the ground research work to find a common bond and then conduct the actual interviews to get their point of view – this is qualitative data.

  For example, trying to understand why Eastern African runners do well in long distance competitive running. Reports show you the results and the researchers go into a study with that premise and then conduct actual interviews to understand the reasons behind their dominance.

- **Design Flexibility:** Researchers can deep dive into certain threads that come out of a research study even though it may not be directly relevant to the central theme of the study. This is to coerce the recipients of the study to answer being fully invested in the study.

  This can be denoted with if a restaurant is coming up with a new venue and the central theme is Mexican food but after the research, there seems to be some interest for South American food too. The researcher should take cognizance of the request and build on it.

  To summarize, it is paramount that the researcher has an open mind to the study and can distance himself/herself from any bias or a halo effect. The researcher must also be aware of their own biases and know how to keep those biases away whilst representing a group.

3.7.3 Types of Qualitative Observation:

Even though qualitative observation is subjective, the researcher must define the end result and quantify it so that the research is actionable. The researcher must also be aware of bias and try to not let that engulf the research. It also helps to have more than one researcher so that the accumulated research is holistic in nature. The four types of qualitative observations are:

A. Complete Observer:

In this type of qualitative observation, the researcher is completely unknown to the research audience and cannot even be seen.

This type of research gives the audience more freedom to speak because they think they are not being observed or judged. But this method of qualitative observation is losing ground over other types because of privacy issues. In today's day and world, one cannot observe you without your knowledge.

This model although is the only option in a public place like a lounge, restaurant or a coffee shop. The other alternative to this is to have a camera recording the focus group or discussion that the group is having.

B. Observer as Participant:

In this type of qualitative observation, the researcher is known to the focus group or the people in the sample undergoing the study. In this study type, the end goal of the researcher is known to everyone. In this case the observer can play an active part in the discussion.

C. Participant as Observer:

In this type of qualitative observation, the observer completely indulges the participants and participates in the discussion. Even though the participants discuss in entirety with the observer, they do know that the observer is also a researcher. The observer in this case though is a family member or a close friend and hence that doesn't deter the participants from a discussion. An example of this study type is a medical study on an in-depth but a slightly embarrassing topic where the researcher could be related the participant or participants in any way.

D. Complete Participant:

This research type is used for secretive topics or research areas that you wouldn't want to ruffle feathers with. In this case the researcher is completely in sync with the participants. The discussions are free flowing no holds barred and the researcher indulges in the discussion animatedly. In this research type the participants don't know the researcher or even that a research study is being conducted. A shopping mall trying to understand purchasing and spend habits of the shoppers is an example of this type of study. This is where the researcher is planted in an already group of participants and the researcher can plant thoughts or ideas or coerce participants to speak up.

E. Qualitative Observation – Examples:

Qualitative observation is called intensive. An example is – A vacation rental owner wanted to understand why there were diminishing guest visits, very few repeat guests and negligible referrals. An online community of the vacation rental home was interviewed to understand their holiday and stay habits and preferences. At the end of the interview, it was realized that the reason for non-repeat visits and no referrals was that the home didn't contain a washer dryer, it was far from downtown and getting necessities was tough and the home wasn't pet friendly.

There are many differences between qualitative observation and quantitative observation but some of the major differences are:

- Qualitative observation is objective but quantitative observation is subjective.
- Qualitative observation can be conducted with a small sample but in quantitative observation the number is much higher.
- The sample in qualitative observation is counted as the actual but in quantitative observation; a subset can signify the emotions of a larger audience.
- Qualitative observation portrays an individual opinion, but quantitative observation is a collection of opinions.

3.8 References:

1. Goode, W. J., & Hatt, P. K. (1952). Methods in social research. McGraw-Hill.
2. Brooks, R. Lainio, A. and Lazetic, P. (2020) Using creative methods to research across difference. An introduction to the special issue, International Journal of Social Research Methodology, 23:1, 1-6, DOI: 10.1080/13645579.2019.1672281.
3. Akanle, O., Ademuson, A.O. and Shittu, O.S. (2020). Scope and Limitation of Study in Social Research. In Jegede, A.S. and Isiugo-Abanihe, U.C. (Eds). Contemporary Issues in Social Research. Ibadan: Ibadan University Press. Pp. 105-114.
4. Hall, G. and Wise, N. (2019). Introduction: Sport and Social Transformation in Brazil. Bulletin of Latin American Research, 38(3), 265–266. doi:10.1111/blar.12920.
5. Robert (R. S.) Downie, 'Roles and Values: An Introduction to Social Ethics, Routledge, 2020, ISBN 1000034763, 9781000034769.

ISBN: 978-81-948755-8-1

4. Steps of Scientific Methodology in Social Science

Dr. Shailendra Kumar

Assistant Professor,
School of Studies in Anthropology,
Pt. Ravishankar Shukla University Raipur,
Chhattisgarh.

Ashok Kumar Dewangan

Research Scholar,
School of Studies in Sociology and Social Work,
Pt. Ravishankar Shukla University Raipur,
Chhattisgarh.

4.1 Introduction:

Human is a part of animal and social kingdom and both kinds of kingdom directly affected human life and both kingdoms are changeable with many dimensions. In changes of human life some changes happened naturally, and some changes are made by human because he can't survive without positive changes in life. All kinds of changes in human society that changes divided into two forms, one is positive changes and second in negative changes. Positive changes make human life easy and negative changes make difficulty in human life. Research is needed of both kinds of changes, positive and negative because positive changes want innovation and innovation comes from research and at the condition when the human search solution for making negative changes/problems positive for society than also human want research, their conclusion, data based suggestion. Generally, all subjects are divided in three discipline life sciences, social sciences and humanity and all above disciplines have different way/dimensions of research. Life science depends on laboratory, social science depends on field work and humanities depend on library work. Major characteristics of research are ratability, objectivity and validity. These above merits or need of research are easy for life science related research work, but comparatively that are more difficult for social science related research because the whole society is laboratory for social science and each respondent of the study group is objecting. Society is changeable than human behaviors naturally changeable and all data depend on answer of the respondents. Scientific method is a solution about above problem that helpful for make reliability, validity and objective in our research work.

4.2 Research:

"Research is ideally the careful, unbiased investigation of a problem based in so far as possible upon demonstrable facts involving refined distinctions, interpretation and usually some generalization."

(C. V. Good, Dictionary of Education, p.346)

"Research is the manipulation of things, concepts of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge whether that knowledge aids in the practice or in an art."

(Encyclopedia of Social Sciences, p.281)

4.3 Steps of Scientific Research:

Scientific research methodology conduct research work step by step.

"What is called scientific method differs in encouraging and developing the almost possible doubt, so that what is left after such doubt is always supported by the best available evidence."

(M. R. Cohen and E. Nagel, An Introduction to Logic and Scientific Method, p.195)

"Science is a method in which any facts are dealt with and some useful knowledge derived the reform. The material of science is co-existence with the whole physical universe, not only that universe as it now exists, but with its past history and all life therein. The man who classifies facts on any kinds, whatsoever, who sees their mutual relations and describes their sequences, is applying scientific method and is a man of science."

(Karl Pearson, Op. Cit, pp. 12-13)

Scientific research methods, especially in the field of social science conduct research work I follow given steps:

4.3.1 Selection of Problem:

Selection of Problem is first, but the major part of scientific research because whole research work focused on the problem of research. Selection of problem is also known as statement of the problem. There are lots of sources which are helpful for a selection of problems like a census of India, any burning social phenomena, heading of newspapers and sometime some government and non-government institution also propose a research problem. Before any researcher select his/her research topic, the researcher wants to sure some future phenomena like availability of the study group and he/she will get data about the proposed research topic.

Review of literature and selection of problem get not a neat fix place in steps of scientific method sometime researcher reviews some secondary sources like research paper, books, etc.

Than researcher make title for research, at this condition reviews or literature placed first step of the scientific method. The researcher wants to take some important precaution when he/she finalized research title, which are:

a. Any local terminology not placed in the title.
b. Number, age group, numerical word and ethical issue related terminology not mention in the research topic.
c. The researcher could be aware about special references like place, study group not places as subtitle of research topic.

4.3.2 Review of Literature:

Review of literature is also a major part of scientific research. Review of literature also knows as gap of study because it shows research problem which selected from the researcher is how frequent and also shows the status of this particular topic or problem like who and how a research conducted on this particular topic?

"A literature review is a study – or, more accurately, a survey – involving scholarly material, with the aim to discuss published information about a specific topic or research question. Therefore, to write a literature review, it is compulsory that you are a real expert in the object of study. The results and findings will be published and made available to the public, namely scientists working in the same area of research."

(Online source:
https://scientific-publishing.webshop.elsevier.com/research-process/importance-literature-review-research-writing)

Generally, Review of literature helps a researcher in follows area:

a. Review of the literature shows how a researcher conduct and design research work because when a researcher search and review some research paper, synopsis, books, newspaper and other secondary sources than researcher get lots of ideas for research topic like which kind of research design taken by previous work? Which research tools/technique was useful for it? Which area and people could be suitable for research? Etc. And also researcher gets knowledge about previous work's objective and conclusion. So, on the above basis researcher design research framework and also change his work if already had done something by him.
b. Review of literature also helps when a researcher wants to defend his result/conclusion. Which is based on his primary data because generally a researcher concludes his work from his primary data, but the authenticity of researcher data could be questionable like a researcher shows in a table which represents an educational level or literacy rate of respondents. And table shows 50 percent respondents literate and 5o percent respondents are literate. According to this figure researcher generalized this is a good condition for respondents. But in this condition 50 percent could be better and could be bad. The researcher can make his above statement, but when the researcher has an authentic review like if the researcher have census of data of his study area which shows literacy rate of his study area is 30 percent and research got literacy rate is 50 percent in his sampling than he can make their statement 50 percent literacy rate is good condition in the study group. So, review of literature helps researcher for defending his conclusion.

4.3.3 Objectives:

Set of objectives is very sensitive stage for a researcher because whole research work, selection of research area, selection of research technique, the process of data collection, data analysis and report writing etc. depend on objective of research. The objectives of researcher perform as a guide for researcher and also objectives of aware researcher about limitation of research. Researcher want to follow some precautions at the time of objectives setting for research:

a. Objective of research must relate to the topic.
b. No longer statement mentioned in the objective.
c. Any objective, there data is not collected by the researcher are not mentioned in objective.
d. The objectives are short and with well-defined terminologies.

4.3.4 Formation of Hypothesis:

The hypotheses are also working like objective. Hypothesis makes guideline for the researcher because hypothesis known as pre-conclusion that require check on the basis of data. The hypothesis is the most important step for exploration of the cause effect relationship between different variable.

"A hypothesis is a tentative generalization, the validity of which remains to be tested. In its most elementary stages, the hypothesis may be any hunch, guess, imaginative idea or intuition whatsoever which the basis of action or investigation becomes."

(G. A. Lundberg, Op. Cit. p.9)

Generally, three type of hypothesis used by researcher which are; hypothesis sating existing empirical uniformities, hypotheses concerned with complex ideal-types, hypotheses related with analytical variables. When researcher formulate his/her hypothesis than researcher want to take some important precautions like conceptual clarity, specificity and precision, empirical referents, simplicity, related to available techniques and also related with theory.

4.3.5 Selection of Research Method and Techniques:

Selection of research method and techniques are affected by title, objective, hypothesis of research and other side research method and technique put an effect on data collection, analysis and discussion of tables. Research method and technique is mid stage of scientific research method. In the nature research method and related technique are divided in two ways, first is quantitative and other is qualitative research. Firstly, selection of research method depends on selected research design by a researcher. Generally, four research designs are used in the field of social science which are;

a. Descriptive Research Design
b. Explorative Research Design
c. Explanatory Research Design
d. Experimental Research Design

Secondly, sampling is a major stage of research because the selection of type of sampling, number of samples is very scientific criteria, especially when a researcher want to statically analysis in research than statically analysis depend on number of sampling like T-test etc.

"Sampling (statistical) is the process or method of drawing a definite number of aggregate from which the sample is taken."

(H. P. Fairchild (ed.), Dictionary of Sociology, p.265.)

Generally sampling divided in two types one is random sampling and second in non-random sampling.

a. Random Sampling:
b. Non-Random Sampling:

Research Technique:

Research techniques work under research method. Research techniques are changeable means it could be change according to the nature of research like if the study group is approachable for a researcher than researcher use schedule and if that is not possible than researcher can use the questionnaire. Generally, follows research technique are used in social science research by researchers:

A. Questionnaire: "Fundamentally, the questionnaire is a set of stimuli to which literate to which literate people are exposed in observe to observe their verbal behavior under these stimuli."

(G. A. Lundberg, Social Research, p.183)

"It does constitute a convenient method of obtaining a limited amount of information from a large number of persons or form a small selected group which is widely scattered,"

(Wilson Gee, Social Science Research Methods, p.314)

Types of Questionnaire:

- On the basis of Information

    a. Questionnaire of Facts
    b. Questionnaire of opinions

- On the basis of Structure

    a. Structured Questionnaire:

        - According to purpose
        - Supportive Questionnaire

    b. Non-Structured Questionnaire: Open and Symbolic

- On the basis of Nature of Question

    a. Closed Questionnaire: Like tick type question.
    b. Open Questionnaire: Long question open for answer.
    c. Mixed Questionnaire: Tick/objective and long question
    d. Pictorial Questionnaire: For illiterate respondents

B. Schedule: "The schedule is the name usually applied to a set of questions which are asked and filled in by an interviewer in face-to-face situation with another person."

W. J. Goode and P. K. Hatt, Methods in Social Research, p.133.

Types of Schedule:

According to G A Lundberg

a. Schedule for collection of objective facts
b. Schedule for study of attitudes and opinions
c. Schedule for study of Status and Functions

According to P V young

a. Observation schedule
b. Rating schedule
c. Document Schedule
d. Institutional-Survey Schedule

On the basis of Research

a. Observation schedule
b. Rating schedule
c. Institutional-Survey Schedule
d. Interview Schedule
e. Document Schedule

C. Case Study: "Case study is a way of organizing social data so as to preserve the unitary character of social object being studied. Expressed somewhat differently, it is an approach which views any social unit as a whole."

(W. J. Goode and P.K. Hatt, Methods in Social Research, p.331)

Types of Case Study:

a. Study of an individual
b. Study of a group or community

D. Interview:

"The Interview may be regarded as a systematic method by which one person enters more or less imaginatively into the inner life of another, who is generally a comparative stranger to him."

P. V. Young, Scientific Social Surveys and Research, p.242.

Types of Interview:

A- Classification according to the Number of Informants

a. Personal Interview
b. Group Interview

B- Classification on the basis of Objectives

a. Diagnostic Interview
b. Treatment Interview
c. Research Interview

C- Classification on the basis of contact

a. Direct Interview
b. Indirect Interview

D- Classification on the basis of Formality

a. Formal Interview
b. Informal Interview

E- Classification on the basis of Methodology

a. Focused Interview
b. Non-directed Interview
c. Repetitive Interview

F- Classification on the basis of Structuring

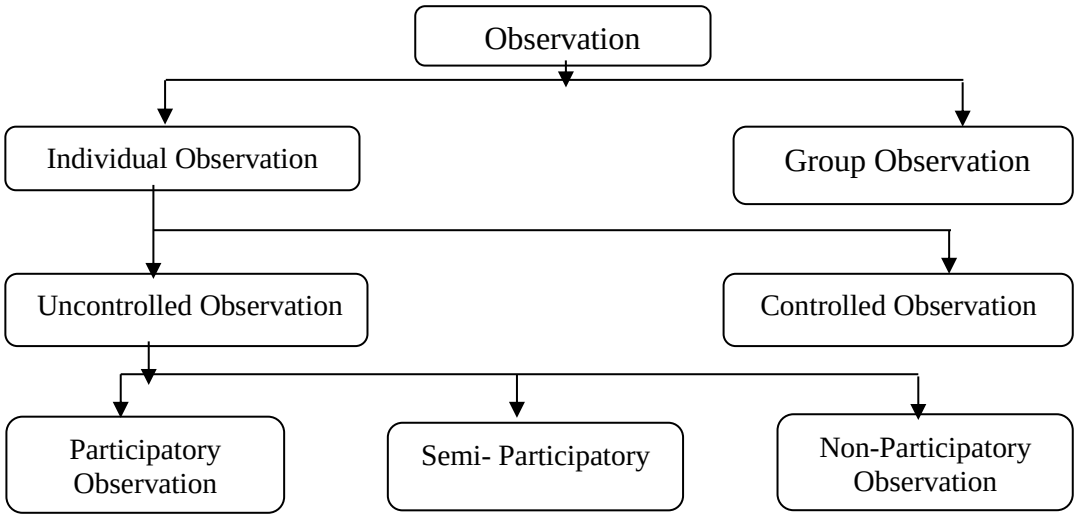
a. Poll-type Interview
b. Open Interview
c. Unstructured Interview

E. Observation:

"Observation-a deliberate study through the eyes- may be used as one of the methods for scrutinizing collective behavior and complex social institutions as well as the separate units composing a totality."

P. V. Young, Scientific Social Surveys and Research, p. 199

Types of Observation:



F. Content Analysis:

"Systematic content analysis attempts to define more causal description of the content, so as to show objectivity the nature and relative strength of the stimuli applied to the reader or listener."

(Waples and Berelson Quoted in Berelson and Janowitz (eds.), Reader in Public Opinion and Communication, p.26)

4.3.6 Data Collection:

Process or step of data collection is the backbone for every research which is depending on primary data. Data collection in society is a complex and big challenge for researchers. There is always a dilemma between researcher and respondents because when a researcher inter his study group than the respondent group always feel dilemma of we and them. According to researcher they are we and respondent group are they and other side respondents group think they are we and researcher are they. Means in the field two different cultures, social background, living style, values, and culture differences are in the face to face stage because researcher's culture is naturally difference compression to respondent culture and same thing for the respondent group also. In this condition researcher want to accept and respect respondents culture because first step of data collection is that researcher want to make believe in respondent groups and that is only possible when researcher respect respondents culture, these idea known as cultural relativism in the field of anthropology and in opposite side when researcher did not respect respondents culture than its call ethnocentrism. So, the first step of data collection is that researcher establishes his/her repo in the study group. Then secondly researcher want to explain the objective of research and also make believe about confidentiality of data after these researcher can collect data with passion. Some important precaution which is must for the researcher is followed:

a. Time and place of the interview must be according to respondents comfort.

b. The researcher asks question step by step.
c. Researcher can't make any false promise to respondents and also take aware about sensitivity of questions. The researcher did not make any sensitive question and also any questions that hurt respondents feeling.
d. Ethical question always a sensible thing in the process of data collection so researcher wants to aware about it.
e. If a researcher wants to make his/her research work in tribal community or any other community which is new for a researcher than researcher, always want to learn dialect/language, values and customs of the study group. Because if the researcher has knowledge about his study group than there are no or less chances he ask any kind of question which is hard and rough for respondents.
f. Key Informants: Key informant is another important thing in the process of data collection, especially is a field related research work. The researcher wants to keep a key informant at the time of data collection because roll of key informant like a bridge between researcher and respondents. The researcher wants to have some precaution at the time of key informant selection like,
g. Key informant is a member of the study group because key informant is member of study group than he/she has knowledge about the study group culture.
h. Key informant nature is neutral in his community because if the key informant has biases about and member, family, etc. than at this condition key informant roll is doubtful for respondents.
i. Key informant is related to the topic of research like researcher keep baiga, gunia (baiga and gunia are local healer in tribal community) local healer, etc. when researcher work in the field on health status.

4.3.7 Editing of Data:

When researchers are in the process of data collection than researcher collecting lots of data. Generally researcher collected his data from his schedule but many times he got other information also which are not mention in their schedule but that could be important for researcher objectives, And other reason because of researcher collect more and more data because he don't want to go field again for some missed data that's why when he feel any data could be useful for him than he collected but when he return from field and he stared data analysis than he feel some data are not related with their objectives and hypothesis than he want to edited his data. If he did not edit data and he adds whole data in research that was collected by him than objectives of the research are affected negatively. But there is one more thing for a researcher; he keeps his extra data for his future work like research paper publication, seminar presentation etc. because primary data are always useful.

4.3.8 Coding:

Coding is a technical step of the scientific method. Generally coding process of data used for quantitative research. When researcher come from the field than researcher edit his/her data. After editing data researcher code their schedule from subjective to objective like to schedule if education status is present in words like illiterate, primary school, middle school, high school, high school etc. Than researcher convert it illiterate is 1, primary school is 2, middle school is 3 etc. After complete his coding work than data is ready for tabulation. At present, many software used by researchers for tabulation likes MS-EXCEL etc.

So, researchers can use MS-EXCEL for tabulation or researcher can use the schedule as master schedule. The researcher makes all coding in one schedule.

4.3.9 Classification and Data Entry:

Generally, the data are divided from two ways one is quantitative data and secondly qualitative data. After completion of editing of data researcher want to classify his date according to objective of research.

"Classification is essentially a form of putting, together things which have certain similarities as to be able to deal with them more easily."

(Peter H. Mann, Methods of Sociological Enquiry, p.18.)

Classification is directly related with tabulation so that is necessary research must to know which kind of table could be made and after classification of data researcher ready for data entry. At present time lots of computer software is present in data entry like MS-EXCEL, SPSS 16.0 TO SPSS25.0 version, SYSTAT etc. According to researcher facilities he can use above software for data entry.

4.3.10 Tabulation and Analysis:

The tabulation is a step which is related to arrangement of data for analysis. In other word we can say tabulation is the first process of explore conclusion of our research work. Tabulation work started with classification of data. Generally, in the form of tabular data are shown in raw and columns. "Tabulation is a part of the technical process in the statistical analysis of data. The essential operation in tabulation is counting to determine the number of cases that fall into the various categories."

(C. Selltiz et. al., Research Methods in Social Relations, pp.-406.407.)

After complete the process of tabulation than researcher stated process of data analysis. Data analysis depends on the nature or demand of research. Generally, in the basic form researcher analysis their data with frequency and percentage. If objective of research depend co-relation with depended and to depended data than researcher can also use statistical analysis like T-test, F-test etc.

4.3.11 Graphical Presentation:

Graphical presentation of result is depending on need of research. Generally graphical presentation of data used for comparative study like presentation of census of India, the age groups of respondents etc. In the field of social science researcher can use many types of graph like pie charts, bar diagrams etc. "A properly constructed diagram appeals to the eye, and also to the mind, because it is practical, clear and easily understandable even by those unacquainted with the method of presentation.

(A. L. Boddington, Statistics and its Application to Commerces, p.140)

4.3.12 Report Writing:

Report writing is the last stage of the scientific method. According to step of report writing we can say report writing is a huge and sensitive stage of report writing. Report writing is representative of our whole research work. Generally, report writing have followed these stages:

a. Cover Page
b. Certificates (according to rules of university)
c. Acknowledgement
d. List of tables
e. List of graphs
f. List of diagrams
g. Introduction
h. Research Area and Peoples
i. Research Methodology and Technique
j. Chapters (According to requirements of research topic which include discussion, tables, graphs)
k. Conclusion and suggestion
l. References/Bibliography
m. Appendices

Above steps could be changed if research guide need. Generally, all kinds of subject which includes anthropology and other have followed above steps.

4.4 Importance of Scientific Methods:

Generally, social sciences have issues about the validity of research because research work of social science is depending on data related with response to human. Human nature is changeable he/she can change his/her response anytime because human life as well as his each and every movement are affected by many factors. On the whole we can say if human behaviors/response is changeable, so data could be changed. So, the researcher can't the authorities his conclusion for long time validity and also hundred percent stable theories or conclusion. Because if data s is affected than whole conclusion are affected, that's why social science need a particular scientific methodology which have a particular scientific methodology which have at least three merits which are reliability, validity and objectivity. Scientific methodology has above kind of characteristics.

4.5 References:

1. Ahuja, R. (2003). Samajik Sarvekchhan evm Anusandhan, Rawat Publication, Jaipur, Rajasthan.
2. Muthal, S. (2001). Samajik Manavvigyan Sadhantik Vyavhar, Madhya Pradesh Hindi Granth Acadmi, Bhopal, Printed by: Mamta Printers, Bhopal.
3. Mahajan, D., & Mahajan K., (2008). Samajik Anusandhan ki Padhtiyan. Vivek Prakashan, Jawahar Nagar, Delhi.
4. Verma, S.K., (2016). Vyavharik Shodh Padhdhti. Chhattisgarh Hindi Granth Acedmai, Chhattisgarh, India.

ISBN: 978-81-948755-8-1

5. Statistical Techniques: An Overview

Abhishek Chakraborty

Assistant Professor,
Department of Management, Bhilai Institute of Technology,
Durg (C.G.), India.

Sunil Kushwaha

Research Scholar,
Department of Management, Bhilai Institute of Technology,
Durg (C.G.), India.

Sushma Singh

Research Scholar,
Department of Management, Bhilai Institute of Technology,
Durg (C.G.), India.

5.1 Introduction:

Regardless of where we stand on the matter of importance of Data Science, it's simply impossible to ignore the continuing importance of data, and our ability to analyze, organize, and interpret to draw conclusive decisions (Kazmier & J, 1968). It is important to understand the objective and purpose behind the various techniques, in order to know where, how and when to use them. It is important to assess the performance of various methods and techniques, to know how well or how badly it is working and solving the purpose of use (Pallant., 2013).

Additionally, this is an exciting research area, having important applications in psychology, literature, science, industry, and finance names a few but not limited to. Statistical way of thinking is to formulate problem and solve the problem statistically by collecting costly data (Yong & Pearce, 2013). There are two types of statistics: Descriptive and Inferential statistics

a. **Descriptive Statistics:** Summarizing information collected, and knowledge gathered by means of graphs like frequency tables, pie charts, bar charts, dot plots and histogram or by means of tables like mean, average, and correlation coefficients.
b. **Inferential Statistics:** Drawing conclusions about the population on the basis of limited number of sample. While using statistical techniques for data analysis following structured steps can be used:

5.2 Set Hypothesis:

The researches on any area are always based on certain assumptions which must be defined as statements. These statements are called hypothesis. There are two types of hypothesis, Null Hypothesis and Alternate Hypothesis.

The null hypothesis generally referred by H0, is the hypothesis which is checked for possible rejection under the assumption that it is true. Theoretically, a null hypothesis is set as no difference or status quo, until and unless it is proved wrong when sample us used.

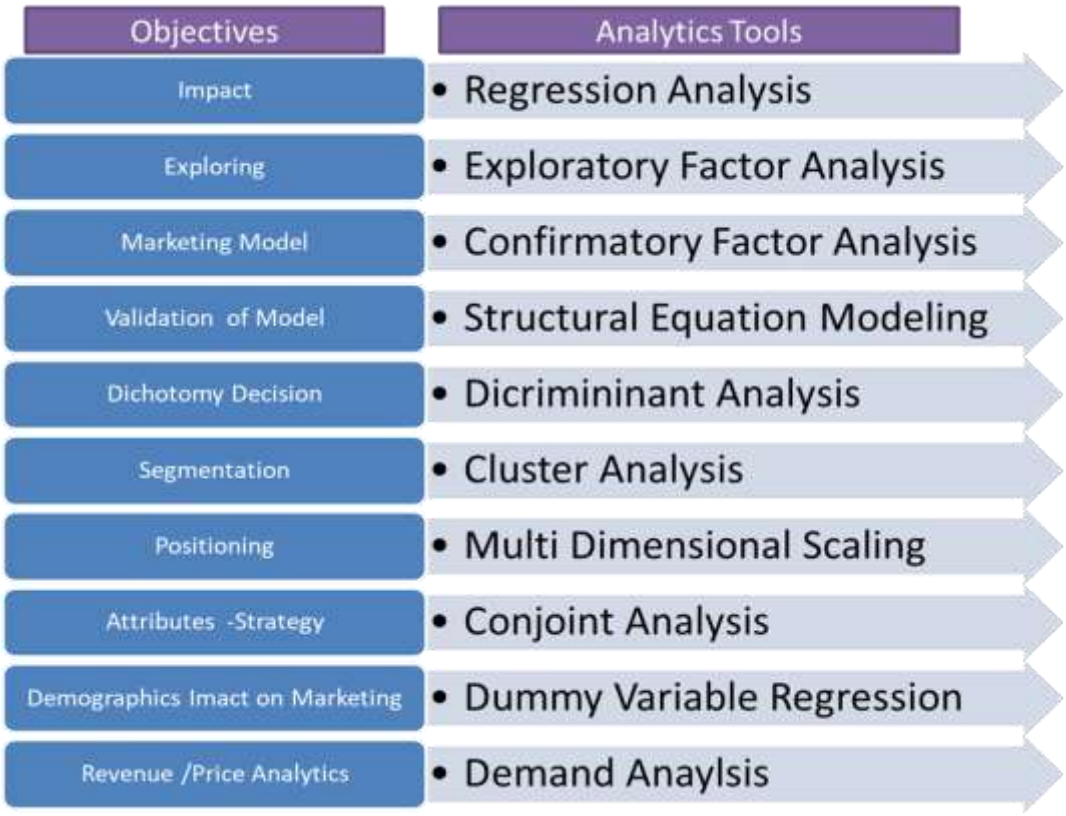
The alternative hypothesis, generally referred by H1, is opposite of the null hypothesis. In other words, when null hypothesis is found to be true, the alternative hypothesis must be false or when the null hypothesis is found to be false, the alternative hypothesis must be true.

5.3 Define Appropriate Statistical Test:

In research, most fundamental difficulty is selecting appropriate statistical tools. It is advised to select statistical test on the basis of data type, sample size, and the level of data may provide a benchmark for deciding the statistical test (Velicer & Jackson, 1990).

Apart from these, the statistics used in the study (mean, proportion, variance, etc.) must also be considered when a researcher decides on appropriate statistical test, which can be applied for hypothesis testing in order to obtain the best results.

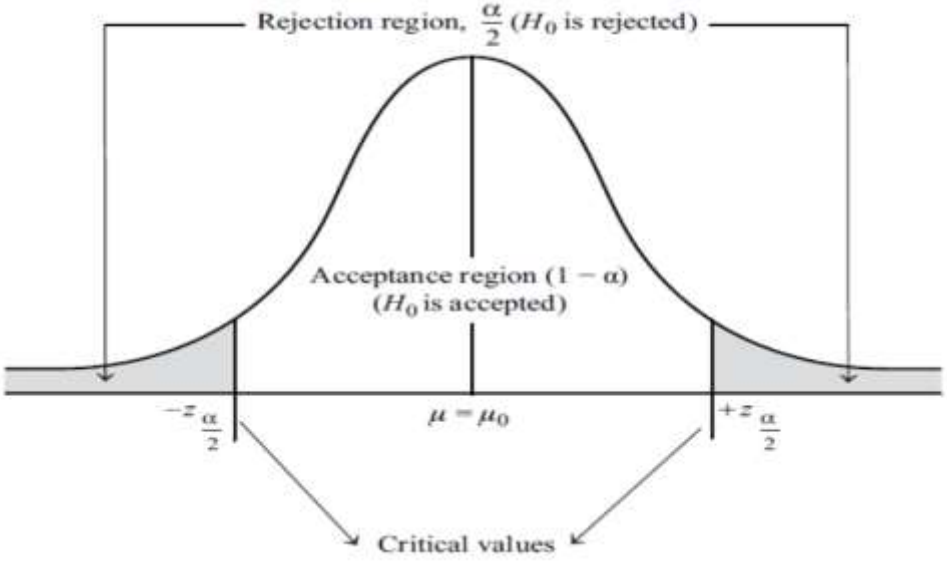
One another way of selecting appropriate techniques is analyzing the objective of research. Some authors compile the techniques on the basis of objectives set. Depending upon the objectives of the research, statistical tools and techniques are selected (Yong & Pearce, 2013). Following are compilation of analytical tools suggested on the basis of objectives set



5.4 Define Level of Significance:

The level of significance generally denoted by α is the probability, which is attached to a null hypothesis, which may be rejected even when it is true. The level of significance is also known as the size of the rejection region or the size of the critical region. The levels of significance which are generally applied by researchers are: 1%; 5%; 10%.

5.5 Define the Decision Rule:



On the basis of level of significance, decision rule is set to accept the hypothesis or reject it, for this rejection region and acceptance region is defined.

5.6 Collect the Sample Data:

In this stage of sampling, data are collected, and the appropriate statistics are calculated. The first four steps should be completed before collecting the data for the study. It is better not to collect the data first and then decide on the stages of hypothesis testing (Kothari & Garg, 2019).

5.7 Analyze the Data:

In this step, the researcher has to compute the test statistic. This involves selection of an appropriate probability distribution for a particular test. Depending upon number of dependent variables analysis approach can be Univariate analysis and multivariate analysis (Gorsuch, 1990).

Univariate Analysis:

If dependent variable under study is only one at a time, then Univariate analysis should be used and respective statistical techniques and tools to be used as discussed in following parts.

Multivariate Analysis:

If dependent variable under study is more than one at a time, then multivariate analysis should be used and respective statistical techniques and tools to be used as discussed in following parts.

At next level, depending upon type and nature of scale used to collect data, parametric and non-parametric test to be selected.

Parametric tests are those that make assumptions about the parameters of the population distribution from which the sample is drawn.

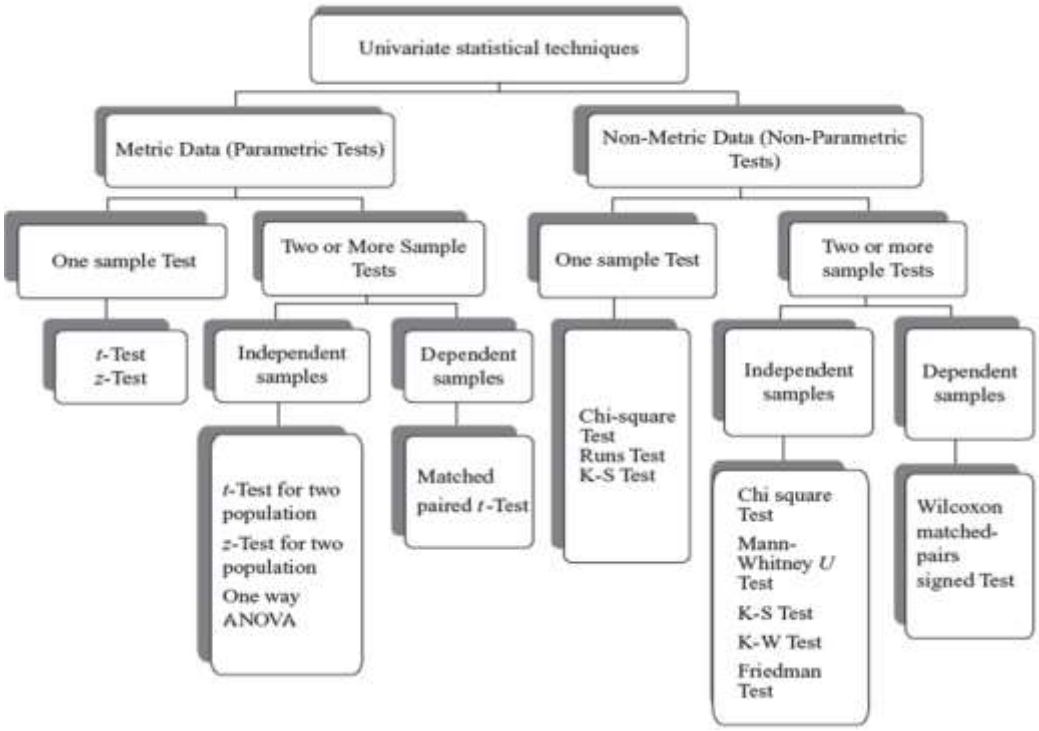
This is often the assumption that the population data are normally distributed. Non-parametric tests are "distribution-free" and, as such, can be used for non-Normal variables.

- **A Parametric test** is a test whose model requires and specifies certain conditions about the parameters of the population from which the sample is drawn. Such tests make certain assumptions about the nature of the underlying population like Normal Probability Distribution and their validity rests upon the validity of these assumptions. These tests are more powerful and strong in their assertions and are usually applicable when data is interval scale or Ratio Scale. These tests are very much rich and developed (Bajpai, 2017).
- **Non-Parametric tests** are also known as distribution free methods. These are the tests whose model does not specify conditions and assumptions about the parameters of the population; they lack parameters. These are widely used for nominal or ordinal data where no parametric tests are not available at all. However, they can also be used for Ratio or Interval Scale data as well. These tests are not very powerful and strong in their assertions. Non-parametric statistical tests are typically much easier to learn and apply than are parametric tests. These tests usually convert data into ranks (hence, such tests are also sometimes known as Rank Tests) or signs and thereby may lose some important information.

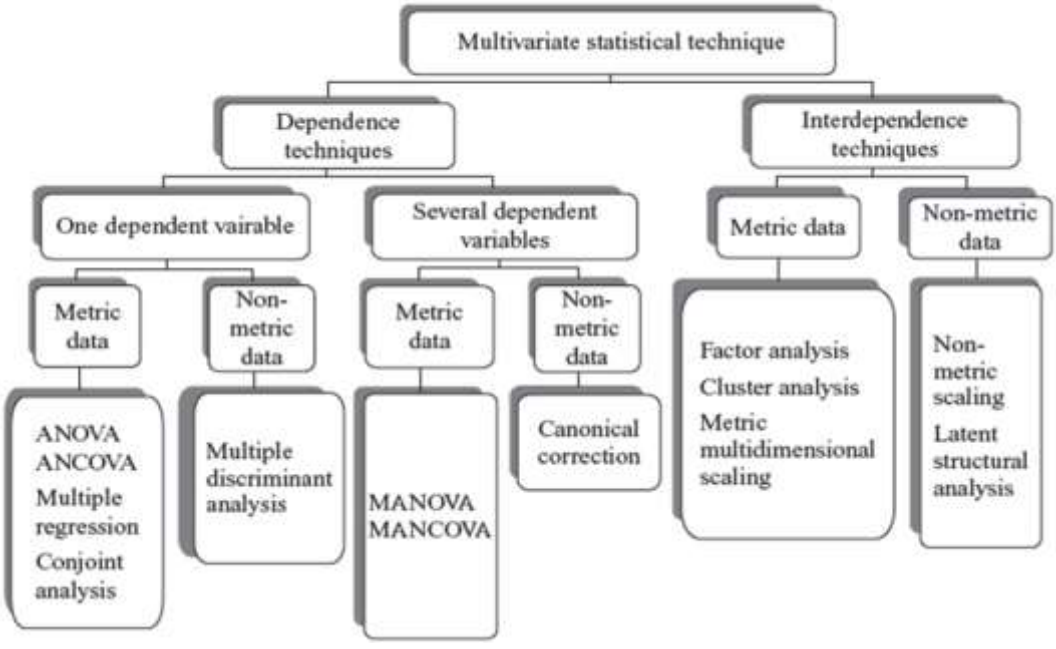
Following are flowcharts for selection of types of statistical tests,

a. First step select the type of dependent variable i.e., Univariate or multivariate.
b. Second step is to select type of test i.e., parametric or non-parametric test.
c. Third step is to select test on the basis of no. of samples i.e., one sample or more than one sample.
d. Fourth step is to select test depending upon interrelationship between samples i.e., dependent samples or independent samples.

Univariate Statistical Techniques:



Multivariate Statistical Techniques:



5.8 Arrive at a Statistical Conclusion and Implication:

In this step, the researchers draw a statistical conclusion. A statistical conclusion is a decision to accept or reject a null hypothesis. Statisticians present the information obtained using hypothesis-testing procedure to the decision makers. Decisions are made on the basis of this information. Ultimately, a decision maker decides that a statistically significant result is a substantive result and needs to be implemented for meeting the research goals.

The above steps are suggestive in nature which researchers, scholars and academicians can adopt to follow a structured step-by-step process of data analysis.

5.9 Bibliography:

1. Bajpai, N. (2017). Business Research Methods. Pearson Publications.
2. Field, A. (2000). Comparing several means: ANOVA (GLM 1). In F. A, Discovering Statistics Using SPSS for Windows, (1st ed., pp. 243-294). London: SAGE Publications Ltd.
3. Gorsuch, R. L. (1990). Common Factor-Analysis versus Component Analysis - Some Well and Little Known Facts. Multivariate Behavioral Research, 25 (1), 33-39.
4. Kaiser, H. (1974). An index of factorial simplicity. Psychometrika, 39 (1), 31-36.
5. Kazmier, & J, L. (1968). Probability learning as related to the response format used. Psychon. Science, 11 (6), 199-200.
6. Kothari, C. R., & Garg, G. (2019). Research Methodology. New Age International Publishers.
7. Littlejohn, A., Milligan, C., Fontana, R. P., & Margaryan, A. (2016). Professional Learning Through Everyday Work: How Finance Professionals Self-Regulate Their Learning. Vocations and Learning, 9 (1), 207–226.
8. MacCallum, R., Widaman, K., Zhang, S., & Hon. (1999). Sample size in factor analysis. Psychological Methods, 4, 84-99.
9. Pallant. J. (2013). SPSS survival manual: a step by step guide to data analysis using IBM SPSS (5th Ed.). Australia: Allen and Unwin.
10. Velicer, W., & Jackson, D. (1990). Component Analysis versus Common Factor-Analysis - Some Further Observations. Multivariate Behavioral Research, 25 (1), 97-114.
11. Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. Tutorials in Quantitative Methods for Psychology, 9 (2), 79-94.

ISBN: 978-81-948755-8-1

6. Type of Research and Type Research Design

Neelam Pawar

Associate Professor,
Department of Pharmaceutical Sciences,
Chaudhary Bansilal University Bhiwani,
Haryana, India.

Abstract:

The main objective of research to obtain new finding and validate existing data about phenomena studied through systematic, scientific, controlled, careful and rigorous investigation. The type of research classified as pure research, applied research, descriptive research, analytical research, fundamental research, conceptual research, empirical research, longitudinal research, laboratory research, exploratory research, conclusion oriented research. To make judgment about cause-effect relationship, experimental design might use. The research includes survey, fact finding, case study, correlation study, comparative study enquiries of different kinds.

Main focuses of chapter to understanding of type of research and research design to prepare empirical analysis and also describes main variables operationalize and explains measure selection behavior. Research design is used to collect the relevant data and technique to facilitate the smooth scaling of the various research operations making yielding maximal information. Research design is also provides backbone structure to researcher for planning of answering the research question or testing from hypothesis. This type of research design includes descriptive design, exploratory design, experimental design, longitudinal design, cross-sectional design, casual design, action research design, cohort research design and case study design.

Keywords: Research Types, Research Design, Observational Methods, Analytical Research, Experimental Research Design.

Research:

The research is related to systematic investigation on the basis of the methodology of research and knowledge on a particular topic or subject, the user group, the research problem it investigates etc. According to Creswell (2003) need to focus on three methods like quantitative, qualitative and mixed method approaches.

Quantitative research methods are deals with numbers and amounts for describing an event that support the hypotheses and predication modal.

Qualitative research method enable researcher to use texts for findings, quality of subject and kind of providing picture from researcher view. Mixed method includes the mixing of both qualitative and quantitative data. Types of research shown in figure number 1.

6.1 Types of Research:

6.1.1 Pure Research or Basic Research:

The research carried out for new idea generation, new facts and fundamental principle for human knowledge.

Based on experimentation and observation by following rigorous standards and methodologies to meet specific objective and ensure credibility of conclusions of research published into pre-reviewed journals.

Pure research was studies on elements after Mendeleev's periodic table published and Penicillin discovery by Alexander Flaming was big step in discovery of antibiotic in medicinal science. Pure research is marvelous change setup of human mind and it generates knowledge and education. [1]

6.1.2 Applied Research:

Applied research main aim to discover solution, to provide knowledge and to applied social research data into decisions to solve problems associated with serious risks. With help of employing experimental research, accepted known theories, principles, case studies and interdisciplinary research one can solve certain problems.

Characteristics:

- Solve problematic facts.
- Without generalize objective studies individual or specific cases.
- Represent how things can be changed.
- Tries to correct problematic facts.[2]

Qualitative Research:

Qualitative research refers to much more subjective non- quantitative, use different methods of collecting data, analyzing data, interpreting data for meanings, definitions, characteristics, symbols metaphors of things. Qualitative research further classified into following types:

Ethnography:

This research mainly focus on culture of group of people which includes share attributes, language, practices, structure, value, norms and material things, evaluate human lifestyle. Ethno: people, Grapho: to write, this disciple may include ethnic groups, ethno genesis, composition, resettlement and social welfare characteristics.

Phenomenology:

It is very powerful strategy for demonstrating methodology to health professions education as well as best suited for exploring challenging problems in health professions educations.

Case Study Research:

It is used to generate deep understanding of complex issue in real life matter. It involve wide variety of principle in medicine for examine patient.

Quantitative Research:

Quantitative research aim to measure numeric figures, quantity, amounts, used extensively in field of economics and commerce. Quantitative research refers as systematic empirical investigation of phenomena quantitative data and their relationship.[3]

6.1.3 Descriptive Research:

The research which is determines "the way things are". The descriptive research may include behavior observation research, you can observe a lot by watching and survey research.

Types of Descriptive Research:

- Observational Method
- Survey Method
- Case Study Method

a. **Observation Method:** This is type of correlation research which adopt researcher observes ongoing behavior. There may be 3 types of approach for observational researches are covert observation, overt observation and research participation.
b. **Survey Method:** The brief interview or discussion with some person about relevant topic. It is used to take opinion, thought and feelings. In this predetermined set of question should give to the indulging of population interest towards.
c. **Case Study Method:** These studies are related to analysis of events, periods, persons, decisions, policies, and institutions studied by one or more methods. Study is conducted on the basis of inquiry of subject instance of class of phenomena that provides an analytical frame. [4]

6.1.4 Analytical Research:

It is related with carrying analysis on certain phenomenon with the help of analytical tools. Analytical research used already available facts and information; analyze them to make critical evaluation.

Type of Analytical Research:

a. **Reviews:** The search involves meta- analysis of quantitative methods of review. It also relates with making formal assessment of various research with intension of making any useful change or conclusion if necessary.
b. **Historical Research:** It is a systematic collection and evaluation of data to explain, understand events, action and describe that occurred in past. Historical research source material may include documents, numerical records, oral statements and records. The

main aim of historical research to find critical search for truth to conceptualize, histories and contextualize to explain there is no agreed definition of what time period constituted on temporary history has existed or can exist.

c. **Philosophical Research:** This research is related to the theoretical bases of branch of experience and knowledge which is fundamental in nature of reality, knowledge and existence.
d. **Research Synthesis:** To summarizing the facts related with particular question, two or more research studies are assessed.

Techniques of Survey Research are:

- Questionnaires
- Interviews
- Survey

e. **Grounded Theory:** Grounded theory out of many discoveries or construction theories and their data obtained systematically with the help of comparative analysis. The methodology after revision should be more flexible and widely adopted to assume reality of external world. This may include qualitative data, interviews, and review of records, surveys and observations.

These research place priorities on study phenomenon over method of study, the researcher role are important in creating categories and interpreting data beside strategies as tools or prescriptions. [5]

6.1.5 Fundamental Research:

To acquire the new knowledge experimentation and theoretical work has to done primarily.

It increases scientific knowledge of researcher and has no planned or immediate uses, their results may be useful in future.

Benefits of Fundamental Research

- Economical gaining
- Benefits to society
- New knowledge acquisition

6.1.6 Conceptual Research:

The research is conducted on the basis of already present information and observation on given topic. It can be used in developing theories or new interpretation by abstract concepts and ideas.

While conducting a conceptual research, choose the topic, collect relevant literature, identify specific variables, generate the framework, this type of research is mainly relies on previously conducted studies, already existing relevant information and literature.

6.1.7 Empirical Research:

This type of research based on collection of data which lead to generation of new ideas, observation and experiments or by using scientific instruments.

The study conclusion is drawn from concretely empirical evidence and verifiable evidence. It is derived from Greek word Empeirikos which means "experienced".

6.1.8 Longitudinal Research:

In this type of research, we conduct much observation of subject variables for long time (over a weeks, months and years), without interfere with subject.

Collection of data at the onset of study and gather repeatedly over a period of time depends on length of study to observe how variable change in this duration.

Main importance of longitudinal research is in studying development and lifespan issues.

Types of Longitudinal Studies:

a. **Retrospective Study:** This study may involve to looking at historic information for past records.
b. **Cohort Analysis:** In this type of study group being selected based on historical, geographic, birth.
c. **Panel Study:** Involves sampling a cross-section of individuals. [6]

6.1.9 Laboratory Research:

In laboratory research provide conditions with technological research, measurement and experiments are to be performed.

Any chemical substances, microscopically, parasitological, hematological, immunological, biochemical, tissue culture research can be carried out into laboratory.

It involves study of natural science with experiments.

6.1.10 Exploratory Research:

This research is conducted for not clearly defined problems. It helps to determine data collection method, research design and selection of subjects.

It depends on reviewing of literature, information collection through informal discussion with consumer's competition.

Way to implement exploratory research into research plan. We need to focus on groups mainly contain 8 to 12, ask them relevant question on subject and issue being searched. [7]

6.1.11 Conclusion Oriented Research:

This research deal with redesign enquiry, to pick up problem and prepared to conceptualize.

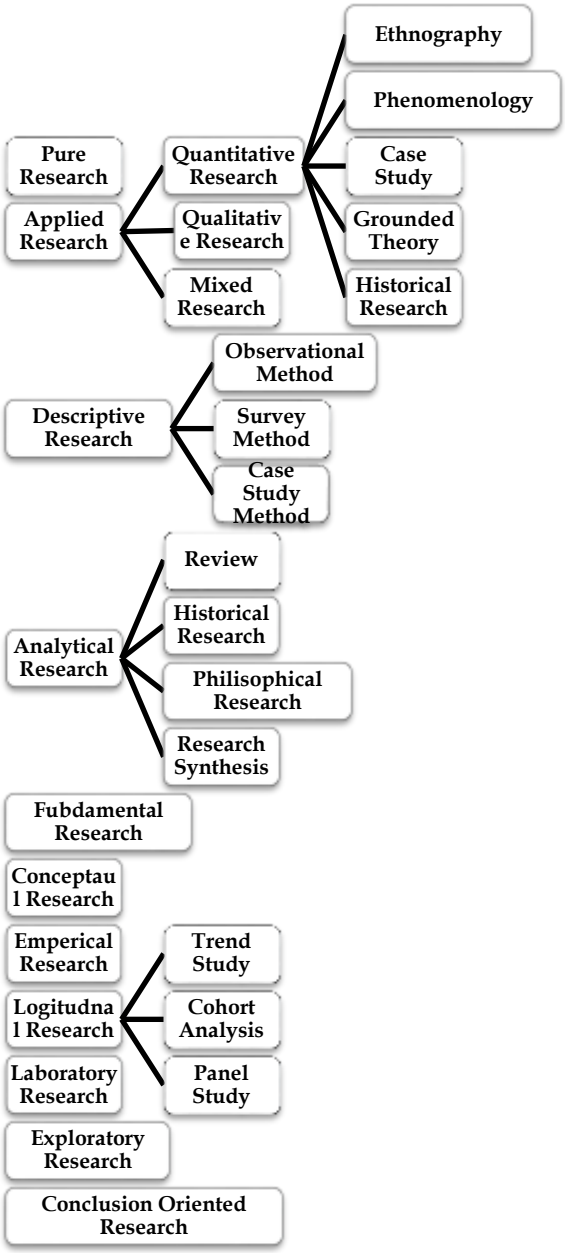


Figure No. 1: Types of Research

Research Design:

Research design is used to reduce the costs, bear a significant control on the consistency of the results accomplished, provides a solid base for the complete research.

With the help of preplanning, it is possible to minimum spending money, effort and to get maximum information. Research design is used to collect the relevant data and technique to facilitate the smooth scaling of the various research operations making yielding maximal information.

Poor groundwork of research design displeases the entire project. Types of research design shown in figure number 2.

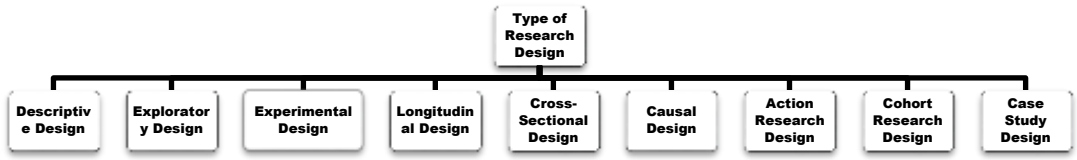


Figure No. 2: Types of Research Design

6.2 Types of Research Design:

A researcher must have knowledge of various types of research designs to choose which type of research design should be applied for the research. There are different types of research designs which are explained below.

6.2.1 Descriptive Design:

Descriptive design includes phenomena being researched and characteristics of population. To describe internal validity does not require characteristics of population. It used for statistics of data, average and frequencies.

Advantage:

- Amount of data gathered by this research and which can be used for future references.
- It gives overviews of study which is helpful to determines variables used for study.
- Limitation of study can use for development or as a useful tools.

Disadvantage:

- To disapprove hypothesis, outcome of descriptive design cannot be used.
- Study depends on measurement and instrumentation for observation.
- Using observational method outcome can be collected.

6.2.2 Exploratory Design:

Design used for research where no design study is done before. Later investigation can be best understood to get knowledge through this design. The study used for explanation whether future study is possible or not and data can be used for further development for more research.

Advantage:

- Research priority can be determined through exploratory design.
- All answer like What, Why, how we can get through data collection.
- Background data can be collected through exploratory design for particular topic.

Disadvantage:

- Whole population can be generalizing through data of exploratory research.
- Unstructured style of research.

This design is followed to realize following purposes:

- Clarifying concepts and defining problem.
- Formulating problem for more precise investigation.
- Increasing researcher's familiarity with problem.
- Developing hypothesis.
- Establishing priorities for further investigation.

6.2.3 Experimental Design:

The casual relationship where particular cause leads to same effect, cause will proceed to effect so degree of associate is major.

The procedure is main which controls all factors of experiment.

Experimental design uses more measurements and more groups for longer periods of time.

Advantage:

- Placebo effects can be determined from treatment effects.
- From single study high level of evidence can be collected.
- It determines cause of something to take place.

Disadvantage:

- Because of technical or ethical reasons few types of proceeds cannot be performed.
- It might not fit into real time.
- If procedure uses special equipment and facilities, experiments can be costly.

Basic Principles of Experimental Design:

- Principle of replication
- Principle of randomization
- Principle of local control

Types of Experimental Design

- Pre-experimental
- True experimental
- Quasi experimental

Pre-Experimental Design:

After implementing factors of effect and causes various groups are kept under observation. The research is conducted to understand investigation necessary for particular group.

Types of Pre-Experimental Research:

- Static-group comparison
- One -shot case study research design.
- One group pretest posttest research design

True Experimental Research Design:

To prove or disprove hypothesis statistics analysis required. To build relationship between (cause effect) groups, a true design required. It needs random distribution, variable can be manipulated and control group is not changed. [8]

6.2.4 Longitudinal Design:

This research design makes multiple observation, repetitive study and experiments. This involved same group of people for study over period of time.

The variable are identify and cause are found which made variable have caused change in their behavior. This also called panel research design.

Advantage:

- Data can be collected from particular phenomenon.
- Various variable established causal relationship.
- Pattern of change can be tracked.

Disadvantage:

- Method is changed over time, but researcher assumes that present trend may remain same for future also.[9]

6.2.5 Cross-Sectional Design:

The research design calculated among study participants at some time. Research variable data analyze from sample population which is collected from given point of time.

It has selection based on differences rather than selection, dependence based on existing variations; no time dimension so distinguishing features can be analyzed.

Advantage:

- Study used for large number of subjects.
- Grouping not selected, randomly based on population grouping is done.
- At a point in time provides characteristics of result.
- Results performed on population are more reliable.
- Use large number of subject involves.

Disadvantage:

- Very difficult to find same interest phenomena or subjects.
- Outcome does not provide any historical occurrence because of time-bound procedures.
- Different outcome from different time-frame.
- Cause and effect relationship cannot be determined from this research.

6.2.6 Action Research Design:

In this exploratory and understanding of problem is developed to follow characteristic based path to made strategies of intervention. Various forms are collected to follow new intervention strategies until problem strategies established. This path is cyclic; provide initializing, hypothesizing and specifying problem to make interventions and assessments.

Advantage:

- Because of cooperative and adaptive nature it can be used in community or world situation.
- It mainly focuses on solution driven and practical besides than theories.
- It increases change of learning from experiences also viewed as cyclic.
- Outcome is related to practice.
- Researcher has nothing to hide and controlled information.

Disadvantage:

- It is responsibility of researcher to enhance change so difficult to perform conventional studies.
- Test result may be bias one due to over- involvement of researcher.
- Documentation is really difficult because of no standard format.
- It is cyclic in nature so action research is difficult to conduct.[10]

6.2.7 Cohort Research Design:

This study conducted on short population over a period of time. It is generally deal with statistics section of population which is relevant to investigational problem.

Open- cohort study involve rate-based data and closed-cohort involve all participant enter in study at a specific point, no new participant allowed in later.

Advantage:

- Action research study is mandatory because involving random people in study is unethical so it is a risk-based study.
- To provide insights into overtime effect, study should be flexible.
- Primary source and secondary source data can be used.
- Need to avoid debate related to cause and effects because, it can gauge probable cause before outcome.

Disadvantage:

- No involvement of randomization, so lower than other research which select random participant.
- Research has to wait for condition because it takes long time, so result credibility may change by variable.
- Factor between two cohort groups cannot be controlled.[12]

6.2.8 Casual Design:

They relates with understanding of phenomenon with statements "If A, then B". According to assumptions and norms one can made certain changes in this kind of research.

The explanation of test by hypothesis seeks by majority of scientists like dependent variable, independent variable, variation in one phenomenon, variation in other phenomenon.

The following impact need to include in casual design:

Non-Superiorness:

The relationship independent of variation and between two variables is called third variable.

Appropriate Time Order:

Before dependant variable independent variable must be tackled.

Empirical Associate: Finding relationship between dependant and independent variables.

Advantage:

- Chances of replicate are more.
- Study has systematic subject selection and has internal validation.
- It helps the word better understanding by providing link between variables and eliminates possibilities.

Disadvantage:

- Two different events seem to be related and cannot be casual.
- Causality only inferred but because variable superfluous and perplexing variable exist so difficult to determine conclusion about relationship.
- It is not easy to predict which variable is cause and which is effect.[13]

6.3 References:

1. Research Methods/Types of Research - Wikibooks, open books for an open world. En.wikibooks.org. (2020). Retrieved from https://en.wikibooks.org/wiki/Research_Methods/Types_of_Research#:~:text=Also%20the%20research%20is%20classified%20into%3A%201%20Descriptive,Exploratory%20research%2010%20Historical%20research%20More%20items%20.
2. Gitlin, L. N., DePoy, E. (2013). Introduction to Research - E-Book: Understanding and Applying Multiple Strategies. United Kingdom: Elsevier Health Sciences.
3. Sridhar, M. S. (2010). Introduction to Research Methodology: Problem Selection, Formulation and Research Design. United States: M. S. Sridhar, Lulu.
4. Kumar, M. (2020). C.R. Kothari: Research Methodology Methods and Techniques. India: New Age International (P) Limited. Academia.edu. Retrieved from https://www.academia.edu/33779875/C_R_Kothari_Research_Methodology_Methods_and_Techniques.
5. Creswell, J. W. (2003). Research design: Qualitative, quantitative, and mixed
6. Method approaches. A framework for design. Sage Publications,
7. Inc. Second Edition.
8. Mishra, S.B., Alok, S. (2017). Handbook of Research Methodology. Educreation, 1.
9. Chawla, D. & Sodhi, N. (2011) "Research Methodology: Concepts and Cases" Vikas Publishing House PVT Ltd.
10. Vahidov, R. (2012). Design-type Research in Information Systems: Findings and Practices. United States: Information Science Reference.
11. Moissenko, F., Braicu C., Tomuleasa C., Berindan-Neagoe I. (2016) Types of Research Designs. In: Stefan D. (Eds) Cancer Research and Clinical Trials in Developing Countries. Springer, Cham. https://doi.org/10.1007/978-3-319-18443-2_3
12. Bickman, L., Rog, D.L. (2009). Applied Research Design: A Practical Approach. Handbook of Applied Social Research. SAGE Publications, London; 2009. 3- 46. 10.4135/9781483348858.n1
13. Mann, C. (2003). Observational research methods. Research design II: cohort, cross sectional, and case-control studies. Emerg Med J. 20:54-60. 10.1136/emj.20.1.54
14. Creswell, J.W. (2003). Research design. Sage Publications: Thousand Oaks, CA.
15. Rahi, S. (2017). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. Int J Econ Manag Sci 6: 403. doi: 10.4172/2162-6359.1000403.

ISBN: 978-81-948755-8-1

7. Use and Applications of Computer in Social Research

Dr. Sunita Tanwar

Assistant Professor,
Department of Management Studies,
Central University Haryana,
Mahendergarh, India.

Dr. C. S. Yadav

Professor,
Department of Management studies,
Graphic Era Hill University Uttrakhand,
India.

Dr. Lokesh Jain

Professor,
Department of Rural Management,
Faculty of Management technology, Gujarat Vidyapeeth,
Randheja-Gandhinagar, Gujrat India.

Abstract:

Nowadays, computers are playing a very important role everywhere as a technology savior, the same is seen in research. In this paper the authors would like to focus on the use and application of computers for social research. It has been observed that computers play a very important role in research from literature review, data collection to data analysis and presentation. This paper will describe the increasing role, importance and use of computers in research for better outcomes. Computer technology has given new wings to the researcher in the present scenario. It has not only made possible the accessibility of large amounts of data information within no time but made its analysis much easier.

Keywords: Social Research, Use of Computer, Data Collection.

7.1 Introduction:

Nowadays, Technology is playing a very important role in every field of life and research is also not an exception to it. Researches are highly benefited with the advent of technological advancement like computers. The reason is not confined to the fact that it has made the researchers work more simpler and less expensive but also less time consuming too. With the advent of the computer the calculation and analysis part being made more easier and more representable. Computers are indispensable tools in the field of research. It not only provides space to store huge data but helps in retrieving the same stored data time and again with the same ease and convenience.

It can e-transfer the data from computer to drive, to desktop or to Pen drive and hard disk for use. Computers play an important role in research because of its multiple usages and comfort it provides as mentioned below:

a. **Speed:** It can compile, access and analyse a huge amount of data within no time. You can use the data for the purpose of literature review of the paper, data collection, analysis and compilation of the result within no time.
b. **Large Storage Capacity:** Computer is a device that not only provides you a huge storage for the purpose of collection of a large number of research papers and data storage for analytical purposes.
c. **Error free access:** The basic concept of any research relies on the accuracy of the data. Computers play a very important role to attend this accuracy by reducing the chances of human error to the largest possible extent. This not only signifies the importance of computers in research but can also lead to conduct of the same in a relevant proper manner.
d. **Automation:** Most of the computer programs are automatic in nature and are self-updated with time. There are so many softwares such as mendeley and others which can automatically lead to the retrieval of research papers available online. but it can also lead to automation of the result based on the secondary sources of data to make the research more relevant and with time.
e. **Cost Reduction:** The cost of data collection has reduced to a higher extent as now it becomes easier to collect data through online survey questionnaires, recorded interviews and available videos with less cost within no time with the advancement of Technology.
f. **Flexibility:** The flexibility provided to the data at the time of analysis to use Different techniques is very high as compared to the one in case of doing it manually.
g. **Communication:** Computer is a device is very helpful in research communication. we can send mail to bulk of respondents you can receive information. it can also help in searching the platforms through which we can connect two different social network purchase link to them Facebook Google Scholars you have more Asus to the field of experts and gathering information.
h. **Analytical Ease:** computers can have access to different analytical tools which can make a work easier in terms of calculation whether it's a mathematical calculation or to predict a model based on social connect Using SPSS, AMOS or LISREL etc.

7.2 Use of Computer Tools:

a. **MS Word:** With the help of MS Word in computers you can easily type your thesis by using the keyboard or the voice recording tools. The task becomes easier related to font size adjustments, setting heading and subheading etc. at just a click of a button. It can also help you in arranging the format on the basis of a design document. In word, you can easily save, copy and transfer your data to either hard drive, pen drive or share it with your supervisor easy. You can easily add or delete the information in the word document.
   The headers and footers are also adjusted in one go as compared to the typewriters where we have to type the whole page even for changing the page number or any word from the document. It also provides a facility for inserting the tables, line alignment, paragraph phrasing and so on. Tools like voice recorders are of high importance for the purpose of data collection in focus group interviews. In all the writing work would have not been that much easier without the access of computers.
b. **Excel:** The other facility provided by the computer is using an Excel sheet which can calculate huge amounts of data in no time. It can also help in comparing different data

used for social research purposes. It also provides access to the pivot tables to represent data through relevant charts, graphs, diagrams or by using different statistical techniques such as mean, median, mode and frequency distribution by using tables. Excel can also help in calculating more complex problems by applying formulas and using selective databases for particular purposes.

Software for Analysis and Interpretation:

Different softwares are available for different purposes of research in computers such as voice recognition software is used in automatically transcribing dictation, field notes and interviews into computer text files. The softwares can also help in changing the transcripts into different languages.

Why to use Computers in Social Research?

The use of computers is very important in social research in the present scenario because of the ease and help to the researcher from a literature review to data analysis and interpretation. Even though the computer is only the tool and not a resource, the importance of computers is very high in every part of the research. It is involved in such a manner as if no search is possible without it. It can be considered as the lifeblood of the researcher from the beginning of the research process to the publication of that research. it can be best understood from the use of computers at different phases of research as follows:

Problem Identification and Literature Review Phase:

This is one of the most important phases of any research where the researcher has to identify the problem statement of research by scanning the previous research data. It can be conducted in a very precise manner with the help of different searching tools available online. The computer is not only helpful in searching Predator but provides an online library storage facility too. The research scholar can also update the required online literature through google scholar alerts and world wide webs and different databases such as Ebsco, Jstor, scopus etc. and arrange it with the help of softwares like mendeley.

Softwares like NVIVO can helps in conducting bibliometric analysis by organising the results of different studies and provide the publication details related to expert in that area, number of research published, recent area of research, good journals in that field etc. Computer also helps in proper citation of the data in the desired format with the help of tools like bibliometriy and Citation in word document which is equally important for arranging references, grammar and punctuation check.

Research Design:

In this phase of research design the whole layout is laid down for the conduct of research. It includes the type of research, universe of the study, population of the research, sample unit and sample size. Computers help in sample size determination of the data and pilot survey using statistical tools in excel for calculation of standard deviation, mean etc. in excel for more accurate and precise calculation of the survey data. Different types of studies like longitudinal studies and systematic research or meta-analysis are conducted using computer software only.

In longitudinal studies, researchers have to maintain the connection of events for a long time about an individual, object or situation which is only for with the help of a computer.

If we take an example of the medical history of an individual regarding some symptoms reflected over a period of time, then there is no other way to keep a record and connect other than a computer. For systematic literature review and meta-analysis, it gives first hand information which is really helpful in any research at the beginning.

Data Collection:

This is the most important step of any kind of research. Computers are required at each step, most especially in the case of huge data collection. At this stage, computers are useful in designing the questionnaire in the google form so that data can be easily imported in excel sheets and then to SPSS for coding the data collected through different sources. It can be helpful in editing the data by doing proper treatment to the missing data with more accuracy as compared to manual process. it provides more flexibility in recording of the data due to audio visual tools of data collection.

Data Analysis and Interpretation:

Computer is the only device which provides flexibility for coding of the data and all sorts of calculation at the click of button with precision, accuracy and completeness. This is helpful in testing the hypothesis developed during the process of research and calculating the power of the study with the help of tools like SPSS, STATA, Minitab, Stat craft, Eviews etc. as per the desirability of the research topic in more presentable form. It indicates the result with more accuracy and signifies the result of hypothesis and helps in interpretation of the result based on scientific reasoning.

Report Writing:

report writing is the most important aspect of any research. Computers are very useful in report writing and it is the only device which not only gives you a space to represent the results in the best possible manner with the help of tools and techniques of citation, proper approach for publication in a social and scientific manner. It represents the result with justification and supportive literature in the report by reducing the chances of human error by arranging the facts and figures systematically in the report.

7.3 Conclusion:

Social research has a vast area of coverage and it has to go through all sorts of data collection from primary surveys to in-depth interviews and recording of group data. No other data collection technique can be helpful without use of a computer as it provides different ways of coding, editing, treatment of missing data to tabulation of data in more representable form.

With the advent of technological advancement and updation, usage of computers has increased because of more precise and accurate calculation. But at the end, a computer is the machine, it requires human interference at all stages of research due to the intellectual capacity of the human being.

7.4 References:

1. Babbie, Earl 1996 "We Am a Virtual Community." The American Sociologist 27,1 (Spring):65-71.
2. Bailey, D. (ed.) 1978 Computer Science in Social and Behavioral Science Education. Englewood Cliffs, N.J.: Educational Technology Press.
3. Bainbridge, William Sims 1995 "Sociology on the World Wide Web." Social Science Computer Review 13,4 (Winter):508–523.
4. Brent, Edward, and Ronald E. Anderson 1990 Computer Applications in the Social Sciences. New York: McGraw-Hill.
5. Coleman, J. S. 1962 "Analysis of social structures and simulation of social processes with electronic computers." In H. Guetzkow, H., ed., Simulation in Social Science: Readings, 61–69 Englewood Cliffs, N.J.: Prentice-Hall.
6. Fielding, Nigel G., and Raymond M. Lee (eds.) 1991 Using Computers in Qualitative Research. Newbury Park, Calif.: Sage Publications, Inc.
7. Hanneman, Robert A. 1988 Computer-Assisted Theory Building. Newbury Park, Calif.: Sage Publications, Inc..
8. Kelle, Udo 1995 Computer-Aided Qualitative Data Analysis. Newbury Park, Calif.: Sage Publications, Inc.
9. Kiesler, Sarah, and Lee S. Sproull 1986 "Response effects in the electronic survey.", Public Opinion Quarterly 50:402–413.
10. Koppel, R, G. Dowdall, and A. Shostak 1985 "Using computers to teach sociology: A departmental survey." Footnotes 13,8 (November):4.
11. Nie, N., D. Bent, and W. Hull 1975 Statistical Package for the Social Sciences. New York: McGraw-Hill.
12. Stone, Philip et al. 1966 The General Inquirer. Cambridge, Mass.: MIT Press.
13. Tesch, Renata 1989 "Computer Software and Qualitative Analysis: A Reassessment." In G. Blank, J. L. McCartney, and E. Brent, eds., New Technology in Sociology: Practical Applications in Research and Work. New Brunswick, N.J.: Transaction.
14. Kerlinger, Fred R., “Appendix B. The Computer and the Behavioural Research,” in
15. Foundations of Behavioural Research, Prism Books Private, Ltd., Bangalore, 1995.
16. Kothari, C.R. (2004) Research Methodology Methods and Techniques. 2nd Edition, New Age International Publishers, New Delhi.
17. https://www.encyclopedia.com/social-sciences/encyclopedias-almanacs-transcripts-and-maps/computer-applications-sociology

ISBN: 978-81-948755-8-1

8. Education, Environment and Entrepreneurship: Agents for Growth and Development in A Rural Economy

Shri. Sumarlang O. Lyngskor

Assistant Professor,
Economics Department
Shillong College,
Shillong.

Abstract:

"Successful entrepreneurship takes complete dedication and careful strategizing along with market analysis. Plus, successful start-ups provide countless benefits to a healthy economy and consumers in need."

Fabrizio Moreira †

(† Fabrizio Moreira is an Ecuadorian politician and businessman.)

An attempt in this article is to highlight the close relationship between Education, Environment and Entrepreneurship. Taking into account of these three factors, an improvement in the economic condition of the people especially those in the rural areas can be achieved. Poverty is one of the problems where many developing as well as under developing countries have to tackle. Therefore, with high literacy rate along with favorable conditions of business environment and very viable opportunities for entrepreneurship, a dilemma of poverty can be reduced. The objective of this paper is to find out the various factors which are the main inputs towards growth and development in an economy. Following the literature, the key factors in this paper are

- **Education:** Education is linked up in a vital and inseparable inter-disciplinary approach with economy. Through Education effort can be made in order to overcome the various problems of poverty, employment, social and civic discipline.
- **(Environment:** Business environment is the main factor in order to create awareness and opportunities to budding entrepreneurs as such surroundings will influence certain individuals or organisations.
- **Entrepreneurship:** being a mechanism towards.

  a. Economic Growth and Development
  b. Providing employment and job opportunity
  c. Enhancing productivity and production capabilities
  d. Contribution to the high levels of creativity and innovation
  e. Wealth creation and welfare education; all ideas and knowledge on entrepreneurship should be converted to profitable and useful products and services.

However, comprehension on entrepreneurship are the entrepreneurs; who should be creative, innovative, risk taker, dynamic, flexible, and brave, opportunity recognizer, network builder, independent and self-reliant people and a potentiality in business leadership.

Key-Words: Poverty, Education, Entrepreneurship, Environment and Entrepreneur.

8.1 Introduction:

Poverty being one of the problems where many developing and under developing countries are facing, it is a social phenomenon in which a section of the society is unable to fulfil even its basic necessities of life. The third world countries are the hardest hit by poverty which exhibits invariably the existence of mass poverty. Thus, the third world countries are having a very difficult task to eradicate from within their boundaries. Any developing and under developing countries are trying hard to eradicate poverty by introducing many schemes, programmes but to no avail, reasons being - defective planning, inequality in the distribution of income and wealth, rapid growth of population, unemployment and underemployment etc. Even in developed countries of Europe and America are not free from this problem as certain pockets of poverty do exist within their boundaries.

Attempts have been made to define poverty in a most common and acceptable manner by different societies, but all of them are conditioned by the vision of minimum or good life obtaining in society. For example, the concept of poverty in countries like United States, France, UK, and Germany would be significantly different from countries like India, Pakistan, Sri Lanka, Bangladesh, because the average person is able to afford a much higher level of living in developed countries when compared to a developing or under developed countries. In India, the general acceptable definition of poverty emphasizes minimum level of living rather than a reasonable level of living. A common yardstick in economics literature are the absolute and the relative, in the absolute standard minimum physical quantities are being measured for a subsistence level and then the price quotations convert into monetary terms the physical quantities. According to the relative standard, income distribution in the population in different groups is estimated and a comparison of the levels of living of the top 5 to 10 percent of the population reflects the relative standards of poverty.

This paper targeted towards a section of the population in the society fallen under relatively poverty concentrated in a rural economy of a developed and developing countries where such agents like Education, Environment and Entrepreneurship could improvise for growth and development. In any underdeveloped countries, where education and business environment provides an opportunity, it will be very much feasible because in such countries where an existence of mass poverty occurs, it is a cause for concern and it can still be a prospect for growth and development once agents stated are being operated.

Why Education is Important?

Education is one of the most important factors for raising the economic level especially in the rural based economy. An Educated individual will certainly have thinking power and knowledge of analysis, estimation, forecasting etc. that are the bases to start any kind of small enterprise. Education is linked up in a vital and inseparable inter-disciplinary approach with economy.

Through Education effort can be made in order to overcome the various problems of poverty, employment, social and civic discipline which ultimately leads to growth and development of a rural economy. Education and Economic development are closely knit with one another especially for rural development which characterized by its emphasis on locally produced economic development strategies. Rural areas are highly distinctive to one another, therefore, a large variety of developmental programmes are being approached globally. Education contributing to rural development must be locally controlled, practically applicable, problem identification, and focused on functional specialization. This will definitely diagnoses their requirements and independent in economic decisions which will affect their lives in the long run, providing skilled manpower, linking rural and urban sectors, job creation, raising the standard of living, increasing labour force productivity and developing leadership quality.

Education has an advantageous influence over growth and development in a rural economy. Development of rural individual, house hold and families, society and community and this will imply reduction in poverty level, equal distribution of income, and solving unemployment problems. It plays a key role in the economic systems of supply and demand, production, marketing, health care, governance and development in education right from primary to the higher level respectively.

By improving and developing economically the rural areas education is one factor that can lead to an increase in per capita income and gross domestic product of any developing or under developed countries. Education oriented to urban rather than rural needs may do more harm than good by accelerating rural to urban migration, unemployment and imbalance in a rural environment.

Through Education, rural population will have an opportunity to be self-employed and create an entrepreneurial career. Unemployment is one problem faced by many developed, developing and underdeveloped countries; unemployment may be termed as one of the root to many social evils especially among the youths. Therefore, when there is an entrepreneurial education rural youths will have a positive thinking for being self-employed and create job opportunities for others. Some of the important steps in job creation by educated rural youths are:

a. Creating awareness about career options in self –employment and entrepreneurial activities.
b. Development of entrepreneurial qualities
c. Enhance the entrepreneurial skills, qualities and competencies.

8.2 Apt and Sustainable Business Environment:

This paper clearly indicates that an environment pointed out is a Business environment. Business environment is the main factor in order to create awareness and opportunities to budding entrepreneurs as such surroundings will influence certain individuals or organisations. The term business is understood differently by different people involved. It can be:

a. Business as an activity,
b. Business as a method of transacting,

c. Business as a method of making money,
d. Business is an organized activity to achieve certain pre-determined goals or objectives. This shows that the concept of business has undergone a vast change, from a producer driven activity to a consumer centred phenomenon. In the past, Business concept was 'to sell what is being produced', the modern concept was 'to produce what is being desired'.

The term Business environment refers to the aggregate of all forces, factors and institutions which are internally affecting the business through management structure and policies as well as which are external to and beyond the control of individual business enterprises; but which influence their functioning. Business involves activities which link an individual(s) or organisations to the outside world. An individual(s) or within an organisation, a business is governed by the forces of demand and supply or the behaviour of market or, like in a business organisation, its employees, management or decision makers. In this backdrop, it becomes essential to acquaint the stake holders with nature, complexity and interrelation among business environmental forces that may act upon a variety of business and hence, influence business performances.

Rural business environment is a smart and competitive in rural areas; it requires certain tools on identifying how rural entrepreneurship is supported to better access new markets and develops new forms of successful rural business both on and off the farm. Opportunities from biotechnology to the experience economy and from possibilities created by new information technologies to changing consumer demands and by taking advantages of such opportunities will leads to new ways of thinking about rural businesses, weird ideas, and improved modern forms of business support will come along the way. However, digital divide is one factor which put a brake in any of the fast growing rural economy. In order to overcome the digital divide, it requires flexible support towards rural businesses and improved business environment in the areas. Some of the points involved to overcome the digital divide are-

a. Roll out of broadband internet access through innovative community broadband.
b. Building digital skills and capacities and
c. Creation of rural digital hubs

8.3 Entrepreneur and Entrepreneurship:

An Entrepreneur/Organizer is an agent who can accelerate for full utilization of factors of production. He involved physically and mentally in the business, he will be responsible for any loss or losses of his business, if any, and undertakes by himself all the works related to his business. He performs all the function of initiating, controlling, supervising, organizing, risk-taking and even the functions of introducing innovations. The success or failure of any business firm depends mainly on the efficiency of the entrepreneur/organizer that brings together and co-ordinates the operation of the other three factors of production, that is, Land, Labour and Capital, in economic activities, thus, an entrepreneur is another factor of production.

A successful entrepreneur must possess a courageous quality to meet all the challenges of his business, right strategy, right planning and manage the project effectively in an accountable and transparent manner to avoid any closure or failure of the venture. He must foresee changes in advance and be the leader of his business. He should command the confidence of others, especially of his employees and must be able to influence others effectively.

The skills and experience of an Entrepreneur are such that he should possess knowledge about the performance, functions and processes of his business. However, in rural areas, more effort is required from the individual to be an entrepreneur. The task is very challenging as the occupation of the larger population itself is in the agricultural sector, therefore to be an entrepreneur it requires exertion of responsibility, knowledge of wants in the rural market, demands of the rural population, financial aspects like banking, insurance, loans, assistance from the authority or agency, available of materials needed for his ventures and also willingness of the rural population to adopt a change – that is, from being engaged in farming only to becoming marketing agents of all form of agricultural production. But an entrepreneur has to have certain qualities as well, such as:

- He is a person who develops and owns his own enterprise.
- He is a moderate risk taker and works under uncertainty for achieving the goal.
- He is innovative.
- He peruses the deviant pursuits.
- Reflects strong urge to be independent.
- Persistently tries to do something better.
- Dissatisfied with routine activities.
- Prepared to withstand the hard life.
- Determined but patient.
- Exhibits sense of leadership.
- Also exhibits sense of competitiveness.
- Takes personals responsibility.
- Oriented towards the future.
- Tends to persist in the face to adversity.
- Convert a situation into opportunity.

Simply being an entrepreneur will die within itself unless and until he practices and execute all his traits and abilities, when this has been done then a concept of entrepreneurship evolved which rural economy can move forward with a change. Growth and development will take place and different forms of economic activities will start to perform.

By Entrepreneurship we mean the process of making money, earning profits and increasing the wealth while posing characteristics such as risk taking, management, leadership and innovation. The term Entrepreneurship is a complicated term and gives various meaning depending on the situation. The word entrepreneur has a French origin. It originated during the Middle Ages when the term entrepreneur was applied to “the man in charge of the great architectural works: castles and fortifications, public buildings, abbeys and cathedrals”.

It is derived from the French word, entreprendre, which means “to undertake.” In a Business context, it means to undertake a business activity or simply to start a business.

The four key elements in Entrepreneurship are:

a. Innovation
b. Risk taking
c. Vision and
d. Organizing skills,

All the four elements are important, and their binding is very essential, in rural areas when applied it will be very effective as many unexplored areas for development always exists.

In many of the developing countries a lot of attention is being paid to the development of entrepreneurship because it is not the proprietary quality of any caste and community. The entrepreneurship is usually understood with reference to individual business. Entrepreneurship has rightly been identified with the individual, as success of enterprise depends upon imagination, vision, innovativeness and risk taking. The production is possible due to the cooperation of the various factors of production, popularly known as land, labour, capital, market, management and of course entrepreneurship. The entrepreneurship is a risk taking factor, which is responsible for the end result in the form of profit or loss.

The various interchangeable meanings of what entrepreneurship is all about, it is -

- A theory of evolution of economic activities.
- A continuous process and an ingredient of economic development.
- Essentially a creative activity or an innovative function.
- A risk taking factor which is responsible for an end result.
- The name given to the factor of production, which performs the functions of enterprise.
- Creates awareness among people about economic activity.
- Generates Self-employment and additional employment.

As mentioned above, that rural economy is basically on agriculture or its produce and it's allied. Therefore, this is one potential area to develop which ultimately it will help in expanding its growth into the other sectors. It will help in solving unemployment problems, Rural –Urban Migration, etc., there will be development of infrastructures, Banking, Insurance, transport and communication, health care and education. This ultimately leads to the growth and development in the Rural Economy.

8.4 Summary:

When all the key factors are taken into account, it can be observed that poverty, education, entrepreneurship and environment are the agents that can bring changes to the rural economy. Keeping aside other factors such as non-participation of the rural folks, unavailable of opportunities, financial constraints and non-existence of markets for agricultural produce or agricultural by products, etc.; growth and development of rural area is very much possible and achievable. It will be an achievement if such agents could transform a rural area into a semi-urban area or more appropriate into a develop urban area.

8.5 References:

1. Business Environment and Entrepreneurship: THE INSTITUTE OF COMPANY SECRETARIES OF INDIA, ICSI House, 22, Institutional Area, Lodi Road, New Delhi 110 003. Website www.icsi.edu
2. ENTREPRENEURSHIP AND GUILD SYSTEM IN LINKAGES WITH EDUCATION AMONG THE PEOPLE OF RI KHASI: HAMLET BAREH NGAPKYNTA: CONFERENCE PAPER: National Workshop cum Conference on Socio-Economic Development in India: May 3 – 4, 2005.

3. Rural business: the European network for rural development: http//enrd.ec.europa.eu
4. POVERTY, INEQUALITY AND THE PLANNING PROCESS IN INDIA: Indian Economy: Ruddar Datt and KPM sundaram: 52nd Revised edition
5. ROLE OF EDUCATION IN ENTREPRENEURSHIP DEVELOPMENT: Fardin Vakili, nemat Tamasebi, sairan Tamasebi, Delaram Tahmasebi: volume 16, Issue 3-4 December 2016/ https://doi.org/10.18311/jeoh/0/16046
6. ROLE OF EDUCATION IN RURAL DEVELOPMENT: Ritu Chandra, assistant Professor Department of Humanities and social science, SRMU, Lucknow.
7. NEED AND IMPORTANCE OF ENTREPRENEURSHIP EDUCATION: ISSUES AND EFFORT: Pranab Kumar Sarmah: Regional workshop on Entrepreneurship Development: Opportunities and Challenges in the North Eastern Region: 8th June,2012 (Proceeding Volume)
8. ENTREPRENEURSHIP EDUCATION: A NECESSITY IN THE PRESENT SCENARIO: S. O. Lyngskor: Regional workshop on Entrepreneurship Development: Opportunities and Challenges in the North Eastern Region: 8th June,2012 (Proceeding Volume).

ISBN: 978-81-948755-8-1

9. Introduction Social Science Research

Dipti Nandkishor Hajari

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Chandrakant Govind Gojegave

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Shrawani Renukadas Deshpande

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

9.1 Introduction:

The unique characteristic of human mind is the curiosity to know about the universe. Innumerable questions arise in our mind about our environment, planet and the universe. Most of these questions starting with what, why, how and soon. For example, what are stars?, why day and night alternate? How is rain formed and why the mode of life and activities of human beings vary from place to place? Whenever such questions arise we seek answer to them or we try to find out solutions to them. Seeking answers to questions and finding solutions to the problems have been the basis of human progress. A systematic search for an answer to a question or a solution to a problem is called research.

Actually, research is simply the process of arriving as dependable solution to a problem through the planned and systematic collection, analysis and interpretation of a data. Research is the most important process for advancing knowledge for promoting progress and to enable man to relate more effectively to his environment to accomplish his purpose and to solve his conflicts. Although it is not the only way, it is one of the most effective ways of solving problems.

The term research consists of two words, 'Re'+'Search'. "Re" means again and again and "Search" means to find out something. The following is the process; arbitrary method of seeking answer to questions is based on imagination, blind belief or impression. It is vague and inaccurate. Scientific method is a systematic rational approach to seeking fact.

It is objective, precise and arrives at conclusions on the basis of verifiable evidence.

Hence research is systematic and logical study of an issue problem or phenomenon through scientific method. Following definitions may reveal the proper meaning of the concept of research.

'Research' sounds as if it is something very specialised and difficult to do, far beyond the skills of ordinary people. Scientists and academics do research. Nobel Prize winners do research. You might be surprised to learn that we all do research as part of our everyday activities. We all know how to do research, and you have probably been doing research in one way or another for many years.

'Natural inquiry'- In everyday life, research is simply the process of looking for answers to questions. This kind of research is sometimes called 'natural inquiry'.

a. We experiment with new and different ways of doing things - for example, trying out a new recipe.
b. We collect information about topics in which we are interested; for example, looking in the library for material for an assignment.
c. We test theories and hypotheses - we check to see whether or not the evidence supports our ideas and beliefs. We make guesses about things and then check to see if our guesses are correct.
d. We look for explanations and causes for things we see happening around us.

9.2 The Foundations of Social Research:

The kind of research we do in community services is usually called 'social research'. Social research investigates social phenomena, which include social interactions, social structures, social institutions and how society functions. Social research investigates how human beings interact with each other and how society itself operates.

This is an area of inquiry which has been around for thousands of years in various forms. The traditions of social research we have inherited have their roots in philosophy. The word 'philosophy' is based on a Greek word meaning 'love of knowledge or wisdom'. (The Concise Oxford Dictionary, 1969 p 912).

Philosophy studies the most general and abstract features of the world and the categories within which we think about the world. In philosophy, the concepts that we use to approach the world are themselves the subject of philosophical inquiry. Philosophy asks the 'big' questions about 'the meaning of truth, life, morality and beauty'.

Social research as we know it today originated in France in the 19th century with the work of the 'father of sociology', Auguste Comte, (Holmes, Hughes & Julian 2007 p 7) but various forms of social research seeking knowledge about people and their social lives has been going on for thousands of years.

There are many other cultural approaches to exploring and examining social phenomena, but we will concentrate on Western traditions of thought. Each of the different approaches (or paradigms, or perspectives) in contemporary social research and sociology reflects a different philosophical tradition.

Ancient Greece: In Ancient Greece, philosophers asked questions about the nature of human beings and about the nature of human society. Socrates debated the structure of society. Thales (640 BC - 550 BC) used observation instead of religious beliefs to explain natural events. This was the origin of the empirical rationalist approach to science. Hippocrates (c 450 BC) used experiments to test treatments for various ailments; by 400 BC controlled research using observation and experimentation was beginning to displace religious and supernatural explanations for natural and social phenomena. Many of the methods developed by the Ancient Greek philosophers are still used today. (Sarantakos, 1993, p 2)

The 'Age of Reason': During the 17th and 18th centuries, the 'scientific revolution' throughout Europe increased interest in understanding nature and in seeking patterns and universal 'laws' in the natural world. The same methods of inquiry were applied to seeking similar patterns and regularities in social and economic structures. (Sarantakos, 1993, p 3)

The 'scientific age' - The nineteenth century: By the 19th century social research was used to study social 'problems' such as poverty. The rapid development of the physical sciences, especially physics and chemistry, together with the application of new discoveries to technology, contributed to the Industrial Revolution in the late 18th and early 19th centuries. Social values, attitudes and beliefs changed dramatically, and along with the sweeping social changes which accompanied the Industrial Revolution, a strong belief in the power of science and technology to solve social problems developed.

9.3 Positivism:

This is the school of thought which holds that the highest or only form of knowledge is the description of sensory phenomena. In 1848 Comte introduced his 'positive method' which dominated social research for more than a hundred years. Comte was optimistic about the benefits that science could bring to society and to human affairs. He believed that researchers should seek explanations for social problems in the way society was structured, rather than in theological principles. Previously, social problems such as poverty were believed to be divinely ordained.

The Twentieth Century:

Positivism flourished in Europe and in the USA, where social research became established within the universities from the early 20th century. Until the 1960s, positivist approaches dominated social research. Typical positivist social research used survey methods and experiments directed towards quantifying (measuring) phenomena, using statistics. More recently, other schools of thought which criticize positivism have developed, including.

a. Symbolic interactionism
b. Phenomenology
c. Philosophical hermeneutics
d. Ethnomethodologies
e. Marxism
f. Feminist approaches
g. Action research
h. Interpretive approaches

i. Social constructionism
j. Post modernism (sarantakos, 1993 pp4-6)

The positivist perception of reality, its goals, methods, moral prescriptions and its way of seeing the world have all been criticized. Positivism's rejection of subjective experience and the meanings that we attach to events, experiences and social interactions as proper objects of study is particularly at odds with more recent perspectives in sociology and social research.

9.4 Scientific Method:

All scientists use common methods for their enquiry. All sciences whether natural or social agree up on methods of studying phenomena. But their materials differ. A biologist studying the structure of some flowers, a chemist studying radioactive properties of an element and a sociologist studying crime situation in an urban slum. All follows similar scientific methods of inquiry. But their subjects of study are different. Therefore, they use different techniques of investigation for their study. As their materials are different, their purposes also differ. All of them will observe the phenomenon and analyze them to find out their sequences this is called scientific method. Thus, scientific method is a systematic step-by-step procedure (three steps-observation, hypothesis and verification) following logical process of reasoning.

According to Prof. Morgan "scientific method being highly elastic, can be applicable to all domain of human activity where the discovery of truth is the objective". So the scientific method is means for gaining knowledge of the universe. As Karl Person observed "there is no short-cut to truth, no way to gain a knowledge of the universe expect through the gate way of scientific method". Two elements of scientific method are,

a. **Procedural Components:** Observation, hypothesis and verification are the three procedural components. Observation helps to collect data and help to build hypothesis. The second step is formation of one or more hypotheses. A hypothesis is tentative conclusion. It guides collection of data. The third stage is verification of hypothesis. It is done by analytical tools.
b. **Personal Components:** The researcher needs imagination, analytical ability resourcefulness, skill, capacity to find out the hearts of the problem. Researcher's ability and attitude are more important than the method of approach. Ambitions interest and perseverance are very much required to go on successfully with research. Researcher should have an objective scientific and professional qualification and personal quality and interest.

9.4.1 Meaning and Essentials of Scientific Method:

Scientific method is a way in which one can test opinion, impressions or guess by examining available evidences for and against them. So, it is controlling lot of things and establishing stable belief.

Essentials of scientific method are,

- Scientific method aims at discovering facts.
- It is itself corrective in nature.

- It is itself based on systematic doubts.
- Scientific theories are abstract in nature.

Basis of Scientific Method:

Following are the major basis of scientific method,

a. **Reliance on Empirical Evidence:** Scientific method involves a systematic process. The answer to a question is not decided by intuition or imagination. Relevant data are collected through observation and experimentation. The validity and the reliability of data are checked carefully, and the data are analyzed thoroughly using appropriate methods of analyses.
b. **Use of Concepts:** We use concepts to deal with real facts. Concepts are logical constructs or abstractions created from sense impressions. They are the symbols representing the meaning that we hold.
c. **Commitment to Objectivity:** Objectivity is the hallmark of the scientific method. It means forming a judgment upon facts unbiased by personal impressions. The conclusion should not vary from person to person. It should be same for all persons.
d. **Ethical Neutrality:** Science does not pass normative judgment on facts. It does not say they are good or bad. Science aims nothing but making true and adequate statements about its object.
e. **Generalization:** Scientist tries to find out the commonality of a series of event. They aim at discovering the uniformity. Assumed a discovered uniformity a logical class and it's observed pattern, a descriptive generalization is formulated.
f. **Verifiability:** The findings of a research should be verifiable. Scientist must make know to others, how he arrived at his conclusion. He should thus expose his own methods and conclusions to critical scrutiny. When others test his conclusion under the same conditions, then it is accepted as correct.
g. **Logical Reasoning Process:** The scientist method involves the logical process of reasoning. This reasoning process is used for drawing inference from the finding of a study or for arriving at conclusion. This logical reasoning process consists of induction and deduction.
h. **Induction:** One of the methods of logical reasoning process. The inductive method consists of studying several individual cases drawing a generalization. It involves two processes-observation and generalization. Conclusion from induction method is subjected to further conformation based on more evidence.
i. **Deduction:** Deduction is reasoning from the general to the particular. This reasoning establishes a logical relationship between a minor premise and a conclusion. A major premise is a previously established generalization or assumption. A minor premise is a particular case related to the major premise. The logical relationship of these premise lead to conclusion.

E.g., major premise: - All men are mortal Minor premise: - A is a man Conclusion: - A is mortal.

The logical process of both induction and deduction are useful in research studies. Both are inseparable parts of a system of reasoning. Both processes are often used simultaneously.

9.5 Difficulties in the Use of Scientific Methods in Social Science Research:

Some theorists argue that scientific method is more applicable to physical or natural sciences: and it cannot applicable to social sciences. The following are the major difficulties.

a. Human behavior is different. It's very difficult to categories.
b. When human behavior is studied and analyses by another human, there may be personal problems.
c. Psychological nature of human behavior cannot be measurable.
d. Human behavior is not uniformed and predictable. Uncertainty is existing.
e. Difference in choice and decision.

Meaning and Definition:

Research is an essential and powerful tool in leading man towards progress. Without systematic research there would have been very little progress. John W. Best has rightly said, "The secret of our cultural development has been research, pushing back the areas of ignorance by discovering new truths, which, in turn, lead to better ways of doing things and better products. "Scientific research leads to progress in some field of life. New products, new facts, new concepts and new ways of doing things are being found due to ever-increasing significant research in the physical, the biological, the social and the psychological fields. Research today is no longer confined to the science laboratory.

Meaning of Research:

Word 'Research' means a systematic investigation or activity to gain new knowledge of the already existing facts. Research is a scientific inquiry aimed at learning new facts, testing ideas, etc. It is the systematic collection, analysis and interpretation of data to generate new knowledge and answer a certain question or solve a problem.

Research is an intellectual activity. It is responsible for bringing to light new knowledge. It is also responsible for correcting the present mistakes, removing existing misconceptions and adding new learning to the existing fund of knowledge. Researches are considered as a combination of those activities which are removed from day to day life and are pursued by those persons who are gifted in intellect and sincere in pursuit of knowledge.

But it is not correct to say that the research is restricted to such type of persons, however, it is correct to say that major contribution of research comes from highly gifted and committed workers. Thus, the research is not at all mysterious and is carried on by hundreds of thousands of average individuals. Research is also considered as the application of scientific method in solving the problems. It is a systematic, formal and intensive process of carrying on the scientific method of analysis. There are many ways of obtaining knowledge. They are intuition, revelation, and authority, logical manipulation of basic assumptions, informed guesses, observation, and reasoning by analogy. One of the branches of research known as empirical research is highly goal-oriented technique.

Society is an organized group of persons associated together with shared objective, norms and values pertain to the society. People have social life and social process.

Research is systematic and organized effort to investigate a specific problem that needs a solution. It contributes to the general body of knowledge. It also corrects human knowledge. Social research now can be defined as the systematic and objective analysis and recording of controlled observations that may lead to the development of generalization, principles or theories resulting in prediction and possibly ultimate control of events in society. It attempts to answer or solve social problems.

Definitions of Research: The following are the important definitions of research:

"Research is an endeavor / attempt to discover, develop and verify knowledge. It is an intellectual process that has developed over hundreds of years ever changing in purpose and form and always researching to truth."

J. Francis Rummel

"Research is an honest, exhaustive, intelligent searching for facts and their meanings or implications with reference to a given problem. The product or findings of a given piece of research should be an authentic, verifiable contribution to knowledge in the field studied."

P. M. Cook

"Research may be defined as a method of studying problems whose solutions are to be derived partly or wholly from facts."

W. S. Monroes

"Research is considered to be the more formal, systematic intensive process of carrying on the scientific method of analysis. It involves a more systematic structure of investigation, usually resulting in some sort of formal record of procedures and a report of results or conclusion." John W. Best

"Research comprises defining and redefining problems formulating hypothesis or suggested solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions and at last careful testing the conclusions to determine whether they fit the formulated hypothesis." Clifford Woody

"Research is a systematic effort to gain new knowledge."

Redman & Mori

"Social research may be defined as a scientific undertaking which by means of logical and systematized techniques aims to discover new facts or verify and test old facts, analyses their sequences, interrelationships and casual explanation which were derived within an appropriate theoretical frame of reference, develop new scientific tools, concepts and theories which would facilitate reliable and valid study of human behavior."

P. V. Younge

According to C.A. Moser: “Social research is a systematized investigation to gain new knowledge about social phenomenon and problems."

According to P.V. Young: “Social research is a scientific undertaking which by means of logical methods, aim to discover new facts or old facts and to analyze their sequences, interrelationships, casual explanations and natural laws which govern them."

Characteristics of Social Research:

a. It is directed towards the solution of problems. The ultimate goal is to discover cause-and-effect relationship between social problems.
b. It emphasis the development of generalizations, principles or theories that will be helpful in predicting future occurrences.
c. It is based upon observable experience or empirical evidence.
d. It demands accurate observations and description. Researchers may choose from a variety or no qualitative description of their observations.
e. It involves gathering new data from primary sources or using existence data for new purpose.
f. Although social research activities may at time be somewhat random and unsystematic, it is more often characterized by carefully designed procedure that applies rigorous analysis.
g. It requires expertise. The researcher knows what is already known about the problem and how others have investigated.
h. It strives to the objective and logical applying every possible test to validate the procedure employed, data collected, and conclusion reached.
i. It involves the guests for answer to unsolved problems.
j. It is characterized by patient and unhurried activity. Researcher must expect disappointment and discouragement as they pursue the answer to difficult question.
k. It is carefully recorded and reported. Each important term is defined, limiting factors are recognized, procedures are described in detail, reference are carefully documented, results are objectively recorded, and conclusions are presented with scholarly caution and restraint.
l. It is interdisciplinary in nature.
m. It sometimes requires courage.

Purpose of Research:

The purpose of research is to discover answers to questions through the application of scientific procedure. The main aim of research is to find out the truth which is hidden, and which has not been discovered as yet. Though each research study has its own specific purpose, some general objectives of research below:

a. Research extends knowledge of human beings social life and environment.
b. Research reveals the mysteries of nature.
c. Research establishes generalizations and general laws and contributes to theory building in various fields of knowledge.
d. Research verifies and tests existing facts and theory.
e. Research helps us to improve our knowledge and ability to handle situation.

f. General laws developed through research may enable us to make reliable predictions of events.
g. Research aims to analyze inter-relationship between variables and to derive causal explanations, which help us to better understanding of the world in which we live.
h. Research aims to finding solutions to the problem, e.g.:- socio-economic problems, health problems, organizational and human relational problems and so on...
i. Research also aims at developing new tools, concepts and theories for better understanding to unknown phenomena.
j. Research helps national planning board to focus our national development. It enables the planners to evaluate alternative strategies, on-going programs and evaluation etc.,
k. Research provides functional data for rational decision making and formulation of strategies and policies.
l. Research gains familiarity with a phenomenon or to achieve new insights into it. (Studies with this object in view are termed as exploratory or formative research studies).
m. Research portray accurately the characteristics of a particular individual, situation or a group. (Studies with this object in view are known as descriptive research studies).
n. Research determine the frequency with which something occurs or with which it is associated with something else. (Studies with this object in view are known as diagnostic research studies).
o. Research help to test a hypothesis of a causal relationship between variables. (Such studies are known as hypothesis-testing research studies).

Objectives of Social Research:

a. To facilitate the understanding of human behavior.
b. To acquire knowledge about social phenomena, events, issue, problems etc.
c. To identify functional relationship existing in the social phenomena.
d. To find out the natural laws that regulates or directs social phenomena.
e. To standardize the society concept, e.g., culture, struggle, generation gap, social distance etc.
f. To formulate solution to social problems.
g. To maintain social organization, remove social tension, misconception, etc.
h. To develop social revival plan.

9.6 Some Important Terms and Concepts:

a. **Theory:** A theory is a suggested explanation for something - a ‘guess’ about the way things are, how something works, how things relate to each other. Theories may be simple or complex, formal or informal. They are used to explain or suggest explanations and to make predictions. Research is often carried out to test a particular theory (Sarantakos, 1993 p 9).
b. **Data:** (Singular: datum) this is a Latin word used to refer to ‘bits of information’ or facts, usually things which are observable and measurable. Theories and data are both needed to answer research questions (Concise Oxford Dictionary, 1969 p 309).
c. **Validity:** The extent to which a measure, indicator or method of data collection is sound or true; for example, if a measure such as an IQ test is ‘valid’ then it actually measures ‘intelligence’ (Sarantakos, 1993 pp74-78). If information (data) collected through observation is ‘valid’ then it truly reflects the phenomena observed. Validity refers to the

extent to which your research instruments (for example, questionnaires) collect data which is relevant to your research question or topic; and to the extent to which the data you collect is relevant to your research question or topic. In other words, does the instrument measure what it is intended to measure? Is the information it collects relevant?

d. **Reliability:** This means the extent to which you can trust (rely on) your instruments and your data - is the instrument dependable? Does it give consistent results over a number of trials? (Sarantakos, 1993 pp79-80). A reliable measure is one which gives the same results if the same individuals are measured on more than one occasion. For example, if you want to measure a person's weight, a valid instrument would be a set of scales. If the scales give the same reading for the same person on several occasions (under conditions where the person's weight should not change) then the instrument is also reliable. If you weigh yourself at 10am and the reading is 60 kg, then you weigh yourself again at 11am and the reading is 80kg, again at 1pm and the reading is 50kg, then your instrument (your set of scales) is probably not reliable!
e. **Sampling:** Sampling is how you choose the individuals you will include in your research; a sample is usually smaller than the total population or target group in which you are interested and should represent in some way the characteristics of this total population (Sarantakos, 1993 pp124-150). You will be familiar with the kinds of samples used in everyday life - for example, you might use a selection of small pieces of fabric to choose a covering for a sofa; a selection of small colour cards to choose a colour of paint to repaint the living room; a taste of a food to decide if you like it or not.

The purpose of using a sample in research is to investigate features of the population in greater detail than you could if the total population was used (too time consuming), and to draw inferences about the whole population from what you discover about the sample. For these inferences to be valid, the sample must be representative of the whole population. There are many different sampling techniques to choose from. Random or probability sampling is complex and uses numbers and statistics to ensure that every individual in the population in which you are interested (the sampling frame) has an equal chance of being selected. This is necessary if your research project aims to prove correlations between factors (Sarantakos,1993 p 126).

Non-probability sampling techniques are less complicated, and are often used in qualitative studies (Sarantakos, 1993 pp 137-140). You will need to read more about sampling if you are to make an informed choice about which method of sampling to use.

9.7 Research Process:

The research process- Formal research is planned, methodical and organized. 'A process is a series of linked activities moving from a beginning to an end. The research process is not rigid, but if the first steps are not carried out carefully, all the later steps will be weakened' (Dixon, Bouma & Atkinson, 1987, p 12) At macro level a well-organized research project will follow these steps:

9.7.1 Planning:

Clarify your topic, question or hypothesis; choose an approach; choose the methods you will use to collect and analyse data; decide how to select your sample.

Try to ‘ask the right questions’. Make sure your topic, question or hypothesis is ‘researchable'. Good research questions are:

A Limited in scope, narrow in focus, clearly related to a particular time, place and set of conditions.

An Often smaller fragments of larger questions or issues A Accessible - this means that information relevant to the research question can actually be collected. Usually this means data, which is observable, tangible, and measurable.

Social research cannot answer questions about right and wrong (morality), about beauty or about the truth of beliefs; for example, whether or not God exists or how many angels can dance on the head of a pin.

These are philosophical questions, the subject of speculation rather than of empirical social research. Empirical research can only answer questions about how many people believe God exists; how many and which people think Van Gogh’s paintings are beautiful; or which groups of people believe something such as euthanasia is right or wrong. Remember this when you are planning a research project.

Planning is the most important step in the research process. If you have a good research question, topic or hypothesis, and if you have worked out your research design clearly, you will have a clear plan to follow and all the later steps will be easier.

If you do not plan your research carefully, all the later steps will be difficult. In the planning stage, you should also do a literature search to find any existing research studies which would help you, and to make sure you understand the approaches and methods you plan to use.

9.7.2 Data collection:

This is probably the most active stage in the research process. Before you start collecting data, you need to make sure your data collection instruments (for example, questionnaires, interview schedules or observation checklists) are ready to use. It is a good idea to ‘pilot’ your data collection instrument before you use it, to identify any problems or flaws in it.

This stage can be very time consuming. As well as collecting your data you must also record it, summarize it and put it into some kind of order. You need to consider these issues in the planning stage.

Think about what you will do with all your completed questionnaire forms, or all your interview transcripts or completed observation notes or checklists.

9.7.3 Interpreting, analyzing and reporting:

This is the final stage in the research process. You will need to relate the data you have collected back to your original research question, topic or hypothesis, and draw conclusions about this from your data.

You also need to identify any limitations or problems you encountered and discuss how these affect your results. Your final report may also include recommendations based on what you have discovered, if this is relevant to your original purpose in doing the research. Research process consists of series of actions or steps necessary to effectively carry out research. These actions or steps are;

a. **Formulation of Research Problem:** At the very outset, the researcher must decide the general area of interest or aspect of a subject matter that he would like to inquire into and then research problem should be formulated.
b. **Extensive Literature Survey:** Once the problem is formulated the researcher should undertake extensive literature survey connected with the problem. For this purpose, the abstracting and indexing journals and published or unpublished bibliographies are the first place to go to academic journals, conference proceedings, government reports, books etc. must be tapped depending on the nature of the problem.
c. **Development of Working Hypothesis:** After extensive literature survey, researcher should state in clear terms the working hypothesis or hypotheses. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. It's very important or it provides the focal point for research.
d. **Preparing the Research Design:** After framing hypothesis, we have to prepare a research design i.e. we have to state the conceptual structure within which research would be conducted. The preparation of such a design facilitates research to be as efficient as possible yielding maximal information. In other words, the function of research design is to provide for the collection of relevant evidence with optimum effort, time and expenditure. But how all these can be achieved depends mainly on the research purpose.
e. **Determining Sample Design:** A sample design is a definite plan determined before any data is actually collected for obtaining a sample from a given population.in census inquiry we involve a great deal of time, money and energy so it not possible in practice under many circumstances. Sample designs can be either probability or non-probability. With probability samples each element has a known probability of being included in the sample, but the non-probability samples do not allow the researchers to determine this probability.
f. **Collecting the Data:** There are several ways of collecting the appropriate data which differ considerably in context of cost, time and other resources at the disposal of the researcher. Primary data can be collected either through experiment or through survey. In case of survey, data can be collected by any one or more of the following ways;

   By observation,
   - Through personal interview,
   - Through telephonic interviews,
   - By mailing of questionnaires or
   - Through schedules.

g. **Execution of the Project:** Execution of project is a very important step in the research process. If the execution of the project proceeds on correct lines, the data to be collected would be adequate and dependable. A careful watch should be kept for unanticipated factors in order to keep the survey realistic as much as possible.
h. **Analysis of Data:** The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inference.

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

i. **Hypothesis Testing:** After analyzing the data, the researcher is in a position to test the hypothesis, if any, he had formulated earlier. Do the facts support the hypothesis or they happen to be contrary? This is the usual question which is to be answered by applying various tests like't' test, 'F' test etc. F test have been developed by statisticians for the purpose. Hypothesis testing will result in either accepting the hypothesis or in rejecting it. If the researcher had no hypothesis to start with, generalizations established on the basis of data may be stated.

j. **Generalizations and Interpretation:** If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalization i.e. to build a theory. As a matter of fact, the real value of research lies in its ability to arrive at certain generalizations. If the researcher had no hypothesis to start with, he might seek to explain his findings on the basis of some theory. It is known as interpretation.

k. **Preparation of the Report or the Thesis:** Finally, the researcher has to prepare the report of what has been done by him. The layout of the report should be as follows; the preliminary pages, the main text and end matter.

The preliminary pages carry title, acknowledgements and forward and then index.

The main text of the report should have introduction, review of literature and methodology.

Criteria of Good Research:

One expects scientific research to satisfy the following criteria:

a. The purpose of the research should be clearly defined and common concepts be used.
b. The research procedure used should be described in sufficient detail to permit another researcher to repeat the researcher for further advancement, keeping the continuity of what has already been attained.
c. The procedural design of the research should be carefully planned to yield results that are as objective as possible.
d. The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.
e. The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.
f. Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.
g. Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

9.8 Phases of Social Research (S.R.):

Phases of social research consist of a series of steps necessary to efficiently carry out research on any social phenomena.

These actions are closely related. They can be overlapped. Phases of S.R. basically refer to scientific research process.

There are nine phases of social research.

a. **Sensing or realizing problem:** The first step in SR process is observing the situation and sensing problem. New problems keep on emerging in the social environment. One should sense these development origins in the environment. At this stage, one may not know exactly what is happening but one can definitely sense that things are not going smoothly as they should be.
b. **Problem identification:** Once one become aware of what is happening in the environment, he/she would then focus on the problem. The researcher singles out the problem for the study, i.e. what exactly are the problems in the situation. It is thus, problem-defining stage. Without a focused definition of problem, data tends to be irrelevant, expensive and confusing. Research problem should be specific.
c. **Theoretical Framework:** Once the problem is identified, the researcher carefully studies the earlier studies, if any which are similar to the study in hand. It helps to integrate information locally so that reason for the problem can be conceptualized. This helps to develop theoretical framework. This step essentially involves a review of related literature. It familiarizes the researcher with what is already known and what is still unknown and untested.
d. **Hypothesis Formulation:** After developing theoretical framework, the researcher develops hypothesis. It is drawn from the theoretical framework. A hypothesis is a tentative answer to question. It is an educated guess. It is generally based upon prior research. It is subjected to the process of verification or disconfirmation. Hypothesis is conjectured relationship between two or more variables expressed in the form of testable statements.
e. **Research Design:** It is the plan, structure and strategy for conducting research. It describes the general framework for collecting, analyzing and evaluating data. It helps to obtain answer to research questions and to control variance. It enables the researcher to answer research questions to validity, objectively, accurately and economically as possible. Design should be carefully worked out to yield dependable and valid answer to the research questions.
f. **Collection of Data:** At this stage, the researcher has to collect data as expected. Data can be obtained from primary source or secondary source. Questionnaire, interview, observation are major instruments to collect data. This step is also called fieldwork because researcher has to visit field for administering the research instruments to collect data.
g. **Data Analysis:** It is statistical analysis that has been collected, edited, coded and tabulated. In other words, data analysis means the categorizing, ordering, manipulating and summarizing of data to obtain answer to research's question. Its purpose is to reduce data to intelligible and interpretable form so that elations of research problem can be studied and tested. Different statistical techniques are used at this stage.

h. **Interpretation and Generalization:** Interpretation takes the result of data analysis, makes inference pertinent to the research relation studied and draws conclusion about the relations. Generalization is the act of giving general form to these conclusions.
i. **Report Preparation:** Finally, the researcher has to prepare the report of his/her research. Its objective is to tell readers the problems investigated, the method used to solve problems, result of the investigation and the conclusion from the result.

9.9 Types of Social Research:

Quantitative research - Based on positivist principles, quantitative research applies strict standards of research design and seeks quantitative data (numbers, quantities); uses measurement and statistical analysis; often aims to establish cause-effect relationships or correlations between variables (see the notes on the Scientific Model of research). Quantitative research includes any research method which results in data being expressed in numerical form (Sarantakos, 1993 p 6).

a. **Qualitative Research:** Includes several different approaches based on a range of different theories. Qualitative research often aims to explore social relationships and to describe people's experiences, perceptions and interpretations of events. Qualitative research includes any research in which researchers use skills as empathetic interviewers or observers to collect unique data rich in depth and detail such as narratives and descriptions of experiences. (Sarantakos, 1993 p 6)
b. **Applied Research:** Research used to examine social and policy issues and to address specific problems; includes social impact studies, action research and evaluation research (Sarantakos, 1993 p 6).
c. **Longitudinal Research:** Studies carried out over time, usually examining changes in a particular population or in a particular social issue over a long period of time; for example, following the health status of a particular population over many years. (Sarantakos, 1993 p 6)
d. **Descriptive Research:** Often used for preliminary studies; aims to describe social systems, social relations or events and to give background information about social issues (Sarantakos, 1993 p 7).
e. **Classification Research:** Aims to categories things and demonstrate differences between classes or categories, explain or clarify social events or relationships; for example, ranking social groups according to their attitudes; grouping people according to their political preferences.
   This kind of research includes social surveys (Sarantakos, 1993, p 7).
f. **Comparative Research:** Comparative research aims to identify similarities and differences between social units; for example, examining the differences between Australian and British families (Sarantakos, 1993 p 7).
g. **Exploratory Research:** Usually undertaken when there is not enough information available about a particular phenomenon, topic or social issue. Exploratory research may be used as the base for further research; it may be used to define concepts, formulate hypotheses, or operationalize variables before conducting research using the scientific model (Sarantakos, 1993 p 7).
h. **Explanatory Research:** Explanatory research aims to explain social relationships and events, to link various factors together, or to test theories (Sarantakos, 1993 p 7).

i. **Action Research:** 'The application of fact finding to practical problem solving in a social situation with a view to improving the quality of action within it, involving the collaboration and co-operation of researchers, practitioners and laymen' (Burns, 1990, p 252). Action research criticizes the theoretical and methodological basis of conventional social research and is a popular approach in research in community services.

There are varieties of ways through which we may classify it into different categories.

A. On the Basis of Nature of Information: On the basis of nature of information, we can classify the research into two types.

a. Qualitative Research: When information is in the form of qualitative data.
b. Quantitative Research: When information is in the form of quantitative data.

B. On the Basis of Utility of Content or Nature of Subject Matter of Research: On the basis of these criteria, we can categorize the research into two categories.

a. Basic/ Fundamental /pure or Theoretical Research: Its utility is universal.
b. Experimental or Applied Research: Its utility is limited.

C. On the Basis of Approach of Research: We may classify research into two different categories.

a. Longitudinal Research: Examples of this category are historical, Case study and Genetic research.
b. Cross-Sectional Research: Examples of this category are. Experimental and Survey Research.

D. On the Basis of Method of Research: On the basis of research method, we may classify a research into five different categories.

a. Philosophical Research: It is purely qualitative in nature and we are focusing on the vision of others on the content of research.
b. Historical Research: It is both qualitative as well as quantitative in nature and deals with past events.
c. Survey Research: It deals with present events and is quantitative in nature. It may further be sub-divided into; discretional, correlational, and exploratory type of research.
d. Experimental Research: This is purely quantitative in nature and deals with future events.
e. Case-Study Research: It deals with unusual events. It may be qualitative as well as quantitative in nature depending upon the content.

***i-Basic Research*:** It is also called fundamental research. It is undertaken to improve our understanding of certain problems that commonly occur in social setting and how to solve them. It undertaken for sole purpose of adding to our knowledge that is fundamental and generalizable. This type of research may have no immediate or planned application. But it may later use in further research of an applied nature.

Its objective is therefore, is not apply the findings to solve immediate problems at hand, rather to understand more about certain phenomena or problem that occur in social life or settings, and how they can be solved. It contributes to theory formation. This research work of professors, scholars and other researchers devoted to generate new knowledge in particular area of their interest can be called fundamental research. Basic research is essentially positive. It explains the phenomena as they are and as not they should be. It may verify or establish new one. It is an intellectual exercise.

***4-Applied Research*:** It is also called action or decisional research. It is undertaken in response to a social problem, which requires a solution. Its major purpose is to answer practical and useful question. The results are practically applied to solve immediate problems. It involves normative prescription. As applied research id concerned with knowledge that has immediate application. It is also called decisional research.

Differences between Basic and Applied Research:

Differences	Basic Research	Applied Research
Purpose	Its purpose is to add human knowledge.	Its purpose is to answer practical question
Nature	Knowledge or findings is fundamental and generalizable.	It is applied and more specific (practical).
Time scale	(Theoretical).	Tight time scale.
Outcomes	Flexible time scale. It results in universal. Principles relating to the process and its relationship to outcomes.	It results in solution to problem.
Ability to solve Problem	It doesn't solve Immediate problem in hand.	It has immediate Application.

9.10 Historical Research Method:

History is the record of the changing processes. History consists of changes which social structures undergo. Social scientists studies the past to gain a better understanding of the present state of affairs. History is the meaningful record of man's achievement.

It is not merely a list of characteristics of chronological events, but an integrated account of the relationship between persons, events, times and places.

John W. Best, "Man uses history to understand the past, and try to understand the present in the light of past events and developments." F.N. Kerlinger, "Historical research is the application of the scientific method of inquiry to historical problems."

Whitney, "Historical research deals with the past experiences....its aim is to apply the method of reflective thinking of social problems, still unsolved, by means of discovery of past trends of event, fact and attitude. It traces the lines of development in human thought and action in order to reach some basis for social activity."

Redcliff Browne, "Historical method may be defined as a system in which present day events are studied with reference to the events that took place in the past."

Historical method seeks to find explanation of questions of current interest by an intensive study of the past. Many studies in the field of economics, politics, sociology, education and psychology are essentially historical in approach.

Purpose of Historical Research:

a. Historical researches provide important information concerning the effects of certain past practices and may suggest plans for future actions.
b. It also offers explanation of the how and why of many of the theories and practices that has developed and now prevails in the school/college.
c. It contributes to an understanding of the significance of the phenomenon studied.
d. It helps to gain an accurate account of the past.
e. It helps to gain a clear perspective of the present.

Sources of Historical Research:

There are many sources for collection of historical data like; Autobiographies, Diaries, Confessions, Memories, Personal letters, Accessible documents, news-papers and literature, books and Magazines, Cultural and Analytical history material, Artistic materials, historical paintings, Portraits, charts etc. These sources can be divided into two categories i.e., Primary sources and Secondary sources.

Primary Sources:

The original documents are termed as Primary sources. These are solid basis of historical research and are highly prized by a historian.

According to Kerlinger, "A primary source is the only repository of an historical datum, like an original record kept of an important occasion, an eye witness description of an event, a photograph, minutes of organization meeting and so on."

a. **Document or Records:** These are maintained and written by actual participant or witness of an event. These sources are produced for the purpose of transmitting information to be used in the future. Documents classified as primary sources are constitution, charters, laws, court decisions, diaries, deeds, genealogies, contracts, wills, autobiographies, letters, official minutes or records, permits, licenses, affidavits, depositions, declarations, proclamations certificates, lists, bills, handbills, receipts, newspapers, magazines, accounts, maps, diagrams, books, pamphlets, catalogues, films, pictures, paintings, recordings, transcriptions and research reports.

b. **Remains or Relics:** These are associated with a person, group, period, fossils, skeletons, tools, weapons, food utensils, clothing, buildings, furniture, coins, art objects, pictures and paintings are examples of relics.
c. **Oral Testimony:** These are spoken account of witness or participant in an event. It is obtained in a personal interview. It may be recorded or transcript as the witness relates his experiences.

Secondary Sources of Data:

In the words of Kerlinger, "A secondary source is an account or record of an historical event or circumstance one or more steps removed from an original history." Secondary sources are the reports of a person who relates the testimony of actual witness of, or participant in an event. The writer of the secondary source who was not on the scene of the event, merely reports what the person who was there said or wrote. Most history books and encyclopedias are the examples of secondary source.

Characteristics of Historical Method:

a. Historical method is universal.
b. Historical method involves very deep and intensive investigation of material that already exists.
c. Historical facts cannot be repeated in an accurate fashion as can be done in laboratory observation.
d. Only such problems which are based on historical records can be investigated by following this approach.
e. Historical approach to research is the application of scientific method to historical problems.
f. In Historical Method hypothesis may or may not be formulated depending upon the nature of the research.
g. The interpretation of data entirely depends upon the topic of research.

Approaches to Historical Research:

a. Perspective Approach: It means to study the events from the past towards present. It is ancient approach. Ancient approach was to study the political personality approach.
b. Retrospective Approach: It means to study the events of present and proceed to past events. It is a recent approach to study the phenomena in social milieu.

Types of Historical Research:

a. Approach: An example is the pragmatic approach used by Karl max to arrange facts of history to support his concept of socialism.
b. Subject: It includes the bibliography of a given person, monography of a town, state, nation or civilization or slightly higher level the history of ideas, institutions, or trends.
c. Technique: It is based either on documents or relics.
d. Classical studies
e. Documentary research: It considers only documents.
f. Bibliographical research:

g. It includes history of a unit. (Nation, person, culture)
h. Legal Research

The Steps of Historical Research:

a. Identification and Definition of the Problem: It involves not only the location of the problem, which has a historical significance, but also the availability of adequate data.
b. Collection of Data: It may involve anything from digging up ancient ruins to stumbling on old documents or remains. Most educational data have to be gathered in the routine fashion by giving minutes of meetings, diaries etc. Data are collected by two sources: primary or secondary.
c. Criticism of Data: The establishment of the validity of data involves a dual process, of first establishing the authenticity of the sources and then the validity of its content.
d. Interpretation of Data: This should be made from the standpoint of a hypothesis or theory of the data. Data should be considered in relation to one another and synthesized into a generalization or conclusion which places the overall significance in focus.

Limitations of Historical Research:

a. It is very difficult to study historical events on the basis of cause-effect relationship.
b. Many obstacles hinder the objectivity of the study.
c. The investigator must have a special historical perspective.
d. The importance of historical research has declined due to use of scientific method in social sciences.

Guidelines of Historical Research:

a. Primary sources should be used as extensively as possible.
b. Personal bias should not be allowed to influence research procedure.
c. Proper recognition should be given to the inter-relationship of education with other social institutions and forces.
d. Words and expressions should be interpreted in the light of their usages in earlier times.
e. Various facts should be synthesized and integrated into meaningful generalization.
f. Significant facts must be distinguished from trivial facts in a situation.

9.11 References:

1. Burns, R.B 1994 Introduction to Research Methods, Second Edition, Longman Cheshire, Melbourne
2. Holmes, D, Hughes, K, Julian R, 2007 Australian Sociology: A changing society, second edition, Pearson Education Australia, French's Forest
3. Sarantakos, S 1993 Social Research, Macmillan Education Australia, South Melbourne
4. Abercrombie, N, Hill, S; & Turner, B 1984 the Penguin Dictionary of Sociology, Penguin Books, Harmondsworth
5. Burns, R 1994 Introduction to Research Methods, Longman Cheshire, Melbourne
6. Holmes, D Hughes, K & Julian, R 2007 Australian Sociology: A changing society, Pearson Education Australia, French's Forest
7. Sarantakos, S 1993 Social Research, Macmillan Education, South Melbourne

ISBN: 978-81-948755-8-1

10. Concept in Social Research – Hypothesis

Jivika Shivaji Chavan

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Anamika Delip Utekar

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Chandrakant Govind Gojegave

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

10.1 Introduction:

There are many different reasons for carrying out social research and many different kinds of social research. The reason for researching a particular topic will determine the kind of research and the approach used. The purpose of much social research is to address a social issue or problem of some kind; and there are many more specific reasons for doing research, each of which influences the approach taken and the kind of research done. When you are planning a research project it is very important to clarify why the research is being done; this is an essential first step. The purpose of your research will determine the methods that you choose and the perspective or approach that you take.

10.2 Some Common Reasons for Doing Social Research:

10.2.1 To Make Comparisons:

Sometimes social research is done to compare the characteristics or behaviours of different groups; for example, comparing the health problems of different populations. In this kind of research, the aim is often to make links between variables in order to examine differences, using scientific methods and experimental designs. (Sarantakos, 1993 p 7)

Problems:

- Experimental designs are hard to apply to social phenomena. It is difficult to control variables in the ‘real’ world outside a laboratory.

- This kind of research needs expertise in statistical testing of results.
- This kind of research often overlooks or leaves out variables other than those being studied and so may not include the full picture.
- This kind of research cannot be completely objective and value free. The choice of what to research implies a set of values.
- If this approach is used to study social groups or particular categories of people (for example, ethnic groups) it may lead to stereotyping.
- Because of its empirical basis, it excludes subjective experience.
- There are many ethical issues in using humans as experimental subjects.

10.2.2 To Discover or Explore:

This kind of research aims to understand the incidence, development and interpretation of social phenomena; for example, to explore the rise and decline of a particular sub-culture such as punk rock; or to explore the extent of drug use within a particular age group; or to trace the development of a new political movement. This kind of research is often done in response to the emergence of new social phenomena; for example, to examine the impact of new technology such as mobile phones. (Sarantakos, 1993 p 7)

Problems:

- This kind of research is usually an exploratory exercise, so results may not be conclusive or meaningful.
- This kind of research often uses raw data and simple methods of analysis and may lack depth.
- Sampling techniques tend to be non-probability and may lead to biased results.
- The motivation for this kind of research may be to push a particular point of view.
- This kind of research also has an empirical basis, and may overlook other perspectives and leave out subjective data.

10.2.3 To Study Social Changes:

Social research is often done to examine how a particular community changes over time or to examine the impact of new social phenomena on a particular target group; for example, tracing the changes to cultural traditions in a migrant community over two or more generations; examining the impact of petrol sniffing on a remote population. (Sarantakos, 1993 p 7)

Problems:

This kind of research is similar to exploratory research and has similar problems:

- Uses raw data and simple methods of analysis.
- Raises ethical issues - for example, what to do about the ‘problem’ after the research is completed.
- By targeting specific groups, it can contribute to marginalizing them
- It is generally done with the assumption that there is a problem, so it can encourage negative views and stereotyping.

10.2.4 To Inform Policy Development and Planning:

A lot of social research is done to develop policies and plan services. This kind of research is usually carried out by or for an organisation and examines trends and patterns of social behaviour and social phenomena as part of a planning process. For example, this kind of research may examine trends in cigarette smoking, use of alcohol, or patterns of exercise in a population in order to develop policies and services to address health issues.

Problems:

- The research often comes too late to prevent serious problems - it is often done after the problem has developed.
- Results may not be accurate - trends and patterns are often identified by a 'best guess'.
- It may take years for trends to emerge, so this kind of research can take a long time.
- Political and economic expediency may compromise results.
- This kind of research often uses census methods to collect data and there is often resistance to disclosing information.

10.2.5 To Analyse and Criticize:

Social research is sometimes done in order to criticize the results of someone else's research or to examine the legitimacy of someone else's research.

Problems:

- Results and findings may be taken out of context.
- The researcher often has his or her own agenda - for example, may wish to discredit someone else's research (this is common in academia!)

10.2.6 To Conduct Social Experiments:

This kind of research is often undertaken to examine the impact of a particular service, program or intervention on a particular target group, or to study the effects of a particular social 'problem' on an identified population. In this kind of research, the program or intervention is delivered, and its effects are examined.

Problems:

- This kind of research often focuses on a very narrow range of variables and may miss important factors.
- Usually large scale and requires extensive, complex statistical testing of results.
- Often uses experimental designs and encounters all the problems of using experimental designs outside a controlled environment and with human subjects.
- May be affected by the 'Hawthorn effect' (the impact of being studied on the subject of study - for example, if people know they are part of a research project or experiment, and they know they are being studied, this changes their behaviour)

- If a control group and an experimental group are used, this can raise serious ethical issues - for example, denying the control group access to a treatment or program which may benefit them.
- this kind of research is also empirically based and may overlook other perspectives and leave out subjective experience.

10.2.7 To provide evidence that a social injustice is occurring:

This kind of research has an explicit values base and seeks to find data to support claims that an injustice is being done or that a particular group is being treated unfairly.

Problems:

- Underlying ideological factors may distort the results; that is, the researcher may only look for data which supports his or her point of view.
- there can be confidentiality issues if identifying information is included in data to add credibility.
- even if subjects' personal details are disguised, workers and others who know the subjects may be able to work out who they are.
- There are issues about informed consent - subjects may not be able to anticipate all the consequences of participating in the study.

10.2.8 To Evaluate Services and Assess Needs:

Research is often done to evaluate the effectiveness of services and programs, to review progress and achievements, or to explore and identify the service needs of particular client groups or communities.

10.3 Hypothesis Meaning:

The word hypothesis consists of two words -Hypo+Thesis. 'Hypo' means tentative or subject to the verification. 'Thesis' means statement about solution of the problem. Thus, the literal meaning of the term hypothesis is a tentative statement about the solution of the problem. Hypothesis offers a solution of the problem that is to be verified empirically and based on some rationale. Again, 'hypo' means the composition of two or more variables which are to be verified and 'thesis' means position of these variables in the specific frame of reference.

The word hypothesis is a compound of two words 'hypo' and 'thesis' where 'hypo' means under and 'thesis ' means reason or rational view. Thus, hypothesis is a below reasoned view. It is a view, which is not fully reasoned. In social research and other research, hypothesis is used to mean a statement about the relationship, which helps to be investigated.

Definitions of Hypothesis:

According to F.N. Kerlinger, "Hypothesis is the most powerful tool man has invented to achieve dependable knowledge".

According to G.A. Lundberg:

“A hypothesis is a tentative generalization the validity of which remains to be tested. It may be any hunch, imaginative idea or intuition whatsoever, which becomes the basis of action or investigation."

According to W. Goode and P.K. Hatt: -

“A hypothesis is a proposition, which can be put to test to determine its validity. It may seem contrary to, or in accordance with common sense."

"Any supposition which we make in order to endeavor to deduce conclusions in accordance with facts which are known to be real under the idea that if the conclusions to which the hypothesis leads are known truths, the hypothesis itself either must be or at least likely to be true." **J. S. Mill.**

"It is a shrewd guess or inference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigation." **John W. Best**

"A hypothesis is a statement temporarily accepted as true in the light of what is, at the time, known about a phenomenon, and it is employed as a basis for action in the search for new, truth, when the hypothesis is fully established, it may take the form of facts, principles and theories. “**Barr and Scates.**

"Hypothesis is an assumption whose testability is to be tested on the basis of the compatibility of its implications with empirical evidence and previous knowledge." **Gorge J. Mouly.**

Once the problem to be answer is defined, the researcher formulates theory. Theory formulation leads to hypothesis formulation. Data collection and analysis revolve around the hypothesis, when hypothesis comes to be true, it originates theory. Hypothesis is an educated guess about a problem’s solution. It shows the relation between two or more variables, which need to be investigated for the truth. Non-hypothesis can be defined as logically conjectured relationship between two or more variables in testable statements. Hypothesis is always presented in declarative sentence form. They can be general or specific.

10.3.1 Nature of Hypothesis:

a. Conceptual: Some kind of conceptual elements in the framework are involved in a hypothesis.
b. Verbal statement in a declarative form: It is a verbal expression of ideas and concepts. It is not merely mental idea but in the verbal form, the idea is ready enough for empirical verification.
c. It represents the tentative relationship between two or more variables.
d. Forward or future oriented: A hypothesis is future-oriented. It relates to the future verification not the past facts and information.
e. Pivot of a scientific research: All research activities are designed for verification of hypothesis.

10.3.2 Functions of Hypothesis:

H.H. Mc Ashan has mentioned the following functions of hypothesis;

a. It is a temporary solution of a problem concerning with some truth which enables an investigator to start his research works.
b. It offers a basis in establishing the specifics what to study for and may provide possible solutions to the problem.
c. It may lead to formulate another hypothesis.
d. A preliminary hypothesis may take the shape of final hypothesis.
e. Each hypothesis provides the investigator with definite statement which may be objectively tested and accepted or rejected and leads for interpreting results and drawing conclusions that is related to original purpose.
f. It delimits field of the investigation.
g. It sensitizes the researcher so that he should work selectively and have very realistic approach to the problem.
h. It offers the simple means for collecting evidences for verification.

10.3.3 Importance of a Hypothesis:

a. Investigator's eyes: Carter V. Good thinks that by guiding the investigator in further investigation hypothesis serves as the investigator's eyes in seeking answers to tentatively adopted generalization.
b. Focuses research: Without hypothesis, a research is unfocussed research and remains like a random empirical wandering. Hypothesis serves as necessary link between theory and the investigation.
c. Clear and specific goals: A well thought out set of hypothesis places clear and specific goals before the research worker and provides him with a basis for selecting sample and research procedure to meet these goals.
d. Links together: According to Barr and Scates, "It serves the important function of linking together related facts and information and organizing them into wholes."
e. Prevents blind research: In the words of P.V. Young, "The use of hypothesis prevents a blind search and indiscriminate gathering of masses of data which may later prove irrelevant to the problem under study."
f. Guiding Light: "A hypothesis serves as powerful beacon that lights the way for the research work."
g. It provides direction to research and prevent the review of irrelevant literature and the collection of useful or excess data.
h. It sensitizes the investigator certain aspects of situation which are irrelevant from the standpoint of problem at hand.
i. It enables the investigator to understand with greater clarity his problem and its ramification.
j. It is an indispensible research instrument, for it builds a bridge between the problem and the location of empirical evidence that may solve the problem.
k. It provides the investigator with the most efficient instrument for exploring and explaining the unknown facts.
l. It provides a frame work for drawing conclusion.
m. It stimulates the investigator for further research.

10.3.4 Forms of Hypothesis:

According to Bruce W. Tuckman following are the forms of hypothesis;

a. **Question Form:** A hypothesis stated as a question represents the simplest level of empirical observation. It fails to fit most definitions of hypothesis. It frequently appears in the list. There are cases of simple investigation which can be adequately implemented by raising a question, rather than dichotomizing the hypothesis forms into acceptable / reject able categories.
b. **Declarative Statement:** A hypothesis developed as a declarative statement provides an anticipated relationship or difference between variables. Such a hypothesis developer has examined existing evidence which led him to believe that a difference may be anticipated as additional evidence. It is merely a declaration of the independent variables effect on the criterion variable.
c. **Directional Hypothesis:** A directional hypothesis connotes an expected direction in the relationship or difference between variables. This type of hypothesis developer appears more certain of anticipated evidence. If seeking a tenable hypothesis is the general interest of the researcher, this hypothesis is less safe than the others because it reveals two possible conditions. First that the problem of seeking relationship between variables is so obvious that additional evidence is scarcely needed. Secondly, researcher has examined the variables very thoroughly and the available evidence supports the statement of a particular anticipated outcome.
d. **Non -Directional Hypothesis or Null Hypothesis:** This hypothesis is stated in the null form which is an assertion that no relationship or no difference exists between or among the variables. Null hypothesis is a statistical hypothesis testable within the framework of probability theory. It is a non-directional form of hypothesis.

There is a trend to employ or develop null hypothesis in research in most of the disciplines. A null hypothesis tentatively states that on the basis of evidence tested there is no difference. If the null hypothesis is rejected, there is a difference, but we do not know the alternative or the differences. In this the researcher has not to anticipate or give the rational for the declaration or directional form. It does not make researcher biased or prejudiced. He may be objective about the expected outcomes of the research or findings.

Actually, this is a statistical hypothesis which is self- explanatory. Null hypothesis means zero hypotheses. A researcher has not to do anything in developing it. While research hypothesis is second step in the process of reflective thinking.

A null hypothesis in an appropriate form is order to accommodate the object of inquiry for extracting this information. It does not necessarily reflect the expectations of the researcher so much as the utility of the null form as the best fitted to the logic of chance in statistical knowledge or science.

It is the no difference form, i.e., there is no difference or relationship between or among variables under certain conditions.

Statistical tests of significance are used to accept and reject the null hypothesis. If it is rejected, the general hypothesis is accepted.

Non-directional hypothesis is known as null hypothesis because it 'nullifies' the positive argument of the findings or non-directional statement of the generalization. It is also termed as statistical or zero hypothesis because it denies the existence of any systematic principles apart from the effect of chance. It assumes that none or zero difference exists between the two population means or the treatments.

10.3.5 Formulation of Hypothesis:

Formulation of Testable Hypothesis: A hypothesis is a tentative assumption drawn from knowledge and theory. It is used as a guide in the investigation of other facts and theory that are as yet unknown. Its formulation is one of the most difficult and most crucial step in the entire scientific process. A poorly chosen or poorly worded hypothesis can prevent the following:

a. The obtaining of enough pertinent data,
b. The drawing of conclusions and generalizations, and
c. The application of certain statistical measures in the analysis of the result.

Hypothesis is the central core of study that directs the selection of the data to be gathered, the experimental design, the statistical analysis and the conclusions drawn from the study. A study may be devoted to the testing of one major hypothesis, a number of subsidiary hypothesis, or both major and subsidiary hypotheses.

When several hypotheses are used, each should be stated separately in order to anticipate the type of analysis required and in order to definitely accept or reject each hypothesis on its own merit. Irrespective of number or type used each hypothesis should be testable and based upon a logical foundation.

10.3.6 Fundamental Basis of Hypothesis:

The researcher deals with reality on two levels.

a. The Operational Level: On the operational level researcher must define events in observable terms in order to operate with the reality necessary to do researches.
b. The Conceptual Level: On the conceptual level the researcher must define events in terms of underlying communality with other events. Defining at a conceptual level, the researcher can abstract from single specific to general instance and begin to understand how phenomena operate and variables interrelate. The formulation of a hypothesis very frequently requires going from an operational or concrete level to the conceptual or abstract level. This movement to the conceptual level enables the result to be generalized beyond the specific conditions of a particular study and thus to be of wider applicability.

Research requires the ability to move from the operational to the conceptual level and vice-versa. This ability is required not only in constructing experiments but in applying their findings as well.

The process of making conceptual contrasts between operational programmes is called conceptualization or dimensionalization.

10.4 Formulation of Hypothesis:

a. **Deductive Method/Approach/Logic:** The deductive method is one in which the researcher develops hypothesis from theory and design a research strategy to test them. There, hypothesis formulation is preceded by theory formulation. A clear theoretical portion is developed prior to data collection.
b. **Inductive Method/Approach/Logic:** The inductive method is in which the researcher develops hypothesis from specific observation. Here, the researcher first collects data and then develops theory as a result of data analysis. It is based on the principle of developing theory after the data have been collected. The two approaches are closely interlinked. Theory and research go side by side. They have never ending interaction. The deductive approach owes more to positivism and the inductive approach to interpretive. However, such labeling is potentially misleading and of no practical value.

Differences between Deductive and Inductive Method:

Difference	Deductive method	Inductive method
Precedence	It moves from theory to data. It develops hypothesis from theory.	It constructs theory or principle from specific observation. It moves from data to theory.
Data Flexibility	It collects quantative. Data.	It collects qualitative data.
Generalization	It is a highly. Structured approach.	It is a more flexible structured. Approach to permit changes of research emphasis as the research progresses.
Others	It has necessity to collect samples of sufficient size in order to generalize. Conclusions. • It has need to explain causal relationship between variables. • It is application or controls to ensure validity of data. • It is the operationalization of concepts to ensure clarity of definition.	It has less concern with the need to generalize. • It gains an understanding of meanings of human attach to events. • It is a realization that the researcher is a part of the research process. • It is a close understanding of the research context.

Difficulties in the Formulation of Useful Hypothesis: Moving from the operational to the conceptual level and vice -versa is a critical ingredient of the research to demonstration process. The following are the difficulties in the formulation of hypothesis:

a. Absence of knowledge of a clear theoretical framework.
b. Lack of ability to make use of the theoretical framework logically.
c. Lack of acquaintance with available research technique resulting in failure to be able to phrase the hypothesis properly.

10.5 Types or Research Hypothesis:

Null Hypothesis:

Null hypothesis is one, which indicates a definitive exact relationship between two variables. It is so called because this hypothesis usually reflect 'no difference' or 'no effect' situation. It means that there is no difference between two populations in aspect of some property and that the difference if any is only accidental and unimportant. The null hypothesis is akin to the principle that a man is innocent until he is proved guilty. It constitutes a challenge and the function of a research to give facts a chance to reflect this challenge. Example: -There is no difference between male and female in their productivity.

Statistically expressed: Ho: μ1 =μ2
Where,
Ho is null hypothesis.
μ1 is the productivity of male worker.
μ2 is the productivity of female worker.

- **Alternative Hypothesis:** It is opposite of the null hypothesis. The alternative hypothesis is a statement, which expresses a relationship between two variables or indicates difference between groups. It is the statement of acceptance condition for each of the alternative courses of action or solution to problem. Example: male worker will have more productivity than female workers.

  Statistically expressed: H1= μ1 > μ2 Where H1= alternative hypothesis

  μ1 = the productivity of male worker
  μ1 = the productivity of female worker

- **Variables and Their Types:** Variable is a concept which can take on different quantitative values. For example, height, weight, income, age etc. The main focus of the scientific study is to analyse the functional relationship of the variables. A variable is a quantity which can vary from one individual to another. The quantity which can vary from person to person.

"Variable is a property that taken on different value", Kerlinger.

It is any feature or aspect of an event, function or process that, by its presence and nature, affects some other event or process, which is being studied.

a. **Continuous Variable:** It is that which can assume any numerical value within a specific range.

b. **Discrete Variable:** A variable for which the individual values fall on the scale only with distinct gaps is called a discrete variable.
c. **Dependent Variable or Criterion variable:** If one variable depends on or is a consequence of other, it is termed as dependent variable. Criterion variable is the basis on which the effectiveness of the experimental variable is studied.
d. **Independent Variable or Experimental Variable:** The variable that is antecedent to the dependent variable is termed as an independent variable. The variable whose effect is going to be known is known as experimental variable.
e. **Controlled Variable:** The effectiveness of an experimental variable is examined by comparing with other variable, known as controlled variable.
f. **Confounding Variable:** Those aspects of study or sample, that might influence the dependent variable (outcome measures), and whose effect may be confused with the effects of the independent variable. They are of two types: Intervening and extraneous variable.
g. **Intervening Variable:** Intervening Variable: There are a number of abstract variables in educational/social experiments, which intervene the effect of experimental or criterion variable. For controlling intervening variable appropriate research design should be used. Intervening variables are hard if not impossible, to observe because they usually have to do with an individual's feelings like boredom, stress, fatigue, excitement etc. Extraneous variable on the other hand, are more readily observed or measured and thus are more easily controlled.
h. **Extraneous Variable:** Independent variables that are not related to the purpose of the study but may affect the dependent variable are termed as extraneous variables. Suppose the researcher wants to test the hypothesis that there is a relationship between children's gain in social studies achievement and their self-concept. Here self-concept is independent variable and achievement in social study is dependent variable. Intelligence may as well affect the social studies achievement; but since it is not related to the purpose of the study undertaken by the researcher, it will be termed as extraneous variable. Whatever effect is noticed on dependent variable as a result of extraneous variable(s) is technically described as an 'experimental error.'

   A study must always be so designed that the effect upon the dependent variable is attributed entirely to the independent variables and not to some extraneous variable(s). When the dependent variable is not free from the influence of extraneous variable(s), the relationship between the dependent and independent variable is said to be confounded by an extraneous variable(s). Extraneous variable can be controlled by removing the variable causing distraction. It may be eliminated by selecting cases with uniform characteristics and through randomization.

i. **Organismic Variable:** There are some variables which cannot be manipulated. They are accepted by the researcher as they are. They are levels of intelligence, sex, class levels, and the like. The researcher can classify the subjects by sex but he cannot modify to suit his research condition. If a researcher attempts to compare boys and girls on some learning task, any differences might be attributed to sex differences but not necessarily so. The differences between boys and girls could be due to differences in intelligence, training, motivation or a myriad of other conditions present in all human beings and not necessarily to biological differences between sexes. Those variables which cannot be manipulated and cannot themselves point out causal relations are called organismic variables.

ISBN: 978-81-948755-8-1

11. Sampling - Meaning and Definition

Chandrakant Govind Gojegave

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Dipti Nandkishor Hajari

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Anamika Delip Utekar

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

11.1 Introduction:

For studying a social problem, it is difficult to study whole universe of the problem under study. In such a case, sampling has become commonplace idea. A sampling is a small proportion of a population selected for observation and analysis. It is a collection of items or elements from a population. By observing the characteristics of sample, one can make certain inference about the characteristics of the population from it is drawn; the act so involved is called sampling. Sampling can be defined as the selection of some part of an aggregate or totality, the bases of which a judgment or inference about the aggregate or totality is made.

It is the process of obtaining information about an entire population by examining a part of it. Sampling means selecting a given number of subjects from a defined population as representative of that population.

One type of population distinguished by educational researchers is called the target population. By target population distinguished by educational researchers is called the target population. By target population, also called universe, we mean all the members of a real or hypothetical set of people, events or objects to which we wish to generalize the results of our research.

According to F.N. Kerlinger: “Sampling is taking any portion of a population or universe as representative of the population."

According to Y.D. Keskar: “Sampling is the generalization in terms of the whole group through the facts assembled relate to only part of it."

According to P. Y. Young "A statistical sample is a miniature picture or cross -section of the entire group or aggregate from which the sample is taken."

Good and Hatt, "A sample as the name implies, is a smaller representation of a larger whole."

W. G. Cocharn, "In every branch of science we lack the resources, to study more than a fragment of the phenomenon that might advance our knowledge." i.e., fragment is sample, and phenomenon is population. The sample observations are applied to the phenomenon i.e., generalization.

David S. Fox, "In the social sciences, it is not possible to collect data from every respondent relevant to our study but only from some fractional part of the respondents. The process of selecting the fractional part is called sampling."

Virtually every research study uses sampling method of some kind to generalize about population. It is deliberate rather than haphazard.

11.2 Sampling Terms / Concepts:

A survey may be conducted by either of two methods.

A. **Census Method:** It deals with the investigation of the entire population. Here the data are collected for each and every unit of the universe. This method provides more accurate and exact information as no unit is left out.
B. **Sampling Method:** Here a small group is selected as representative of the whole universe. It works with the objective to obtain accurate and reliable information about the universe with minimum of cost, time and energy and to set out the limits of accuracy of such estimates. It makes exhaustive and intensive study possible with much less time, money and material. It's more popular in research work.

Population:

Population or universe means, the entire mass of observations, which is the parent group from which a sample is to be formed. The term population or universe conveys a different meaning than a traditional one. In census survey, the count of individuals (men, women and children) is known as population. But in Research Methodology population means characteristics of a specific group. For example secondary school teachers of, who have some specific features like teaching experience, teaching attitudes etc.

a. **Element**: It is unit about which information is sought. E.g. individuals, products, stores, companies etc.
b. **Population:** It is also called universe. It is the aggregate of all elements defined prior to the selection of sample. Population can be finite or infinite.
c. **Sampling unit:** It is the element available for selection at some stage of the sampling process. E.g. female 18-50 yrs.
d. **Sampling frame:** It is the list of all sampling units available for selection from the population. A frame must a class list, list of registered voters, list of students and so on.

e. **Sample size:** It states how many to be surveyed. E.g. should 50 or 60 students be interviewed?

Need of Sampling:

a. Economy of time.
b. Economy of money.
c. True detailed knowledge.
d. Utility in experimental study.
e. It has reliability because it is based on probability theory.

Essentials of an Ideal Sample:

a. Homogeneity: The units included in sample must be as likeness with other units.
b. Adequacy: A sample having 10% of the whole data is adequate.
c. Independence: Every unit should be free to be included in the sample.
d. Representativeness; an ideal sample must be such that it represents the whole data adequately.
e. In the number of units included in a sample should be sufficient to enable derivation of conclusions applicable to the whole data.
f. Economical in terms of time and money.

Characteristics of Good Sampling:

a. A sample should be representative of the whole population.
b. A sample should be independent i.e. interchangeability of units. Each unit should be free to include in the sample.
c. The size of the sample should be adequate to generalize conclusions to the whole population.
d. A sample should be free from prejudice and bias.
e. A sample should be in coeternity with the objective of the study.
f. The units included in the sample should be homogenous.
g. Sampling should result in small sampling error.
h. Sampling should be economy in terms of time, cost and effort.
i. Sampling should have scientific base.
j. The population is known as aggregate of certain properties and sample is called sub-aggregate of the universe.
k. A good sample is free from bias; the sample does not permit prejudices, the learning and pre-conception, imaginations of the investigator to influence its choice.
l. A good sample is an objective one; it refers objectivity in selecting procedure or absence of subjective elements from the situation.
m. A good sample maintains accuracy. It yields an accurate estimates or statistics and does not involve errors.
n. A good sample is comprehensive in nature. This feature of a closely linked with true-representativeness. Comprehensiveness is a quality of a sample which is controlled by specific purpose of the investigation. A sample may be comprehensive in traits but may not be a good representative of the population.
o. A good sample has the practicability for research.

Benefits of Sampling:

a. Sample saves money. It is less expensive.
b. Sampling saves time because observing the characteristics of the sample takes lesser time than that of observing the whole population.
c. Sampling may be more accurate. It enables more accurate measurements for a sample study because it is generally conducted by a trained and experienced investigator.
d. Sampling remains only choice when the population contains infinitely many members.
e. A sample is better in the event that the study result in the destruction or contamination of the element sampled.
f. More coverage is possible with efficient management.
g. It becomes easy to establish report with the information. It facilitates collection of information from them.
h. The process of sampling makes it possible to draw valid.
i. inferences or generalization on the basis of large observation of
j. Variables within a relatively small proportion of the population.
k. More intense study is possible, and it increases administrative convenience.
l. It has a greater speed in conducting a research work.
m. According to W.G. Cocharan, "It has greater precision and accuracy in the observation". Has a greater adaptability and it is an economical technique.
n. It has high speed for generalization.
o. It has a greater scope in the field of research it reduces the cost of observation or data collection.

Limitations of Sampling:

a. Due to human involvement, there could be human bias and subjectivity in the sample itself. It could lead to wrong and misleading result.
b. Its phenomena are complex in nature, the selection or sample becomes more difficult. It is difficult to pick two similar situations, institutions or individuals for sample picking.
c. If the sample units are not homogenous, the sample technique will become more hazardous and unscientific.
d. The sampling technique becomes scientific only when it is done by specialized investigator.
e. There is difficult in selecting representative.
f. There is difficult in sticking to samples.
g. When the characteristics to be measured occur in rare conditions, sampling will not give statistically reliable information about it.
h. Scope of biasness. (Less accuracy)
i. Problem of representative Sample-Difficulty in selecting a truly representative sample.
j. Need of eligible researchers.
k. Instability of sample subjects or changeability of units i.e. in heterogeneous population.
l. There are certain situations where sampling is possible.

Sampling Design:

Sampling designs means the joint procedure of selection and estimation. Sampling is a part of the strategy of research. Sampling should be such that the error of estimation is minimum.

A sample design is a definite plan for obtaining a sample from a given population. It refers to the procedure the researcher will adopt in selecting items from the sample. It is designed before data collection. In designing a sample, the researcher must consider three things: sampling frame, selection of sampling items and sample size. The basic components of a sample design are:

A. Choosing the sample units (who are to be surveyed)
B. Choosing the sample size (how many to be surveyed)
C. Choosing the sample procedure (how to ensure that those who are to be interviewed are included in the sample)
D. Choosing the media (how to reach respondents in the sample-through mail survey, personal interview, telephone interview.)

E. Types of Sampling Designs/Methods of Sampling

A Probability Sampling	B Non-Probability Sampling
A 1 Random Sampling	B-1 Incidental or Accidental Sampling
A-2 Systematic Sampling	B-2 Judgment Sampling
A-3 Stratified Sampling	B- 3 Purposive Sampling
A-4 Multistage Sampling	B- 3 Purposive Sampling
A-5 Purposive Sampling A-6 Cluster Sampling A-7 Multiple Sampling or Double Sampling	

11.3 Types of Sampling:

- Probability sampling
- Non-probability sampling

11.3.1. Probability Sampling:

In it, each item or element in universe has equal chance of being selected. It is called random/chance sampling. Each element of the population has known chance of being selected for the sample.

The sampling is done by mathematical decision rules that leave no discretion to the researcher or field interviewer. G.C. Halmstadter, "A probability sample is one that has been used selected in such a way that every element chosen has a known probability of being included." Four main types of probability sampling are:

A. Simple Random Sampling:

In it, the individual observation or individuals are chosen in such a way that each has chance of being selected, and each choice is independent of any other choice. This is used only in those studies where entire population can be listed that are finite population. Example: - If we wished to draw a sample of 50 individuals from a population of 600 students in a college, we can use simple random sampling.

It is one in which each element of the population has an equal and independent chance of being included in the sample i.e. a sample selected by randomization method is known as simple random sample and this technique is simple randomizing.

Randomization Is Done by Using the Following Techniques:

a. Tossing a coin
b. Throwing a dice
c. Lottery method
d. blind folded method
e. Tippett's table method

Merits of Randomization:

a. It requires the minimum knowledge of population.
b. It is free from subjectivity and free from personal error.
c. It provides appropriate data for one's purpose.
d. The observations of the sample can be used for inferential purpose.

Demerits of Randomization:

a. It cannot ensure the representativeness of a sample.
b. It does not use the knowledge about the population.
c. Its inferential accuracy depends upon the size of the sample.

B. Systematic Random Sampling or Systematic Sampling:

It consists of the selection of each nth term from a list. First, the item is randomly selected and then a sample item at every nth interval is selected. It is simplest and widely used method of drawing sample. It is used when population size is large and when it became very tiresome to use table of random number to select a sample. Systematic sampling is an improvement over the simple random sampling. This method requires the complete information about the population. There should be a list of information of all the individuals of the population in any systematic way. Now we decide the size of the sample:

Let the size of sample is = n and population size is = N

Now we select each N/n individual from the list and thus we have the desired size of sample which is known as systematic sample. Thus, for this technique of sampling population should be arranged in any systematic way.

Merits:

a. This is a simple method of selecting a sample.
b. It reduces the field cost.
c. Inferential statistics may be used.
d. Sample may be comprehensive and representative of population.
e. Observations of the sample may be used for drawing conclusions and generalizations.

Demerits:

a. This is not free from error, since there is subjectivity due to different ways of systematic list by different individuals.
b. Knowledge of population is essential.
c. Information of each individual is essential.
d. This method can't ensure the representativeness.
e. There is a risk in drawing conclusions from the observations of the sample.

C. Stratified Random Sampling or Stratified Sampling:

It involves dividing the population in strata (subgroup). It is used when we have to select sample from a heterogeneous population.

Example: If a researcher has to select 300 students from a college for study, he has to first stratify the student population into two strata; their sex-male and female or in a similar way. It is an improvement over the earlier methods.

When we employ this technique, the researcher divides his population into strata on the basis of some characteristics and from each of these smaller homogenous groups (strata) draws at random a predetermined number of units.

Researcher should choose that characteristic as criterion which seems to be more relevant in his research work.

Stratified Sampling May Be of Three Types:

a. Disproportionate: Means that the size of the sample in each unit is not proportionate to the size of the unit but depends upon considerations involving personal judgement and convenience. This method of sampling is more effective for comparing strata which have different error possibilities. It is less efficient for determining population characteristics.
b. Proportionate: It refers to the selection from each sampling unit of a sample that is proportionate to the size of the unit. Advantages of this procedure includes representativeness with respect to variables used as the basis of classifying categories and increased chances of being able to make comparisons between strata. Lack of information on proportion of the population in each category and faulty classification may be listed as disadvantages of this method.
c. Optimum allocation: Stratified sampling is representative as well as comprehensive than other stratified samples. It refers to selecting units from each stratum. Each stratum should be in proportion to the corresponding stratum the population. Thus, sample obtained is known as optimum allocation sample.

Merits:

a. It is a good representative of the population.
b. It is an improvement over the earlier technique of sampling.
c. It is an objective method of sampling.
d. Observations can be used for inferential purpose.

Demerits:

a. Serious disadvantage of this method is that it is difficult for the researcher to decide the relevant criterion for stratification.
b. Only one criterion can be used for stratification, but generally it seems more than one criterion relevant for stratification.
c. It is costly and time consuming method.
d. Selected samples may be representative with reference to the used criterion but not for the other.
e. There is a risk of generalization.

D. Multistage Sampling:

It is a success random of sampling of units or sets and subsets. Cluster is naturally occurring group of participants. They are randomly selected. Once the cluster has been selected, then all participants within the cluster are surveyed. It is also called multistage sampling because sample selection passes through a sequence of stage.

Example: - District of the country can be randomly selected, then schools, then classes and finally pupils. This sample is more comprehensive and representative of the population.

In this type of sampling primary sample units are inclusive groups and secondary units are sub-groups within these ultimate units to be selected which belong to one and only one group. Stages of a population are usually available within a group or population, whenever stratification is done by the researcher. The individuals are selected from different stages for constituting the multi stage sampling.

Merits:

a. It is a good representative of the population.
b. Multistage sampling is an improvement over the earlier methods.
c. It is an objective procedure of sampling.
d. The observations from multi stage sample may be used for inferential purpose.

Demerits:

a. It is a difficult and complex method of sampling.
b. It involves errors when we consider the primary stages.
c. It is again a subjective technique of sampling.

Multiple or Double Repetitive Sampling:

Generally, this is not a new method but only a new application of the samplings. This is most frequently used for establishing the reliability of a sample. When employing a mailed questionnaire, double sampling is sometimes used to obtain a more representative sample.

This is done because some randomly selected subjects who are sent questionnaires may not return them.

Obviously, the missing data will bias the result of the study, if the people who fail to reply the query differ in some fundamental way from the others in respect to the phenomenon being studied.

To eliminate this bias, a selected sample may be drawn at random from the non-respondents and the people interviewed to obtain the desired information. Thus, this technique is also known as repeated or multiple sampling.

This double sampling technique enables one to check on the reliability of the information obtained from first sample. Thus, double sampling, where in one sample is analyzed and information obtained is used to draw the next sample to examine the problem further.

Merits:

a. Thus, sampling procedure leads to the inferences of free determine precision based on a number of observations.
b. This technique of sampling reduces the error.
c. This method maintains the procedure of the finding evaluate the reliability of the sample.

Demerits:

a. This technique of sampling cannot be used for a large sample. It is applicable only for small sample.
b. This technique is time consuming and costly.
c. Its planning and administration is more complicated.

Cluster Sampling:

To select the intact group as a whole is known as a cluster sampling. In cluster sampling the sample units contain groups of element (cluster) instead of individual members or items in the population. Rather than listing all elementary school children in a given city and randomly selecting 15 % of these students for the sample, a researcher lists all of the elementary schools in the city, selects at random 15 % of these clusters of units, and uses all of the children in the selected schools as the sample.

Merits:

a. It may be a good representative of the population.
b. It is an easy method.
c. It is an economical method.
d. It is practicable and highly applicable in education.
e. Observations can be used for inferential purpose.

Demerits:

a. Cluster sampling is not free from errors.
b. It is not comprehensive.

11.3.2 Non Probability Sampling:

In it, all items in the population don't have equal chance of being selected, it uses that ever subjects are available rather than following a specific subject selection process. Samples are determined by personnel convenience or judgment of the researcher but not by chance. Samples which are selected through non-random methods are called non probability samples the various type of non-probability sampling is as follows.

Convenience/Purposive Sampling:

It refers to samples selection on the basis of convenience of the researcher. A sample is chosen purely for expedience because it is cheap to find. The sample then would not necessarily be a representative one. Commonly used convenient samples are friends, relatives, family members, associations etc. The purposive sampling is selected by some arbitrary method because it is known to be representative of the total population, or it is known that it will produce well matched groups. The idea is to pick out the sample in relation to criterion which are considered important for the particular study. This method is appropriate when the study places special emphasis upon the control of certain specific variables.

Merits:

a. Use the best available knowledge concerning the sample subjects.
b. Better control of significant variables.
c. Sample groups data can be easily matched.
d. Homogeneity of subjects used in the sample.

Demerits:

a. Reliability of the criterion is questionable.
b. Knowledge of population is essential.
c. Errors in classifying sampling subjects.
d. Inability to utilize the inferential parametric statistics.
e. Inability to make generalization concerning total population.

Purposive/Judgment Sampling:

It refers to the sample selected on the basis of what some experts think particular sampling units or elements will contribute to answering particular questions at hand. It is an expert judgment based sampling. Using this method, specialists in the subject matter of the survey choose what they believe to be the best sample for that particular study. It is moderately used in practice.

Example: - A group of sales manager might select sample of grocery stores in city that they regard as representative in some sense. This involves the selection of a group from the population on the basis of available information assuming as if they are representative of the entire population. Here group may also be selected on the basis of intuition or on the basis of the criterion deemed to be self-evident. Generally, investigator should take the judgment sample, so this sampling is highly risky.

a. Knowledge of investigator can be best used in this technique of sampling.
b. This method of sampling is economical.

Demerits:

a. This technique is objective.
b. It is not free from errors.
c. It includes uncontrolled variation.
d. Inferential statistics cannot be used for the observation of this sampling, so generalization is not possible.

A. Quota Sampling:

Quota sampling derives its name from the practice assigning quotes or proportions of kind of people to interviewers. It involves three steps: Selection of control characteristics (sex, age, education, etc.) and determination of the proportion of the universe having equal set of characteristics. Allocation of the sample among cells (how large a sample should be taken from each cell) Selection of the sample item.

Example: An interviewer may be instructed to conduct the interviews with people 30 years old and half with people under 30 years. Here, the control characteristic is the age of respondents. This combines both judgment sampling and probability sampling: on the basis of judgment or assumption or the previous knowledge, the proportion of population falling into each category is decided. Thereafter a quota of cases to be drawn is fixed and the observer is allowed to sample as he likes. Quota sampling is very arbitrary and likely to figure in municipal surveys.

Merits:

a. It is an improvement over the judgment sampling.
b. It is an easy sampling technique.
c. It is not frequently used in social surveys.

Demerits:

a. It is not a representative sample.
b. It is not free from errors.
c. It has the influence of regional, geographical and social factors.

B. Sequential Sampling:

In fixed-size sampling the number of items is decided upon in advance whereas in sequential sampling, the number of items is not presented. In sequential sampling one usually ..... measurements. On only a single unit or the population or a group of population units at a time. The measurement or each group is cumulated with those of previously measured groups. The data are analyzed as they are assembled, and sample size is not predetermined. The mathematics underlying sequential samplings are more complex and time consuming.

C. Snowball Sampling:

It refers to a procedure in which initial respondents are selected randomly but where additional respondents are then obtained from referral or by other information provided by the initial respondents. One uses this method where respondents are difficult to identify and are best located through referral network. The "snowball" gather subjects as it rolls along. It is widely used to study drug culture, teenage gang activities, community relations etc. Its purpose is to estimate various characteristics that are rare in the total population.

The term; snow ball sampling' has been used to describe a sampling procedure in which the sample goes on becoming bigger and bigger as the observation or study proceeds. The term snowball stems from the analogy of a snowball sample which would allow computation of estimates of sampling error and use of statistical test of significance.

For example, an opinion survey is to be conducted on smokers of a particular brand of cigarette. At the first stage, we may pick up a few people who are known to us or can be identified to be the smokers of that brand. At the time of interviewing them, we may obtain the names of other persons known to the first stage subjects. Thus, the subjects go on serving an informant for the identification of more subjects and the sample goes on increasing. Snowball sampling which is generally considered to be no probabilistic can be converted into probabilistic by selecting subjects randomly within each stage.

D. Incidental or Accidental Sampling:

The term incidental or accidental applied to those samples that are taken because they are most frequently available i.e., this refers to the groups which are used as samples of a population because they are readily available or because the researcher is unable to employ more acceptable sampling methods.

Merits:

a. It is very easy method of sampling.
b. It is frequently used method in behavioral sciences.
c. It reduces the time, money and energy i.e. it is an economical method.

Demerits:

a. It is not representative of the population.
b. It is not free from errors.
c. Parametric statistics cannot be used.

Expert Choice Sampling:

Samples are sometimes expressly chosen because, in the light of available information, these mirror some larger group with reference to one or more given characteristics. The controls in such samples are usually identified as representative areas (city, country, state, and district), representative characteristics of individuals (age, sex, marital status, socio-economic status, and race) or types of groups (administrator, counselors, teachers etc.).

These controls may be further sub-divided by specified categories within classes such as amount of training, years of experience or attitudes towards a specific phenomenon. Up-to this stage, these controls are somewhat similar to those used in satisfaction. Purposive sampling differs from stratified random sampling in that the actual selection of the units to be included in the sample in each group is done purposively rather than by random method.

Difference between Probability and Non-Probability Sampling

	Probability Sampling	**Non-probability Sampling**
a.	It is a method of sampling which gives the probability that a sample is representative of population.	In the absence of any idea of probability the method of sampling is known as non-probability sampling.
b.	Probability sampling is generally used in fundamental research in which the purpose is to generalize the results.	It is generally used in action researches in which one studies a class without any generalization purpose.
c.	It refers from the sample as well as the population.	There is no idea of population.
d.	Every individual of the population has equal probability to be taken into the sample.	There is no probability of selecting any individual.
e.	It may be representative of the population.	It has free distribution.
f.	Its observations (data) are used for the inferential purpose.	The observations are not used for generalization purpose.
g.	Inferential or parametric statistics are used.	Inferential or parametric statistics are used.
h.	There is a risk of drawing conclusion.	There is no risk for drawing conclusions.
i.	It is based on Law of probability sampling i.e., Law of Statistical Regularity and Law of Inertia of the Large Sample.	It is not based on law of probability sampling.

The First Step in Sampling is to Define the Target Population.

a. Research work is guided by inductive thinking. The researcher proceeds from specificity to generality. The sample observation is the specific situation, which is applied to the population, it is the general situation.
b. The measures of a sample are known as statistics and measures of a population are termed as parameter. Mean, S.D., coefficient of Correlation of sample observation known as Statistics and Mean, S.D., coefficient of correlation of population are known as parameters. Generally, parameters are estimated on the basis of sample statistics.

c. Sampling is indispensable technique in behavioral research and not so common in physical sciences. It is fundamental to all statistical methodology of behavioral and social research. It makes research findings economical and accurate. Sampling means selection of individuals from the population in such a way that every individual has equal chance to be taken into the sample.
d. Term sample should be reserved for a set of units or portion of an aggregate of material which has been selected in the belief that it will be representative of the whole aggregate. By Frank Yates "Sample is set of units of an aggregate."

Assumptions of Sampling:

a. Homogeneity amidst complexity: Social phenomenon is very complex in nature and every unit appears to be different from another. But at the same time they also possess similarities in many respects. It is, therefore, assumed that there is the possibility of such representative types in the whole population that makes sampling possible.
b. Possibility of Representative Selection: According to Sampling has its origin in the mathematical theory of probability and law of statistical regularity. The law of statistical regularity lays down that a group of objects chosen at random from a large group tend to possess the characteristics of that large group (universe) by L. R. Conner.
c. Absolute accuracy not essential but relative or significant accuracy is needed in case of large scale observations. Because it is practically impossible to achieve because of errors in measurement, collection of data, its analysis, interpretation. A sample is a small proportion of a population selected for observation and analysis. It is a collection consisting of a part or sub-set of the objects or individuals of population which is selected for the express purpose of representing the population.

By observing the characteristics of the sample, one can make certain inferences about characteristics of the population from which it is drawn. Sampling," It is the process of selecting a sample from the population. For this purpose, the population is divided into a number of parts called sampling units."

Field work - Meaning and Definition:

Exposure to practical reality is must for a student from business and professional school. Such schools everywhere require their students to acquire conceptual knowledge as well as practical skills while at school. Conceptual knowledge can be acquired through class lectures and text books. For providing practical exposure to students, business/professional schools use a variety of methods.

One of them is field work also called project work. The field work assignment is an off -the - class room study project undertaken by a student under the guidance of faculty members. The students are required to visit origination for field work. Students have to write and submit a field work report using the format as approved by school after they work in origination for a specific period of time. Field work can be described as a systematic and organized effort to study and observe a specific organizational situation in hand. Thus, the field work process involves series of well thought out and carefully executed activities. It encompasses the process of enquiry, investigation, observation and examination. The expected objective is to discover new.

Facts and relation about the organization phenomena under investigation. We can now define field work as an organized, systematic, data-based scientific investigation in specific situation under taken with the objective of gathering information that enables the students to gain familiarity with the situation and generate more knowledge about phenomena under investigation.

Preparation for Field Work.

A. Pre-Field Activities: The students make some preparations before they actually visit the organization for study. At this stage, students should prepare following activities:

a. Selection of study area that depends upon the student interest, capability and feasibility of the study.
b. Selection of study scheme such as survey case study or feasibility study.
c. Selection of organization for location for field study.
d. Preparation for plan/data needs such as data collection method and instruments. i- Consulting library for more information 4- Consulting the professor to finalize entire scheme of the field work.

B. Field Work Activities:

At this stage, students should prepare the following three phases:

a. At the initial phase, students should introduce himself to the organization and try to learn more about the organization. They should include: meeting the chief executive, meeting officer- in - charge, the unit and collection the relevant materials.
b. At the observation phase student should study and observe the organization action. This is practical phase of field work. The students do this activity. Overview of the organization, observation of the unit selected field study, collection of relevant data, observation of the work system, questionnaire to administration; etc. 4- At the concluding final phase, the collected materials or observed systems in operation should be wrapped up. The following points should be noted:

- One should make sure that enough materials for report writing and oral presentation have been collected.
- The student should test and verify his/her impressions and findings of observation.
- The student should make a courtesy call on the chief executive and gratitude to them for their cooperation.

C. Post Field Work Activities: This is the final phase of the field work assignment, at this stage, student should prepare for report writing. The following activities should be performed:

- Organizing data in meaningful way
- Recording observations in a logical manner and present them in the report where appropriate.
- Writing the field work report in prescribed style and reporting the field report
- And finally submitting the field work report to the concerned authority and preparing for the oral presentation.

Validity: It is concerned with measurement of quality of data. It ensures measuring what is expected to measure. It is the characteristics used to describe a test which measures what it claims to measure.

According to F.N. Kerlinger: “The commonest definition of validity is epitomized by the question: Are we measuring what we think we are measuring."

According to J.W. Best and J.V. Kahn: “Validity is that of gathering instrument or procedure that enables to measure what it is supposed to measure"

Basis of Validation:

Logical validation: This refers simply to a type of theoretical, intuitive, or common sense analysis. This type of validation is derived from the careful definition of the continuum of a scale and the selection items to be measured. It is a component of content of validation.

Jury opinion: It refers to the personal judgment of experts to the field. The behavior scientist’s ordinary element to measure content validity by such jury opinions. That is, several content experts may be as judge whether the items being used instrument and representative of the field be investigated. The result of this procedure reflects the ‘conformed’ judgments of experts in the content field.

Known groups: Closely related to jury opinion approach for assessing content validation is a method involving known groups. With this approach, validation comes from the known attitudes and other characteristics of ant ethical groups and not from specific expertise.

Independent criteria: One of the validity measurement include considering independent criterion. The research attempts to develop or obtain an independent criterion against which the measurement results be matched. Criterion validity can be assessed by correlating the set of scaling result under study with other set, developed from another instrument is administered at the same time. When one predicts success or failure of student from academic aptitude measures, the researcher is concerned with criteria - related validity.

Reliability:

It refers to the degree of consistency that the instrument/ procedure demonstrate whatever it is measured does so consistently and accurately. It is the consistency and accuracy of scores obtained by the same variable when retested with the identical or equivalent test. Synchronous for reliability are: dependability, stability, predictability, accuracy.

A reliable man, e.g., man whose behavior is consistent, dependable and predictable -what he will do tomorrow and next week will be consistent with what he / she does today he has done last week. According to Best and Kahn: “A test is reliable to the extent that it measures whatever is measuring consistently.

According to Boyd and Others: “Reliability is the characteristics of research methodology which allow it to be repeated again and again by the same and by different researchers”.

Methods of Measurement of Reliability:

a. **Test-Retest Method**: It involves repeated measurement using the same instrument under as nearly equivalent conditions as possible. The results of the two administrations are then compared and the degree of correspondence is determined. The greater the difference, the lower the reliability and vice versa. This method examines the stability of response.
b. **Alternative Form Method:** It involves using two equivalent forms of measuring instruments to the single subject. The result of the two instruments is compared on item-by -item basis and the degree of similarity is determined. The scores on a test are highly correlated with scores on an alternative from of test. The greater the difference lowers the reliability and vice versa.
c. **Split-Half Method:** It involves dividing the total number of items into two groups: odd number and even number item. Scores on the odd number items are then correlated with the scores on the even numbered items. or the scores on the half of the test can be correlated with scores on the second half of the test. The greater the difference the lower the reliability and vice versa.

ISBN: 978-81-948755-8-1

12. Research Design

Anamika Delip Utekar

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Shrawani Renukadas Deshpande

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Jivika Shivaji Chavan

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

12.1 Introduction:

A research design is simply the framework or plan for a study that is used as a guide in collecting and analyzing the data. It is a blueprint that is followed in completing a study. Research design is the blue print for collection measurement and analysis of data. Actually, it is a map that is usually developed to guide the research. Thus, we can say that a research design is the arrangement of condition for collection and analysis of data in a manner that aims to generalize the findings of the sample on the population. When particular research area has been defined, research problem is defined, and the related literature in the area has been reviewed, the next step is to construct the research design. It is fundamental to the success of any scientific research. Research design means an overall framework or plan for the activities to be undertaken during the course of a research study.

It involves decisions regarding what, where, when, how much and by what means concerning a research study. It constitutes a blue print for the collection, measurement and analysis of data. It serves as a framework for the study, guiding the collection and analysis of data, research instrument to be utilized and the sampling plan to be followed.

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

According to Kinner and Taylor: "A research design is the basic plan which guides the data collection and analysis phase of the research project. It is the framework which specifies the type of information to be collected, the source of data and the data collection procedure."

"Research design is a master plan specifying the methods and procedures for collection and analyzing the needed information." William Zikmund

12.2 Elements of Research Design:

a. **Problem:** A problem is an interrogative sentence or statement that asks what relation exists between two or more variables. The answer is what is being bought in the research. Research design is based on the research problem.
b. **Methodology:** It deals with a choice of research design methods of measurement and types of analysis. All of these must be congruent. They must fit together. Methodology should be appropriate to the research problem.
c. **Data gathering:** To implement general plan of research, methods of data collection must be used. There is always mutual inter plan of the problem and method. Problems dictate methods to a considerable extent. It can use internal or external sources. The tools can be questionnaire, observation, interview, etc.
d. **Report writing:** It involves preparation and presentation of the research report. A report is a presentation of the research findings directed to a specific audience to accomplish specific objective.

Purposes of Research Design:

Purpose of a Research Design: Research designs are used for the following purposes;

a. **To minimize the expenditure:** Research design carries an important influence on the reliability of the results attained. It therefore provides a solid base for the whole research. This makes the research as effective as possible by providing maximum information with minimum spending of effort, money and time by preparing the advance plan of all about the research.
b. **To facilitate the smooth scaling:** Research design is needed because it facilitates the smooth scaling of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money.
c. **To collect the relevant data and technique**: Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff time and money. Poor preparation of research design upset the entire project.
d. **To provide blue print for plans:** Research design is needed due to the fact that it allows for the smooth working of many research operations. It is like blue print which we need in advance to plan the methods to be adopted for collecting the relevant data and techniques to be used in its analysis for preparation of research project.
   Just as for better economical and attractive construction of a house need a blue print and a map of that, similarly we needs a blue print or a design for the smooth flow of operation of research.
e. **To provide an overview to other experts:** A research design provides an overview of all the research process and with the help of the design we can take the help and views of experts of that field. The design helps the investigator to organize his ideas, which helps to recognize and fix his faults.

f. **To provide a direction:** A research design provides a proper or particular direction to the other executives and others who are helping us into the process. The researcher studies available, literature and learns about new (alternative approaches.

To provide answer to research question: Research design is invented to enable the researcher to answer research questions as, objective, accurately and economically as possible.

To control variance: It enables the investigator to gather and analyze his data in certain ways, it is a control mechanism.

Characteristics of Good Research Design:

Generally, a good research design minimizes bias and maximizes the reliability of the data collected and analyzed. The design which gives the smallest experimental error is reported to be the best design in scientific investigation. Similarly, a design which yields maximum information and provides an opportunity for considering different aspects of a problem is considered to be the most appropriate and efficient design. A good research design possesses the following characteristics;

a. **Objectivity:** It refers to the findings related to the method of data collection and scoring of the responses. The research design should permit the measuring instruments which are fairly objective in which every observer or judge scoring the performance must precisely give the same report. In other words, the objectivity of the procedure may be judged by the degree of agreement between the final scores assigned to different individuals by more than one independent observer. This ensures the objectivity of the collected data which shall be capable of analysis and interpretation.
b. **Reliability:** It refers to consistency throughout a series of measurements. For example, if a respondent gives out a response to a particular item, he is expected to give the same response to that item even if he is asked repeatedly. If he is changing his response to the same item, the consistency will be lost. So, the researcher should frame the items in a questionnaire in such a way that it provides consistency or reliability.
c. **Validity:** Any measuring device or instrument is said to be valid when it measures what it is expected to measure. For example, an intelligence test conducted for measuring the IQ should measure only the intelligence and nothing else and the questionnaire shall be framed accordingly.
d. **Generalizability:** It means how best the data collected from the samples can be utilized for drawing certain generalizations applicable to a large group from which sample is drawn. Thus, a research design helps an investigator to generalize his findings provided he has taken due care in defining the population, selecting the sample, deriving appropriate statistical analysis etc. while preparing the research design. Thus, a good research design is one which is methodologically prepared and should ensure that generalization is possible. For ensuring the generalization we should confirm that our research problem has the following characteristics;

- The problem is clearly formulated.
- The population is clearly defined.
- Most appropriate techniques of sample selection are used to form an appropriate sample.
- Appropriate statistical analysis has been carried out.
- The findings of the study are capable of generalizations.

e. **Adequate Information:** The most important requirement of good research design is that it should provide adequate information so that the research problem can be analyzed on a wide perspective. An ideal design should take into account important factors like;
   - Identifying the exact research problem to be studied
   - The objective of the research
   - The process of obtaining information.
   - The availability of adequate and skilled manpower and
   - The availability of adequate financial resources for carrying research.

f. **Other Features:** Some other important features of a good research design are flexibility, adaptability, efficiency, being economic and so on. A good research design should minimize bias and maximize reliability and generalization.

12.3 Types of Research Design:

A. Descriptive Research Design:

Descriptive research design is designed to describe something. It simply portrays an accurate profile of organizations, events, situation or any phenomena. It describes conditions or relationship that exists, opinion that are held, process that are going on, effects that are evidence or trends that are developing. It is the fact finding operation design to search for information. Investigators collect, classify and correlate data to describe that exists. But it does not answer why phenomena behave as they do. Descriptive research is appropriate in the following conditions:

- Portraying the characteristics of social or any phenomena and determining the frequency of occurrence.
- Determining the degree of to which variables are associated.

Purposes of Descriptive Research:

a. To collect detailed factual information that describes existing phenomena.
b. To identify problems or justify current conditions and practice.
c. To make comparisons and evaluations.
d. To determine what others are doing with similar problems or situations and benefit from their experience in making future plans and decisions.

B. Exploratory Research Design:

It is designed to explore ideas and insights in order to obtain a proper definition of problems at hand. It is appropriate for the early stage of decision making process. It is designed to obtain a preliminary investigation of the situation with a minimum expenditure of time and cost.

Purpose of Exploratory Research:

a. To identify problems and opportunities.
b. To develop a more precise formulation of a vaguely identified problems or opportunity.
c. To gain perspective regarding the breadth of variables operating in a situations.

d. To establish priorities regarding the potential significance of various problems or opportunities o to identify and formulate alternative courses of action.
e. To gather information on the problems associated with doing conclusive research.
f. To gain management and researchers perspective regarding the character of the problem situation.

C. Experimental Research Design:

It describes what will be when certain variables are carefully controlled or manipulated. The focus is on variable relationship. The purpose of experimental research is to investigate possible cause-and -effect relationship as well as to understand the nature of functional relationship between caused factors and affect to be predicted. An experimental design involves the specifications of:

a. Treatments that are to be manipulated.
b. Test units to be used.
c. Dependent variables to be measured.
d. Procedures for dealing with extraneous variables.

12.4 Research Problem:

The problems lie everywhere around us. They even lie at our door step and in our backyards. Human nature is so complicated, that a problem solved for one individual may still exist for another individual, a problem solved for one class/ school/teacher/ situation/ system/time etc., still remains a problem for another class/ school/ teacher/ situation/system/time or a problem solved for the time being may reappear with a lapse of time. We become habitual of living in the age of problems i.e., we are so much surrounded by the problem that we suffers from /'problem blindness". But in order to solve the problem or making research we need to delimit the problem.

Selection of problem is not the first step in research but identification of the problem is the first step in research. Selection of problem is governed by reflective thinking. It is wrong to think that identification of a problem means to select a topic of a research or statement of the problem. A topic or statement of the problem and research problem are not the synonyms, but they are inclusive. The problem concerns with the functioning of the broader area of field studied, whereas a topic or title or statement of the problem is the verbal statement of the problem. The topic is the definition of the problem which delimits or pin points the task of a researcher. It is the usual practice of the researcher that they select the topic of the study from different sources especially from research abstracts. They do not identify the problem, but a problem is made on the basis of the topic. It results that they have no active involvement in their research activities, whatever, they do, do mechanically.

Definitions of the Problem:

The obstacles which hinder our path are regarded as problem. Different definitions of the problem are given below;

"Problem is the obstacle in the path of satisfying our needs." John Geoffery

"Problem is a question which is to be solved." John. G. Tornsand

"To define a problem means to put a fence around it, to separate it by careful distinctions from like questions found in related situations of need." Whitney

"A problem is a question proposed for a solution generally speaking a problem exists when there is a no available answer to same question." J.C. Townsend

"A problem is an interrogative sentence or statement that asks: What relation exists between two or more variables?" F.N. Kerlinger

"To define a problem means to specify it in detail and with precision each question and subordinate question to be answered is to be specified, the limits of the investigation must be determined. Frequently, it is necessary to review previous studies in order to determine just what is to be done. Sometimes it is necessary to formulate the point of view or educational theory on which the investigation is to be based. If certain assumptions are made, they must be explicitly noted." Monero and Engelhart

Identification of a Research Problem:

The following steps are to be followed in identifying a research problem;

Step I Determining the field of research in which a researcher is keen to do the research work.

Step II the researcher should develop the mastery on the area, or it should be the field of his specialization.

Step III He should review the research conducted in area to know the recent trend and studies are being conducted in the area.

Step IV On the basis of review, he should consider the priority field of the study.

Step V He should draw an analogy and insight in identifying a problem or employ his personal experience of the field in locating the problem. He may take help of supervisor or expert of the field.

Step VI He should pin point specific aspect of the problem which is to be investigated.

The Sources of the Problem:

a. The classroom, school, home, community and other agencies of education are obvious sources.
b. Social developments and technological changes are constantly bringing forth new problems and opportunities for research.
c. Record of previous research such specialized sources as the encyclopedias of educational, research abstracts, research bulletins, research reports, journals of researches, dissertations and many similar publications are rich sources of research problems.

d. Text book assignments, special assignments, reports and term papers will suggest additional areas of needed research.
e. Discussions-Classroom discussions, seminars and exchange of ideas with faculty members and fellow scholars and students will suggest many stimulating problems to be solved, close professional relationships, academic discussions and constructive academic climate are especially advantageous opportunities.
f. Questioning attitude: A questioning attitude towards prevailing practices and research oriented academic experience will effectively promote problem awareness.
g. The most practical source of problem is to consult supervisor, experts of the field and most experienced persons of the field. They may suggest most significant problems of the area. He can discuss certain issues of the area to emerge a problem.

Although research problems should not be assigned or they should not be proposed and allotted by a guide but consultation with the more experienced faculty member or research worker is a desirable practice.

One of the most important functions of the research guide is to help the student clarify his thinking, achieve a sense of focus and develop a manageable problem from one that may be vague and too complex. Statement of Problem:

Kerlinger Has Identified Following Three Criteria of Good Problem Statements;

a. A problem should be concerned with relation between two or more variables.
b. It should be stated 'clearly and unambiguously in question form'.
c. It should be amenable to empirical testing.

Meeting these criteria in his problem statement will result, in a clear and concise idea of what the researcher wants to do. This sets the state for further planning.

Objectives of Assumptions about the Problem:

a. To make the research work feasible.
b. To delimit the scope of the problem.
c. To establish the proper frame of reference.

Aspects of Delimiting a Problem:

A. Delimited to certain variables that should be mentioned clearly in the problem.
B. Delimited to the area or level as primary level, secondary level, and college or university level.
C. Delimited to size of sample, considering the time, energy and money.
D. Delimited to the best method only.
E. Delimited to the best available tool for measuring the variable.
F. Delimited to the most appropriate techniques.
G. Other delimitations particular to a problem.

As the above delimitations help the researcher for conducting the study, the findings of studies also confine to these delimitations.

Evaluation of the Problem:

When considering a problem a researcher is required to ask himself a series of questions about it. These are helpful in the evaluation of the problem on the basis of personal suitability of the researcher and social value of the problem.

Following questions must be answered affirmatively before the study is under Taken:

a. Is the Problem Researchable?
b. Is the Problem New?
c. Is the Problem Significant?
d. Is the Problem Feasible for the Particular Researcher?

In order to be feasible, a problem should agree with the following:

a. Research competencies of the Researcher
b. Interest and enthusiasm of the Researcher
c. Financial consideration in the Project
d. Time requirement for the Project
e. Administrative considerations in the Project.

12.5 Research Proposal:

A research proposal is an argument for the proposed study. It is comparable to the blue print that the architect prepares before the bids are let and buildings commences. By definition, a proposal is a persuasive presentation for consideration for something. Proposals are made by individuals or organizations to individuals or organizations. They are usually written but they can be oral presentation or combination of both. The main purpose of research proposal is to explain and justify the proposed study to an audience. Many institutions require that proposal be submitted before any project is approved. This provides a basis for the evaluation of the project and gives the advisor a basis for assistance during the period of his direction. It also provides a systematic plan of procedure for the researcher to follow.

Topic Selection:

A research proposal is prepared on a given topic. A research topic is essentially the specific problem area which requires an investigation. However, topic selection is not an easier job. It demands for rigorous mental exercise. It takes of great deal of searching problem topic. In university students need to submit a topic in a proposal form to his thesis advisor.

Sources of Topic:

a. A problem of the student's own interest based on his experience, judgment, etc.
b. Articles in different publications such as newspaper, journals, magazine, etc.
c. Library and other research studies.
d. Text/ reference book.
e. Advisor's suggestions.
f. Visiting organizations and interacting with the authorities.

Guidelines for Topic Selection:

a. The student should immediately begin to think about his topic selection.
b. The size of the topic should not be too broad or too small.
c. The topic chosen should not be too complex.
d. Material and data on the topic should be available.
e. Topic should be researchable.

12.6 Format of the Research Proposal:

A. Title: It is the broad heading of the research proposal. It should be clearly stated at the beginning. The title should represent the proposed study. It should be short and unnecessary term should be avoided.

B. Background Information: This part of proposal gives useful information of the study that introduce briefly about it. It includes:

- Background of the problem.
- Description of the topic in general and how the researcher developed in it.
- Background information on the organization to be studied.
- Relevance of the proposed study.

C. Statement of The Problem: This is often a declarative statement but may be in the question form. This attempts to focus on a stated goal that gives direction to the research process. It must be limited enough in scope to make definite conclusion possible. The major statement may be followed by minor statement. This part includes:

- Statement of general problem which being investigated.
- Statement of detailed problem such as different variables and their associations.

D. Significance of The Problem:

It is important that researcher point out how the solution to the problem or answer to the question can influence related theory or practice. I.e., the researcher must demonstrate why it is worth the time, effort and expenses required to carry out the proposed research.

Failure to include this step in the proposal may well leave the researcher with a problem without significance- a search for date of little ultimate value.

E. Definitions, Assumptions, Limitations and Delimitations:

a. The researcher should define all unusual terms that could be misinterpreted. The variables to be considered should be defined in peripheral form.
b. The researcher should clearly state the assumptions of the study. Assumptions are statements or what the researcher believe to be facts but cannot verify.
c. The researcher works within some conditions called limitations. They are those conditions beyond the control of researcher that may be restriction on the conclusion of the study and their
d. Applications to other situations. It includes constraint like time, money, data, source, etc. they must be clearly stated.
e. The researcher should also state the boundaries of the study. They are called delimitations.

F. Theoretical Framework/ Review of Related Literature:

This part contains a summary of the writings of recognized authorities and of previous research. This is called literature review. It provides evidence that the researcher is familiar with what is already known and what is unknown and untested. Once effective research is based upon post knowledge, this step helps to eliminate the duplications of what has been done and provides useful hypothesis and suggestions for significant investigation. This part should contain the following:

a. The variables considered relevant to the study should be identified.
b. A clear explanation of relationship between those variables should be explained.
c. The theorized relationship as visualized by researcher should be presented.

G. Statement of Hypothesis / Objective:

It is appropriate here to formulate hypothesis. They offer tentative answer to a question. It includes the followings:

a. Statement of research hypothesis which the researcher will try to test.
b. In the case of exploratory or descriptive studies, the specific objectives of the study should be presented.

The statement or hypothesis / objectives in advance or the data gathering process is necessary for an unbiased investigation.

H. Research Methods:

This section consists of three parts:

- **Subjects:** The subject section details the population of the study from which the researcher plans to select the sample. It defines sample size and sampling methods.
- **Procedures:** The procedures section outlines the research plan/design. It describes in detail what will be done, how it will be done, what data will be needed and what data gathering device will be used.
- **Data analysis:** This section describes the method of data analysis. It performs test of hypothesis. The statistical tools to be applied are to be mentioned.

I. Reference/Bibliography:

The published sources of information and literature consulted in the course of proposal preparation should be alphabetically listed.

ISBN: 978-81-948755-8-1

13. Report Writing

Shrawani Renukadas Deshpande

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Jivika Shivaji Chavan

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

Dipti Nandkishor Hajari

Research Scholar,
Bharati Vidyapeeth Deemed University,
Social Sciences Centre,
Erandwane, Kothrud, Pune.

13.1 Introduction:

A detailed account of the research experience from selection and definition of the problem, formulation of hypotheses, gathering, analyzing and interpreting data, testing of hypotheses, making conclusion and suggesting further research in the related problem area is called a research report.

No matter what quality is of the research undertaken, much of the acceptance of the results depends on the way as they are communicated to the relevant audiences. This act of communicating is called report writing. It is the final step in the research process.

A report is simply a statement or description of theirs that have already occurred. It is culmination of the research findings to a specific audience to accomplish given purpose. This presentation can be written or given orally or both.

It is concise and clear communication of findings of the research work. According to Kinner and Taylor-

“A research report can be defined as the presentation of the research findings directed to a specific audience to accomplish specific purposes. “

Its objective is to tell readers the problems investigated, method used to solve the problem, result of the investigation and conclusion inferred from the result. It is to report what was done, why it is done, outcome of the doing and researchers’ conclusion.

Guidelines for Report Writing:

a. The research report is design to communicate information for use by decision maker, so obviously it must be tailored to his need.
b. Report should be concise yet complete. It should cover the important points of the project and should exclude the unimportant.
c. The research report must be an objective presentation or the research findings.

13.2 Components:

The basic components of a research report are as follows;

A. **Introduction of The Research Problem:** The researcher will write in it;

   a. What is the problem?
   b. What is its importance?
   c. What is the relation of the problem with previous theory and research,
   d. What are the objectives of the study?
   e. What are the hypotheses?

B. **Description of The Procedure of The Research:** The researcher will write in it;

   a. How did he select the subjects?
   b. How many subjects were used?
   c. How were the subjects assigned to groups?
   d. What was done to the subjects?
   e. How was it done?
   f. When was it done?
   g. How long was it done?
   h. How was the reliability of the measuring instruments measured?
   i. How was the validity of the measuring instruments measured?

C. **Description and Presentation of The Results:** The researcher will write in it;

   a. Which statistical procedures he used to test the hypotheses?
   b. What were the outcomes of those procedures?
   c. What were the subsidiary findings of the research?

D. **Discussion of The Study Findings**: The researcher will write in it;

   a. Why did the results manifest themselves in a particular way?
   b. What did there results signify?
   c. What was the relationship between this research and the previous research upon which it was based?

Features: The following are the essential features of a good research report.

- Clarity

- Conciseness
- Veracity
- No place for figures of speech, lyrical prose and in using anecdotes.
- No lengthy digressions
- Only necessary details
- Absolute uncompromising honesty
- Serious attempt and not a game

Reasons for Writing:

The following are the main reasons on account of which the researcher should write the research report.

a. It is a logical conclusion of doing the research.
b. It enriches the curriculum vitae of the researcher which helps him in appointment and promotion.
c. Writing of the research report is an easy task and it is not that difficult as understood.

13.2 Mode of Communications:

The researcher may use any of the following mode for communicating his research results;

a. **A Research Monograph:** The researcher may publish a research monograph on the basis of his research results through a research journals or a reputed research publisher.ph depends upon the standard of the research work and the reputation of the researcher.
b. **A Research Journal:** The researcher may publish a research paper in a reputed research journal. But this requires that the paper should be acceptable to the Editor of the journal. The prestigious journals send these papers to reviewers who are conversant with the research area in which the research paper has been written.
c. **Presenting in the Meeting of the Association/ Society /Congress**: There are annual conferences of the associations, societies and Congress in each subject area. They provide opportunities to the researchers to present their research results in the form of a research paper before the members of the association or the society or the delegates of the Congress which are followed by the discussions. The journals of those organizations publish these papers in the form of the proceedings of the Association / Society / Congress.

Format: The research reports are divided into the following parts;

A. Preliminary Section: It consists of the following:

a. Title Page
b. Preface
c. Table of Contents
d. List of Tables
e. List of figure, maps and illustrations

B. Introduction: It consists of the following:

a. Importance of the problem under investigation.
b. A review of related literature
c. Statement of Hypotheses or relationships being studied
d. Delimitations of the study
e. Assumptions of the study
f. Definition of important terms

C. Methods: It consists of the following;

a. How was the study conducted?
b. From which population was the sample selected?
c. How many subjects were selected?
d. What were the demographic characteristics of the subjects?(male/female, average age)
e. Was there any characteristic which make the sample a typical to the population?
f. How were the subjects assigned to groups?
g. What instructions were given to the subjects?
h. How conditions were controlled?
i. What was the treatment of variables?
j. How, when and on what were subjects measured?
k. What data collection instruments were used?
l. What was the format of items?
m. What was the reliability of the instrument?
n. What was the validity of the instrument?
o. What are the details of the instruments which was prepared by the researcher?

D. Results: It consists of the following

a. What statistical procedure was used to study the hypotheses?
b. What was the probability level of each hypotheses test?
c. What was the probability level of each statistics?
d. What was the attendant degree of freedom?
e. What was the strength of the relationship of the variables?
f. What were the group means and standard deviation?
g. What were principle finding?

E. Discussion: It consists of the following;

a. What were the original purposes of the study?
b. How were these purpose met?
c. Why the obtained occurred?
d. What were the conclusions of the researcher for practice, theory and future research?
e. What is the contribution of the study to the research literature?
f. What are the strengths and weaknesses of the study?

F. **Reference Section:** It consists of the following:

a. Bibliography
b. Appendices: Questionnaires, Copies of letters used, evaluation sheets, checklists etc.

13.4 Research Proposal:

Each researcher has to write a research proposal before he undertakes any research work. For a new researcher it presents a great problem because he does not know the components of any research proposal. Even an experienced research worker is required to write a research proposal if he proposes to obtain financial assistance for a research project from any research organization. In our own country NCERT, UGC, AICTE, ICSSR etc. have developed their own research formats but a few basic components are common to all well-prepared research proposals.

Title of the Proposal:

The first part of any research proposal is its title. If the title is not clearly stated it will not help the researcher in his work. A good title should clearly identify the research proposal and must clearly state about the following:

a. What variables are included in the research proposal?
b. What is the relationship between the different variables?
c. Which is the population to which the results may be generalized? While independent and dependent variables are stated in the research proposal title, which are of experimental nature, the variates and criterion variables are written in non-experimental studies.

One example of each is given below;

Experimental Study:

"The Effect of Lecture Method and Text Book Method on the Academic Achievement in Economics of Class IX Students"

Non-Experimental Study:

"The Relationship between Socio-Economic Status and Academic Achievement in a Foreign Language of Class X Students"

In the experimental study the title of the research proposal is so stated that it shows the effect of independent variable upon dependent variable. This type of title indicates which variable will be manipulated by the research and upon which variable its effect will be observed. In non- experimental study, the title should indicate the relationship between the variate and the criterion variable. In non -experimental study the variables are not manipulated, only relationship between variates and criterion variable is stated. In the above examples, "Lecture method" and "Text Book Method" are independent variable and academic achievement is dependent variable. In the second example the 'Socio-Economic Status' is an example of criterion variable.

The boundaries should be identified for which the research findings may be generalized. They are generally expressed in the terms of 'Target Population'. In the above examples, students of class IX and students of class X are target population in experimental and non-experimental population respectively.

Another requirement for a good, research title is that it should not be too lengthy. Attempts should not be made to answer all questions relating to variables and the population in a title. Fifteen to twenty words are the maximum can be included in a research title.

Some good titles are given below;

a. "A Comparison Between Two Methods of Teaching Algebra-Expository and Discovery-in the Tenth Class in a Recognized Secondary School".
b. "The Effects of Grading on Achievement in Mathematics."
c. "The Relationship between Spelling, Achievement and a Personality Factor".
d. "A Comparison of the Evaluation of Teacher Performance by Principals and Teachers".
e. "A Study of the Effect of Two Seating Arrangements in the in the Foreign Language Achievement of Class VI."

13.5 Research Problem:

The second part of any research proposal is the research problem. It is of special importance on account of its strategic location. The problem should define and delimit the specific area of the proposed research. It should begin with the general background of the problem and end with a specific statement of the problem. The research problem should be so structured that it should begin with a broad base of general problems and explanations. It should be followed by a survey of related research literature. It should end with the problem statement.

The background of the research should identify the variables of the research problem, discuss the variables which are selected for the research study. Other important variables which are not included in the research study should also be briefly discussed. It should also be made clear that which criteria were used for the selection of the variables. This part of the research proposal should be written in simple language and should also be precised.

The significance of the problem should also be written. It should meet the following requirements;

a. The research proposal is time bound document. Thrust areas of research changes from time to time. Only such areas should be selected which are of crucial importance these days.
b. The research proposal should be related with practical problems. It should provide solution to any existing social / behavioral /educational /institutional/library related problem etc.
c. The research problem should not have small target population, because its result cannot be verified.
d. Target population of any research problem should be related to a popular population.

If the research proposal is to be submitted for financial assistance it should also be seen that what the areas of priority of the funding agency are. Each agency grants financial assistance to those research studies which it considers as central to its area of concern and others as peripheral. The statement of the problem is the last stone in the pyramid of the research problem. It specifies the variates and criterion variables in non-experimental studies and independent and dependent variables in an experimental study, the type of relationship between variables and target population.

Another criterion of a good problem statement is that it can be measured. A research problem in which the relationship between variables cannot be measured empirically cannot be categorized a research problem.

The statement which seeks to answer the question of value-judgment should not be included in research problem. Such questions cannot be answered by a research study. They should be avoided in a research proposal.

Statement of Hypothesis:

The third part of a research proposal is statement of Hypotheses. It is done more sophistically than the statement of problem. The research hypothesis is presented in an affirmative form rather than in the interrogative form. They state what is expected to occur if various conditions are evoked or presumed. The researcher should review the related literature thoroughly before formulating hypotheses.

All the terms which are used in any hypothesis should be carefully defined. The hypothesis should be unambiguous and testable. Since the quantum of achievement is difficult to predict at the time of statement of hypothesis, researchers prefer 'null hypothesis' which assumes that only a chance difference is expected to occur between the groups. A null hypothesis merely states that there is no relationship between the variables. It is expressed in statistical terms; Xa-Xb=0.

Suppose a researcher observed that Mr.X appeared to have better teacher-student relation that Mr.Y. It was observed that Mr.X used to discuss personal problems of the students and find out their solutions while Mr.Y used to have only formal relationship of classroom teaching. The researcher formulated the following problem.

"What are the effects of discussion of personal problems of the students on the teacher-student relationship"?

The problem statement could be written as substantive hypothesis in the following words;

"The discussion of personal problems of the students will have better teacher-student relationship than not having any such discussion."

This hypothesis can be written as null hypothesis in the following form;

"Discussion of personal problems of the students by the teachers with them and no discussion will have no differential effect upon the teacher-student relationship."

The following criteria should be used for the formulation of testable and significant hypothesis;

a. The hypothesis must be clearly stated in operational terms.
b. The hypothesis must be specific and testable.
c. Research problems should be selected which are directly related to previous research or theoretical formulations.

Procedures:

The fourth part of a research proposal is called procedures. It is also called as 'Methodology' and 'Method of Procedure.'. It comprises of the following;

A. Target Population:

It is also called universe. The salient characteristics of the population should be thoroughly described so that it should be definite that what is the target population for which sample is to be drawn and to which the results of the study could be generalized.

B. Sampling Plan:

The method of sampling should be specified in the research proposal. If the sample is not thoroughly analyzed and precisely described, faulty generalizations may be made. The sample should be made the true representative of the population. The sampling plan should also be described in the proposal. It should describe how the units in the target population will be selected and used. A good sampling plan should meet the following criteria;

a. Obtaining or constructing an accurate, current list of the target population units.
b. Method of drawing the sample.
c. Number of subjects or population units to be selected.

C. Research Design:

The research design should indicate how the research setting will be arranged in order to yield the desired data with the least possible contamination/ error by intervening variables. There is no single design that can be applied in all the cases. It depends upon individual researcher to devise his design. The design should ensure the answer of every hypothesis designed in the proposed research work.

A well prepared research design should contain the following characteristics;

a. Specifications of its relationship to each research hypothesis.
b. Description of the methods of proposed control of confounding variables and threats to validity.
c. Description of the design in statistical terms.
d. Identification of the types of interferences that may be made.

D. Stimulus Materials:

It should also be specified in the research proposal that what stimulus materials will be used in the study. Kinds and ways of stimuli should be described. Most commonly used stimuli are printed instructional materials. Instructional materials should include the following elements;

a. Title
b. Author/Editor
c. Publisher

d. Year of publication
e. Intended population
f. Time required for administration
g. Cost of material

E. Response Measures:

The researcher should specify clearly what raw data are required by the research design and how they will be collected. Each instrument should be described including the following items of information:

a. Title
b. Author/Editor
c. Publisher
d. Population
e. Forms
f. Test Objectives
g. Description of test ,items, scoring procedures
h. Traits represented in score
i. Predictive / Concurrent validity
j. Reliability data
k. Normative data
l. Internal consistency of tests
m. Time required for administration
n. Cost of material
o. Data of publication

F. Data Collection Methods:

The research proposal should identify the schedules and procedures to be used for acquiring the data and recording it accurately. If they are lengthy, they should be placed in an appendix and reference be given in the body of the proposal.

G. Data Analysis:

The researcher should specify how the data will be ordered and reduced to relate directly to the research problem. The statistical procedure to be used in the analysis of data they should be described. It will be done hypothesis wise or not, it should be indicated in the research proposal.

If a complex design or obscure statistical test is to be used, it should be indicated in the proposal.

If the research proposal is to be submitted to a Funding agency, the following information should also be provided in the research proposal;

Logistics: It consists of the following;

a. Time Schedule
b. Personnel
c. Facilities, equipment and supplies
d. Travel expenses
e. Publication costs and other direct costs
f. Budget forms

The researcher should identify the funding agency such as; UGC, ICSSR, NCERT, SCERT, Universities

The researcher should also obtain the research format from the funding agency and prepare research proposal on the guidelines provided by the funding agency.

Organization/Format/Main Body of Report:

a. **Title page:** The title page appears first. It should indicate the subject, data to the report is prepared, for whom prepared and by whom prepared. If the research report is confidential the name of those individuals to receive report should be specified on the title page.
b. **Table of contents:** If the report is lengthy or it is divided into numerous parts, it is usually describe to have table of content. Table of contents list the sequence of topic covered in the report long with page reference. Its purpose is to aid the readers in findings the particular section in report. If the report includes numerous chart, graphs, and figures they should be listed immediately following the table of content by page number.
c. **Management/executive summary**: Most decision maker requires that the research report contains one or two page management summary. Most executives choose to read only this summary. It provides the executives with the key research findings which bear on the decision problem. It contains objective of the research project, conclusion and specific recommendation for action.
d. **Foreword**: This serves to introduce the readers to the research project. It should give background of the problems like how and when it comes to existence, importance of the problem, various dimensional of the problem and whether any previous research was done which is pertinent to the specific project being reported.
e. **Statement of objectives**: The specific objectives of the report need to be set forth clearly. The readers must know exactly what the report covers.
f. **Methodology:** It describes the research procedure.

This includes the following:

a. **Research design:** It can be exploratory or conclusive the researcher should describe the particular design used.
b. **Data collection method:** The researcher must explain the data collection method used. Data can be collected from primary or secondary source with various methods.
c. **Sampling:** It should specify universe, sampling units, sampling size, sampling procedure employed.
d. **Fieldwork:** It should describe fieldwork activities such as description of the number, type of field workers used, how they were selected, trained and supervised and how their work was verified.

e. **Analysis and interpretation:** It should include logically unfolding of information. It requires the organization of the data into a logical flow of information for decision making purposes.
f. **Limitations** every research project has weakness which needs to be communicating in a clear and concise manner. This helps readers to form more accurate interpretations of the result than they would otherwise do.
g. **Findings** Findings are the results of the study. It is an organized narrative of the results. This section makes up the bulk of the report. Summary table and graphics methods of presentation should be used liberally.
h. **Conclusions and recommendations** it must flow logically form the presentations of the findings. Conclusions should clearly link the research findings with the information needs and based on these linkage recommendations for action can be formulated.
i. **Appendix** The purpose of the appendix is to provide a place for material which is not absolutely essential to the body of the report. This material is typically more specialized and complex or too detailed than presented in the main report and it is design to serve the needs of the technically oriented readers. The appendix typically contains the following materials: copies of data collection forms: details of sampling plan; tables not included in findings; bibliography.

Presentation of Diagram:

Diagram refers to charts, graphs or schemes that explain thesis. They are basically pictorial presentation. They facilitate understanding of complex problems. It also facilitates presentation of data that are already collected in time of research objectives. Diagrammatic representation of information has now become a popular way to communicate findings to readers.

Methods of Diagrammatic Presentation:

a. **Bar chart:** It depicts the magnitude of the data by length of various bars which have been laid with reference to horizontal or vertical scale. They can be bilateral or two way which show both positive and negative characteristics of data.
b. **Pie Chart:** It is a circle divided into sections such that the size of each section corresponding to a portion of the total. It permits quick and easy understandings of relative percentage or division of the whole.
c. **Line or Circle or Sector Charts:** It depicts change in quantitative data over time. Bar chart shows only the total amount for a time period only whereas line charts shows variations within each time period. A line chart is preferred over a bar chart in the following situations.

- When the data involves a long time period
- When several series are compared on the same chart
- When emphasis is on the movement rather than the actual amount
- When trends of frequency distribution are presented.

d. **Scatter Diagram:** It is used to examine the relationship between two variables such as price and scales; incomes and expenses; production and cost; manpower and cost; and so on.

e. **Time Series Graphs:** It shows the behavior of some variables overt time.

Construction of Tables:

The research data can be presented in tabular form. A table is systematic method of presenting statistical data in vertical column and horizontal rows. Tables enable the reader to comprehend and interpret masses of data rapidly and to significantly details and relations at a glance. Tabulation involves arrangement of data in the form of tables.

Types of Tables

a. **Simple table:** It is often called marginal table. It consists of a count of the number of response that occurs in each of the data categories that comprise a variable. It is one dimension or Univariate table. It makes no difference how many categories any single variable has. Such tables commonly occur in newspapers, government publications etc.
b. **Two Way or Bi-Variates Table:** It is two dimensional tables with two variables. The variables are interrelated. Table showing the male and female population is an example.
c. **Three-Way Table:** It indicates three mutually related and interlinked attributes of phenomenon. The male category of a population can be classified as poor, middle income and rich. It tells the relation among three variables at a time.
d. **Multiple Tables:** It gives information about four or more mutually related attributes.

13.6 Bibliography:

A bibliography is a list of published works. However, by common use both published and unpublished materials are listed in bibliography. It is added at the end of research report. It is always arranged alphabetically. If the bibliography is extensive, it can be divided into books, periodically, newspaper, reports and public documents.

Rules for preparing bibliography:

For a book with one author - Kotler, P (1998). Marketing management: Analysis, planning, implementation and control. New Delhi: PHI Note:

a. Use surname of the author first followed by middle name or two initials. Use the name of institutions or agency if there is no author name.
b. Place the parenthesis immediately after the name to enter the year of publication.
c. Name the books in italic if computer printed, and use underline if it is typed.
d. Give the place of publication and name of publisher.
e. In case of two or more works by the same author, the author's name is not to be repeated; a short horizontal line followed by a period should take the place of author's name
f. If there are two or more works by one author, arrange them chronologically, most recent last.
g. Use double space between the entries. The second line of an entry should be single spaced.

For a book with two authors- Kotler, P and Armstrong (2005), Principle of marketing, New Delhi

For an edited book - Blois, Keith (Ed.) (2000). The oxford text book of marketing, New York: Oxford University Press Line.

For a corporate or institutional author - Nepal Red Cross (1991). Fire representative training manual. Kathmandu: NRC

For a newspaper article - The Rising Nepal. April 15, 1997. P3. Col4

1. Ackoff, Russell L. (1961). The Design of Social Research, University of Chicago Press: Chicago.
2. Allen, T. Harrell, (1978). New Methods in Social Research, Praeger Publication: New York.
3. Baker, R.P. & Howell, A.C. (1958). The Preparation of Reports, Ronald Press: New York.
4. Barzun, Jacques & Graff. F. (1990).The Modern Researcher, Harcourt, Brace Publication: New York.
5. Berelson Conard & Colton, Raymond. (1978). Research and Report Writing for Business and Economics, Random House: New York.
6. Best, John, W. & Kahn, James. (1986).Research in Education, 5th ed., Prentice-Hall of India Pvt Ltd: New Delhi.
7. Bhattacharya, Srinivas. (1972). Psychometrics & Behavioural Research, Sterling Publishers Pvt.Ltd. New Delhi.
8. Burgess, Earnest. (1960).Research Methods in Sociology, New York Philosophical Library: New York.
9. Chaturvedi, J.C. (1970). Mathematical Statistics, Nok Jonk Karyalaya: Agra.
10. Clover, Vernon T. & Balsley, Howard L. (1984). Business Research Methods, Grid, Inc.: Columbus.
11. Cochran, W.G. (1963). Sampling Techniques, John Wiley & Sons: New York.
12. Deming, W. Edwards. (1980). Sampling Designs in Business Research, John Wiley & Sons: New York.
13. Dennis, Child. (1980). the Essentials of Factor Analysis, Rinehart & Winston: New York.
14. Denzin, Norman. (1986). the Research Act, Aldine: Chicago.
15. Ferber, R. & Verdoorn, P.J. (1972). Research Methods in Economics and Business, the Macmillan Company: New York.
16. Ghosh, B.N. (1992). Scientific Methods and Social Research, Sterling Publishers Pvt. Ltd: New Delhi.
17. Glock, Charles Y. (1977). Survey Research in Social Sciences, Russell Sage Foundation: New York.
18. Goode, William, J. & Hatt, Paul K. (1968). Methods in Social Research, McGraw-Hill: New York.
19. Gopal, M.H. (1974). Research Reporting in Social Sciences, Karnataka University: Dharwar.
20. Guilford, J.P. (1964). Psychometric Methods, McGraw Hills, Inc.: New York.
21. Hilway, T. (1964). Introduction to Research, 2nd ed., Houghton Mifflin: Boston.
22. Hyman Herbert H.et al., (1975). Interviewing in Social Research, University of Chicago Press: Chicago.
23. John Peter, W M. (1971). Statistical Design and Analysis of Experiments, the Macmillan Co.: New York.
24. Johnson Ellen. (1961). the Research Report: A Guide for the Beginner, Ronald Press: New York.

25. Kerlinger, Fred N. (1973). Foundations of Behavioral Research, 2nd ed., Holt, Reinhart and Wilson: New York.
26. Kish, Leslie. (1965). Survey Sampling, John Wiley & Sons: New York.
27. Kothari, C.R. (1984). Quantitative Techniques, 2nd ed., Holt, Reinhart and Wilson: New York.
28. Leonard Schwartzman &Anselm L. Strauss. (1973). Field Research, Prentice-Hall Inc.: New Jersey.
29. Levin, Richard I. (1979). Statistics for Management, Prentice-Hall of India Pvt. Ltd: New Delhi.
30. Miller, Delbert C. (1977). Handbook of Research Design & Social Measurement, 3rd ed., David McKay Company, Inc.: New Delhi.
31. Phillips, Bernard S. (1971). Social Research, Strategy and Tactics, 2nded. The Macmillan Company: New York.
32. Sadhu, A.N. & Amarjit. (1990). Research Methodology in Social Sciences, Himalayan Publishing House: Bombay.
33. Sharma, B .A, V. et al (1998). Research Methods in Social Sciences, Sterling Publishers Pvt. Ltd.: New Delhi.
34. Siegel, S. (1970). Nonparametric Statistics for the Behavioural Sciences, McGraw-Hill Publishing Co: New York.
35. Tondon, B.C. (1989). Research Methodology in Social Sciences, Chaitanya Publishing House: Allahabad.
36. Yamane, T. (1973). Statistics: An Introductory Analysis, Harper and Row: New York.
37. Young Pauline V. (1960). Scientific Social Surveys and Research, 3rd ed., Prentice-Hall: New York.

Descriptive method is divided into four parts. They are;

The Survey Studies: They are of following types;

The Inter-relationship Studies are of following types;

The Developmental Studies are of the following types;

The Content Analysis deals with the nature utility and procedure of content analysis. The important problems in this area are as follows;

a. Developing and modifying curriculum.
b. Developing a standardized test in any subject.
c. Differentiating aspects of different writing styles.

13.7 Characteristics of Survey Method:

a. Social survey is confined to the study of specific current problems of society e.g. poverty, unemployment etc.
b. A survey research is planned collection of data for prediction of relations between the variables.
c. Survey is concerned with large or widely dispersed group of peoples contrasted with the lab experiments.
d. Under this method observation, interviews, attitude scales, projective techniques, small scale experiments etc. are used to collect data.
e. The facts collected here may form the basis of further social researches.

Planning a Survey Method:

The following are the steps which are involved in survey methods;

a. Select a problem.
b. Preliminary or pilot study should be done.
c. General and Specific objectives of the study are to be framed.
d. It should be determined that for which of the variables, identified in the problem whether; adequate techniques for data collection are available, and if not then is it possible for the researcher to design them.
e. Population should be identified and representative sample should be selected.
f. Data collection design should be prepared.
g. The data should be collected.
h. The data should be analyzed.
i. The report should be prepared which should have descriptive past, comparative or evaluative past and findings.

Merits of Survey Methods:

a. Direct and close contact between researcher and respondents.
b. Great objectivity.
c. Testing the validity of theories.
d. Formulation and testing of hypothesis.
e. Social surveys are based on actual observation.
f. It has universal application.

Limitations:

a. Survey method is costly, time consuming and wasteful in certain cases where the objectives are limited.
b. The survey method is unsuitable if the numbers of persons to be surveyed are very large or if they spread over a large geographical area.
c. In this method personal bias may vitiate the result.
d. It lacks the flexibility.
e. In this method, it is very difficult to verify the accuracy of the data collection.
f. Only useful for current problems.
g. It does not permit more comprehensive and dynamic study of the society but deals with the problems of immediate importance only.
h. Under this method most of the surveys are conducted on sample basis. If the sample is not carefully planned, inferences drawn may be inaccurate and misleading.

Experimental Method:

It may be defined as the study of the relationships among variables-those manipulated and those measured. It simply enables the researcher to improve the conditions under which the researcher observes and thus to arrive at a more precise results. It enables him to relate a

Pre-test	Independent Variable	Post-test
T1	X	T2

Since there is no control group in this research design it cannot be checked whether the obtained result is due to treatment or extraneous variables.

Design No.2: Two Group, Static Design

Group	Independent Variable	Post-test
Experimental		T2
Control		T2

In this design, the two groups are assigned but neither on the basis of randomization nor matching. There is no pre-test so the researcher cannot measure the difference on account of treatment. In this design, comparison is made on the basis of post-test, in experimental group and control group.

True-Experimental Designs:

In these designs, the researcher attempts to control the effects of history, maturation, testing, measuring instruments etc.

Design No.3: Two groups, Randomized Subject, Post –test only Design

Randomly assigned Group i	Independent Variable	! Post-test
Experimental i		i T2
Control |		i T2

In this design, there is provision of randomization of subjects to the two groups, it assures the equivalence of groups and since there is no provision of pre-test there is probability of interaction effect. However, the use of the designs restricts the external validity of the experiment. There are some situations which do not permit selection of subjects at random.

Design No.4: Two groups, Randomized Matched Subjects, Post-test only Design

Randomly assigned group after matching	Independent Variable	Post-test
Experimental		T2
Control		T2

This design is the most useful where small groups are to be used. In this design the subjects are randomly assigned to two groups after matching, it ensures strengths to design.

But it is very difficult to match the subjects with precision because it reduces the sizes of the sample. In some cases it is not possible to match one or more potential subjects. If some subjects are to be reduced for this purpose, a bias is introduced in the sample.

Design No.5: Randomly groups Pretest, Posttest design

Randomly assigned	Pre- test	Independent Variable	Post test
Experimental group	T1 E	Experimental group	T2 E
Control group	T1 C	Control group	T 2 C

In this design additional check is provided for the equality of Experimental group and control group because there is provision of pretest. The nature of the design is such that it controls most of the extraneous variables. However, the design has certain limitations. Firstly, interaction between pre-test and treatment may sensitize subjects which may affect the results. Secondly, interaction of experimental variable with other factor limits its generalization. Thirdly, experimental procedure may affect normalcy.

Design No.6: The Randomized Solomon Three Group Design

Randomly assigned	Pre-test	Independent Variable	Post -test
Experimental group(E)	T1 E		No Pre-test
Control group 1(C_1)	T1 E		T2 C1
Control group 2 (C_2)	No Pre-test		—1 n

In this design check is provided for the equality of Experimental group and control group because there is provision of pre-test. The nature of the design is such that it controls most of the extraneous variables. The provision of the second control group ensures control interaction effect of Pre-test and treatment.

Design No.7: The Randomized Solomon Four Group Design

Randomly assigned	Pre-test	Independent Variable	Post-test
Experimental group(E)	T1 E		T2 E
Control group 1(Q)	T1 C1		T2 C1
Control group 2 (C_2)	No Pre-test		T2 C2
	No Pre-test		T2 C3

In this stage check is provided for equality of Experimental group and control group, because there is provision of pre-test.

The nature of the design is such that it controls most of the extraneous variables. The provision of the second control ensures control interaction effect of pretest and treatment. The design controls any possible contemporary effects between pre-test and post-test. The result in this design provides greater confidence. However, this design is such that it is difficult to conduct in practical situation. There is a difficulty of statistical application in this design.

Factorial Design:

This design enables the experimenter to evaluate or manipulate two or more experimenter to evaluate or manipulate two or more variables simultaneously in order to study the effects of number of independent factors singly as well as the effects due to interactions with one another. Design No.8: Single Factorial Design of 2 2

There are two independent variables and each of the independent variables has two values. The first independent variable which is manipulated and has two values is called the experimental variable. The second independent variable which is divided into levels may be called control variable. In this design the impact of more than one variable can be studied simultaneously. In this not only the significance of difference of different levels is studied but interaction effect can also be studied. However, if too many variables and too many levels are studied, the experiment and statistical analysis becomes too difficult to manage.

Steps of Experimental Research Methods:

The procedures of the experimental method are to be executed under the following steps;

a. **Identifying, Defining and Delimiting the Problem:** The problem that can be verified or refuted by the experimental data should be selected first. The variables to be investigated are defined in operational terms.
b. **Reviewing the Literature:** After selecting the problem, the related literature and experiments should be reviewed and the method of approach or experimental design to be pursued should be planned or outlined.
c. **Formulating the Hypothesis and Deducing Their Consequences:** The problem has to be converted into a hypothesis that can be verified or refuted by experimental method.
d. **Drawing Up the Experimental Design:** This section should place primary emphasis on the question of control, randomization, replication, place of the experiment, duration of the experiment, selecting or constructing and validating instruments to measure the outcomes of the experiment and conducting pilot for trial run tests to perfect instrument.
e. **Defining the Population:** It is necessary to define the population precisely so that there can be no question about population to which the conclusions are to apply. It may consist of selecting a sample of subjects to represent a given population and pairing of subjects to secure homogeneity.
f. **Administration of Test / Carrying Out the Study:** It is necessary to insist on close adherence to plans and experimental design. This will involve controlling variable or non-experimental factors, applying the experimental factors and keeping the careful record of steps in the procedure.
g. Measuring the outcomes / Collection of Data: Careful consideration must be given to the selection of the criterion on the basis of which the results are measured.
h. **Analyzing and Interpreting the Outcomes:** The result pertaining to the factors under study should be clearly noted. The analysis of data demands expert use of statistical procedures. Only then the analysis becomes the basis for valid interpretation.
i. **Drawing the Conclusions:** The conclusions of the study must be restricted to the population actually covered; care must be taken not to over ganaralize the results. The result also pertains to the conditions under which they were derived. Care must be taken to restrict the conclusions to the conditions actually present in the experiment.
j. **Reporting the Results:** The study must be reported in sufficient details.

List fo Chapters

KRIPA DRISHTI PUBLICATIONS

Kripa-Drishti Publications
A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,
Pune – 411021, Maharashtra, India.
Mob: +91 8007068686
Email: editor@kdpublications.in
Web: https://www.kdpublications.in

ISBN: 978-81-948755-8-1