



**RESEARCH METHODS
IN SOCIOLOGY
M21SO06DC**

SELF LEARNING MATERIAL

**POST GRADUATE PROGRAMME
SOCIOLOGY**

SREENARAYANAGURU OPEN UNIVERSITY

The State University for Education, Training and Research in Blended Format, Kerala

SREENARAYANAGURU OPEN UNIVERSITY

Vision

To increase access of potential learners of all categories to higher education, research and training, and ensure equity through delivery of high quality processes and outcomes fostering inclusive educational empowerment for social advancement.

Mission

To be benchmarked as a model for conservation and dissemination of knowledge and skill on blended and virtual mode in education, training and research for normal, continuing, and adult learners.

Pathway

Access and Quality define Equity.

Research Methods in Sociology

Course Code: M21SO06DC

Semester - II

Discipline Core Course
Master of Arts Sociology
Self Learning Material
(With Model Question Paper Sets)



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MESSAGE FROM VICE CHANCELLOR

Dear

I greet all of you with deep delight and great excitement. I welcome you to the Sreenarayanaguru Open University.

Sreenarayanaguru Open University was established in September 2020 as a state initiative for fostering higher education in open and distance mode. We shaped our dreams through a pathway defined by a dictum 'access and quality define equity'. It provides all reasons to us for the celebration of quality in the process of education. I am overwhelmed to let you know that we have resolved not to become ourselves a reason or cause a reason for the dissemination of inferior education. It sets the pace as well as the destination. The name of the University centres around the aura of Sreenarayanaguru, the great renaissance thinker of modern India. His name is a reminder for us to ensure quality in the delivery of all academic endeavours.

Sreenarayanaguru Open University rests on the practical framework of the popularly known "blended format". Learner on distance mode obviously has limitations in getting exposed to the full potential of classroom learning experience. Our pedagogical basket has three entities viz Self Learning Material, Classroom Counselling and Virtual modes. This combination is expected to provide high voltage in learning as well as teaching experiences. Care has been taken to ensure quality endeavours across all the entities.

The university is committed to provide you stimulating learning experience. The PG programme in Sociology is a logical development of the grammar of our UG programme. It is considered to be a progression of the finer aspects of theories and practices. The discussions are meant to arouse interest among the learners in understanding the discipline in the real context and therefore, the examples are drawn heavily from the real life experiences. The provision for empirical evidences integrated endeavour of the academic content makes this programme special and relevant. We assure you that the university student support services will closely stay with you for the redressal of your grievances during your studentship.

Feel free to write to us about anything that you feel relevant regarding the academic programme.

Wish you the best.



Regards,
Dr. P. M. Mubarak Pasha

01.12.2023

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QUANTITATIVE METHODS AND SURVEY RESEARCH

BLOCK-01



Nature of Quantitative Research Methods

Learning Outcomes

After completing this unit, the learner will be able to:

- ◆ demonstrate the scope and meaning of quantitative research methods in social research
- ◆ understand the possible uses and misuse of statistics in quantitative research
- ◆ explain the need for evaluation in social research and programme evaluation

Background

Quantitative research dates back thousands of years. These roots are linked to the understanding that every society needs some sort of bureaucracy in order to function properly, and this requires some data about its residents. For example, in order to set taxation levels and design infrastructure, bureaucracies need to know the basic socio-economic demography of their citizens, such as how many citizens live in a geographical unit, how much money they earn, and how many acres of land they own. Hints on the first quantitative data collection efforts date back to the great civilisations of antiquity, such as China, Egypt, Persia, Greece or the Roman Empire. Surveys became the prime quantitative method used by bureaucrats for the collection of primary data. Later, gradual development in social research as part of positivism and empiricism led to the development of other quantitative techniques. In this unit, we shall explore different facets of quantitative research.

Keywords

Research, Statistics, Evaluation, Positivism, Empiricism, Survey, Numerical



Discussion

1.1.1 Quantitative Research

◆ *Numeric Explanation of Phenomenon*

Quantitative research is the numerical representation of observations for the purpose of describing and explaining the phenomena that those observations reflect. It is used in a wide variety of natural and social sciences, which include physics, biology, psychology, sociology, geology, etc. According to Cohen, quantitative research is defined as social research that employs empirical methods and empirical statements. Creswell has given a very concise definition. He states that quantitative research is a type of research that explains phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics). To be more precise about the definitions, when we set out to do some research, we are always looking to explain something. For example, what factors influence student achievement in learning English as a foreign language? To find out the answer to this question, we collect numerical data, which could be analysed using mathematical or statistical methods. At the same time, in order to use mathematical or statistical methods, the data have to be in numerical form. It is important to use the right tools for data analysis. However, it is even more important to use the right research design and data collection techniques.

1.1.2 Nature of Quantitative Research Methods

◆ *Realist or Positivist View*

The quantitative view is described as being 'realist' or sometimes 'positivist'. Realists take the view that what research does is to uncover an existing reality. The truth is out there, and it is the job of the researcher to use objective research methods to uncover that truth. This means that the researcher needs to be detached from the research and use methods that maximise objectivity and minimise the involvement of the researcher in the research. This is best done using methods taken largely from the natural sciences and then transposed to social sciences. Positivism is the most extreme form of this view, where the world works according to fixed laws of cause and effect.

Quantitative research is associated with a number of different approaches to data collection. Especially in

◆ *Quantitative research features*

sociology, the social survey is one of the main methods of data collection that embody the features of quantitative research. Surveys and experiments are probably the main methods of quantitative research. In quantitative research, the clearly defined research questions are framed on the basis of the research problem, and the answers to these questions are sought objectively. The samples are also representative of the population and hence the results achieved can be generalised to the population. Quantitative research deals with variables and as per the requirement, the researcher controls the variables that can affect the study. Quantitative data is collected with the help of structured and standardised research techniques. The collected data is analysed using empirical evidence, which is often arranged in tables, charts, graphs and other non-textual forms using statistics. Quantitative research is highly reliable, and the results obtained through the scientific method can be generalised and used to predict results and infer causal relationships effectively.

1.1.3 Scope of Quantitative Research

◆ *Audience segmentation*

Quantitative research is useful for conducting audience segmentation. It is done by dividing the population into groups whose members are similar to each other and distinct from other groups. Quantitative research is used to estimate the size of an audience segment as a follow-up step to a qualitative study to quantify results.

◆ *Quantify opinions*

Quantitative research is also useful to quantify opinions, attitudes and behaviours and find out how the whole population feels about a certain issue. Quantitative research is suitable to explain certain phenomena. For instance, what factors predict the general English proficiency of final-year professional students? What factors are related to changes in professional students' formal language efficiency over time? These questions can be studied successfully using quantitative methods, and different statistical measurements can be employed to analyse the relationship between different variables in the research. Quantitative research is also used for testing a hypothesis. For example, to find out whether there is a relationship between students' achievement and their social background in developing formal language efficiency, the testing of this hypothesis is possible if quantitative research is used.

In quantitative research, measurement carries various

◆ *Causality
in quantitative
research*

advantages. The issues of validity and reliability are a concern for quantitative researchers. They are rarely concerned with describing how things are but are keen to say why things are the way they are, which is termed causality. Thus, researchers are often not only interested in phenomena like racial prejudice as something to be described but also explain it by examining its causes. For example, in terms of how much prejudice exists in a certain group of individuals, or what proportion of people in a sample are highly discriminatory and what proportion are largely lacking in prejudice, they would be keen on explaining it in terms of examining its causes. In quantitative research, the findings can be generalised beyond the confines of the particular context in which the research was conducted. The findings of the research should be unaffected by the researchers' special characteristics or expectations. If biases and lack of objectivity is pervasive, the claims of the natural sciences to provide a definitive picture of the world would be seriously undermined.

1.1.4 Limitations of Quantitative Research Methods

◆ *No distinction*

Quantitative researchers fail to distinguish people and social institutions from 'the world of nature': Social scientists treat the social world as if it were no different from the natural order. As positivism, the principles of the scientific method can and should be applied to all phenomena that are the focus of investigation.

◆ *Limited
precision*

The measurement process possesses an artificial and spurious sense of precision and accuracy: It has been argued that the connection between the measures developed by social scientists and the concepts they are supposed to be revealing is assumed rather than the real. The reliance on instruments and procedures hinders the connection between research and everyday life: Many methods of quantitative research rely heavily on administering research instruments to subjects (such as structured interviews and questionnaires) or on controlling situations to determine their effects. Suppose respondents answer a set of questions designed to measure racial prejudice. Can we be sure that they are equally aware of what it is and what its manifestations are, and can we be sure that it is of equal concern to them in the ways in which it connects with everyday life? People may answer a question designed to measure racial prejudice, but

respondents' actual behaviour may be at variance with their answers.

The analysis of relationships between variables creates a static view of social life that is independent of people's lives.

Even though quantitative research is most popular in doing surveys, the prime limitation is its analysis of replicating the information to the entire social world. The measurement is another aspect where the researcher does not necessarily need to have a connection with the real world. Another critique is that the respondents must be aware of the subject that has undergone the survey, there is no further checks to ensure the knowledge about the subject by the respondents. Hence, it may spoil the content of the research while surveying respondents who are unaware of the topic.

◆ *Barriers in quantitative research*

1.1.5 Misuse of Statistics

Statistics is a science concerned with uncertainty in real life. It involves developing and studying methods for collecting, analysing, evaluating, interpreting and presenting the information. Misuse of statistics is a pattern of unsound statistical analysis, which can be a result of mistakes or negligence, lack of statistics knowledge or purposive.

◆ *Statistics: uncertainty and analysis*

A common error in statistical investigation is the selection of a sample that is not an accurate cross-section of the larger universe but merely a particular, unique statement. Conclusions drawn from the biased sample will not, of course, accurately reflect the larger universe. The misuse occurs when such conclusions are held to be representative of the universe by those who either deliberately or unconsciously overlook the sampling bias.

◆ *Statistical precision and bias*

1.1.6 Evaluation Research and Programme Evaluation

When a social intervention takes place or is planned, evaluation research is useful. A social intervention is an action performed in a social setting with the goal of achieving a specific outcome. Evaluation study, in its most basic form, is the act of establishing if a social intervention has achieved the desired outcome.

◆ *Social intervention evaluation*

Evaluation is a form of applied research – it is intended to have some real effect. There are many variations in the

intent of evaluation research. Needs assessment studies aim to determine the existence and extent of problems, typically among a segment of the population, such as the elderly. It is made for assessing the effectiveness of social or economic programmes implemented (e.g.: family planning scheme) or for assessing the impact of developmental projects (e.g.: irrigation project). Cost-benefit studies determine whether the results of a program justify its expense. Monitoring studies provide a steady flow of information about something of interest, such as crime rates or the outbreak of an epidemic. Sometimes, the monitoring involves incremental interventions. Evaluations are of three types:

◆ *Types of evaluation*

1. **Concurrent evaluation:** This is a continuous process and partakes the nature of an inspection or social audit of an ongoing programme. It aims to evaluate the quality of implementation and services as feedback for improving performance.
2. **Periodic evaluation:** This is made after each distinct phase or state of a project has been completed. In the case of a period time-bound programme like the five-year plan, this evaluation may be done in the middle of the period, and it may be called a mid-term or interim evaluation.
3. **Terminal evaluation:** This is done after the completion of a programme or project (e.g.: irrigation project). This is designed to assess the extent of the achievement of its goals or objectives. It may also involve a benefit-cost analysis.

◆ *Evaluative research distinctions*

Weiss and Coleman list a number of specific criteria that distinguish evaluative research from other types of research. First, evaluation research is usually conducted for a client who intends to use the findings as a basis for decision-making. This is quite different from basic research, which aims at knowledge for its own sake. Second, the evaluation researcher deals with his client's questions relating to the latter's programme, while the basic researcher formulates his own research questions. Third, the evaluation researcher measures whether the programme goals are being reached. Other scientific researchers concern themselves with 'what is' rather than with comparisons of 'what ought to be'. Nevertheless, evaluation research does not differ from other types of research in methodology. The problems of reliability, validity and operationalisation and research methods,

◆ *Program
evaluation
overview*

techniques and principles are common to evaluation and other types of research. The main types of research designs that are appropriate for evaluation are experimental designs, quasi-experimental designs, and qualitative evaluations.

Programme evaluation is the use of social research procedures to investigate the effectiveness of social intervention programs systematically. More specifically, evaluation researchers or evaluators use social research methods to study, appraise and help improve social programs in all their important aspects, including the diagnosis of the social problems, their conceptualisation and design, their implementation and administration, their outcomes and their efficacy.

In short, evaluation research intends to research a social event rather than programme evaluation, which examines and verifies the systematic procedures for conducting quantitative social research.

Summarised Overview

Quantitative research is commonly employed, particularly for analysing numerical data in surveys, quantifying opinions, attitudes, and behaviours, and shedding light on how the entire population perceives certain issues. It relies on statistical or mathematical techniques for analysing numerical data. However, a common pitfall in quantitative research is the selection of biased samples, which can lead to inaccurate conclusions about the broader population. Despite its popularity in surveys, one limitation of quantitative research is its challenge in replicating information across the entire social world.

Quantitative research prioritises objectivity, making it suitable when collecting quantifiable measures of variables and drawing inferences from population samples. Nevertheless, it faces criticisms from qualitative researchers who argue that applying a natural science model to study the social world is inappropriate. The misuse of statistics, characterised by unsound statistical analysis stemming from mistakes, negligence, a lack of statistical knowledge, or intentional manipulation, poses a significant concern. Evaluation research involves assessing whether a social intervention has achieved its intended outcomes, while program evaluation employs systematic social research methods to investigate the effectiveness of social intervention programs.

Assignments

1. Review an article with quantitative research methodology and illustrate the major limitations of the subject with regard to quantitative research techniques.
2. Draft a sample questionnaire and collect data from a minimum of 50 respondents. Identify the missing elements while conducting fieldwork and analysing the questionnaire.
3. Discuss how statistical tools may be prone to misuse in quantitative research.
4. Elaborate on the scope and benefits of quantitative research.

Suggested Reading

1. Bryman, A. (2016). *Social Research Methods*. UK: Oxford University Press.
2. Babbie, E. R. (2020). *The Practice of Social Research*. UK: Cengage learning.

Reference

1. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. India: New Age International.
2. Fitzpatrick, J.L., Sanders, J.R. and Worthen, B.R. (2010) *Program Evaluation: Alternative Approaches and Practical Guidelines*. 4th Edt, Pearson, New York.



Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

SGOU



Sampling

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ understand the types of sampling and the selection procedure in quantitative research
- ◆ explore the major tools and their specifications of data collection in quantitative research
- ◆ demonstrate preparation, usage and limitations of the popular tools in quantitative research, such as interview schedules and questionnaire

Background

Sampling is an important topic in research methodology, with well-developed and mathematically sophisticated sampling plans. Sampling allows the researcher to decide what kind of sample size is suited to the investigation of the topic. The need to sample is almost invariably encountered in quantitative research. Sampling in social research has developed hand in hand with political polling. Because, political polling is one of the few opportunities social researchers have to discover the accuracy of their estimates. On election day, they find out how well or how poorly they did. The *Literary Digest* was a popular American news magazine published between 1890 and 1938. In 1920, for the political poll, the Digest editors mailed postcards to people in six states, asking them whom they were planning to vote for in the presidential election. Names were selected for the poll from telephone directories and automobile registration lists. Based on the postcards sent back, Digest correctly predicted the result. The continuous data collection allows them to know about the different factors that accounted for the failure of polls in 1948. By 1948, some academic researchers had also begun experimenting with a form of sampling. They found the significance of sampling and the possibilities of probability and non-probability sampling procedures to make ease and accuracy of data collection. This unit shall explain about the sampling procedure and the developments taking place with different types of sampling.



Keywords

Representative, Data, Population, Probability, Tools, Generalisation

Discussion

1.2.1 Sampling

Sampling is the process of choosing a group of observations or samples to study. In all types of research, whether it's quantitative or qualitative, sampling is essential. Why? Because no research can include everyone and everything. Imagine trying to study every single person, everywhere, doing everything – it's just not practical. In quantitative research, sampling often involves selecting a group of people to study. The main idea here is that the "population," which is the entire group you ideally want to study, and the "sample," which is the specific group of people you actually research and collect data from. So, in simpler terms, sampling is how researchers pick a smaller group to represent the bigger group they want to learn about.

◆ *Representative population*

In quantitative research, the goal is to study a smaller group of people and then use what's learned from them to make conclusions about a larger group. First, data is collected from the sample and analysed to find out things corresponding to the objectives of a study. But remember, the findings are based on the sample, not the whole population. The next step is to take what was learned from the sample and apply it to the entire population. This kind of sampling that aims to be representative is usually called probability sampling, and one of the main ways to do it is by randomly selecting people for the sample.

◆ *Representativeness*

The way you choose your sample in a research project should make sense based on what you're trying to find out. It's not separate but should match the objectives of your research. For example, if you want your sample to represent a larger group accurately, then you should use a method that ensures representativeness. On the other hand, if your research is all about finding connections between different things or comparing groups, then it might be better to pick your sample in a way that gives you the best chance of seeing

◆ *Sampling purposefully*

those connections. So, your sampling plan should fit with what you're trying to learn in your research.

1.2.2 Techniques of Sampling

The sampling techniques are divided into two broad categories:

1. Probability / Random Sampling
2. Non-probability / Non-random sampling

1.2.2.1 Probability / Random Sampling

Qualitative and quantitative researchers have different ways of picking who or what they study. What they both aim for is to choose a smaller group to look at, which represents a bigger group or population. This smaller group helps them make conclusions about the larger group. They tend to use sampling based on theories of probability from mathematics called probability sampling. Researchers use probability or random sampling for two main reasons. First, it helps save a lot of time and money. Imagine if you had to collect data from 20 million people – it would take forever and cost a ton. But with sampling, you can pick a smaller group, like 2000 people, and get results that are almost as good as if you had surveyed everyone. Second, probability sampling makes your results more accurate. It's like trying to count every single person in a big country, which can be really hard. But with the right sampling method, you can still get very accurate results without counting every single person.

◆ *Time-efficient and accurate*

Qualitative researchers don't worry as much about having a sample that perfectly represents a big group of people. Instead, they are more interested in how the small group can help them understand important things about social life. They pick cases, events, or actions that can give them a deeper insight into what is happening in a specific situation.

◆ *Small samples*

Types of Probability Sampling

1. **Simple Random Sampling:** In simple random sampling, a researcher follows these steps: First, they make a list of all the things or people they want to study, this is called a sampling frame. Then, they use a random method, like picking numbers out of a table with random numbers, to choose which people to include in their sample. They go and find the exact no



◆ *Fair and random*

of people they need from the list. The idea is to make sure that everyone on the list has an equal chance of being chosen, so it's fair. You can find these random number tables in books about statistics and research methods.

◆ *Systematic and random*

- 2. Systematic Sampling:** Systematic sampling is a method of selecting a sample from a large population in a systematic and organised way. It involves choosing every n th individual from a list or sequence after a random starting point has been determined. For example, if you want to select a systematic sample of 100 students from a school with 1,000 students, you could start by randomly selecting a number between 1 and 10. Let's say you choose 3. Then, you would select every 3rd student from the list of students, starting with the randomly chosen student. So, if the randomly selected student is the 7th student on the list, you would select the 7th, 10th, 13th, and so on until you have your sample of 100 students. Systematic sampling is a more efficient way to create a representative sample compared to simple random sampling, especially when dealing with a large population.

◆ *stratified sampling*

- 3. Stratified Sampling:** Stratified sampling is a method of selecting a sample from a larger population by dividing the population into subgroups or strata based on certain characteristics that are important to the research. Each subgroup or stratum represents a homogeneous group with respect to those characteristics. Then, researchers randomly select samples from each stratum in proportion to their size or importance in the population. The goal of stratified sampling is to ensure that the sample is representative of the entire population, especially when there are significant variations or differences within the population. By dividing the population into strata and then randomly selecting samples from each stratum, researchers can capture the diversity of the population's characteristics in their sample. For example, suppose you were conducting a survey about people's income levels in a city. In that case, you might first divide the population into different strata based on income brackets (e.g., low-income, middle-income, high-income). Then, you would randomly select samples from each stratum to ensure that your

overall sample reflects the distribution of income levels in the city accurately. Stratified sampling is particularly useful when there is a need to analyse subgroups within the population separately or when certain characteristics are known to affect the research outcomes significantly. It helps improve the accuracy and representativeness of the sample for research and analysis.

- 4. Cluster Sampling:** Cluster sampling is a sampling method used in research where the larger population is divided into clusters or groups, and then a random sample of these clusters is selected for further study. Instead of selecting individual members from the population directly, researchers randomly choose entire clusters and then study all the members within those selected clusters. Cluster sampling is particularly useful when it's difficult or impractical to collect a simple random sample of individuals from the entire population. It can save time and resources, especially when the population is large and widely dispersed. Here is an example: Suppose you want to conduct a health survey of people in a large country. Instead of trying to randomly select individuals from every part of the country, which could be very costly and logistically challenging, you could randomly choose a few cities or regions (clusters) from different parts of the country. Then, within each selected city or region, you would study all the individuals you can find or select a sample from within that specific cluster. Cluster sampling is especially useful when the clusters themselves are similar in some way, but they differ from each other. This method helps capture the variation between clusters and can provide a reasonable representation of the entire population without the need to study every single individual. However, it's important to ensure that the clusters are chosen randomly to avoid bias.

◆ *Clustering for feasibility*

1.2.2.2 Non-Probability Sampling

Non-probability sampling is a method of selecting a sample from a larger population in a way that does not provide each member of the population with a known or equal chance of being included in the sample. Unlike probability sampling, which relies on random selection, non-probability sampling methods involve subjective judgment or convenience.

◆ *Non-random selection*



Types of Non-Probability Sampling

◆ *Low-cost convenience*

1. **Convenience Sampling:** This method involves selecting individuals that are most convenient or readily available for the study. It's often used for its simplicity and low cost, but it may introduce bias because it doesn't ensure that the sample is representative of the population.

◆ *Proportional subgroups*

2. **Quota Sampling:** Researchers divide the population into subgroups (strata) based on certain characteristics and then select participants from each subgroup until a predetermined quota is reached. Quota sampling aims to match the proportions of subgroups in the population but doesn't use random selection.

◆ *Purposive selection*

3. **Purposive or Judgemental Sampling:** Researchers intentionally choose specific individuals or items based on their expertise or judgment. This method is useful when the researcher wants to study a particular subgroup or when they believe certain cases are most relevant to the research.

◆ *Referral chaining*

4. **Snowball Sampling:** This technique is often used in studies where the target population is hard to reach. Researchers start with a small number of participants and ask them to refer to others they know who meet the criteria. This method is common in social networks or hidden population studies. It is also called network, chain referral or reputational sampling, which is a method for identifying and sampling the cases in a network. Snowball sampling is a multistage technique. It begins with one or few people or cases and spreads out on the basis of links to the initial cases. Snowball sampling is used to sample a network.

◆ *Cases outside the general pattern*

5. **Deviant Case Sampling:** A researcher uses deviant case sampling, also called extreme case sampling, when he or she seeks cases that differ from the dominant pattern or that differ from the predominant characteristics of other cases. Deviant case sampling differs from purposive sampling in that the goal is to locate a collection of unusual, different or peculiar cases that are not representative of the whole. The deviant cases are selected because they are unusual, and a researcher hopes to learn more about social life by considering

cases that fall outside the general pattern or include what is beyond the main flow of events.

- 6. Sequential Sampling:** It is similar to purposive sampling but has one difference. In purposive sampling, the researcher tries to find as many relevant cases as possible, whereas in sequential sampling, a researcher continues to gather cases until the amount of new information or diversity of cases is filled.

◆ *Information saturation*

1.2.3 Tools for Data Collection

Tools for data collection are instruments, devices, or software applications used to gather information, facts, or observations from various sources. Data collection is a crucial step in research, analysis, decision-making, and many other fields, as it provides the raw material for generating insights and making informed choices. The choice of data collection tool depends on the type of data you need, the context of your project, and the resources available. Here are some common tools and methods used for data collection:

◆ *sources of data*

1.2.3.1 Surveys and Questionnaires

Surveys and questionnaires are structured sets of questions designed to gather information from a specific group of respondents. They can be administered through various mediums, including paper-based forms, online survey platforms, or phone interviews. Surveys are versatile and can collect both quantitative and qualitative data, making them a popular choice for research in fields like social sciences, market research, and customer feedback analysis. Online survey platforms like SurveyMonkey and Google Forms offer user-friendly interfaces for creating and distributing surveys, making data collection more efficient.

◆ *sources of data*

1.2.3.2 Interviews

Interviews involve direct communication between an interviewer and a respondent. They can be conducted in person, over the phone, or via video conferencing. Interviews allow for in-depth exploration of topics and the collection of qualitative data, including personal experiences, opinions, and insights. They are commonly used in qualitative research, journalism, and qualitative market research to gain a deeper understanding of the subject matter.

◆ *Insightful input*

1.2.3.3 Observations

Observations involve systematically watching and



◆ *Gather data by observation*

recording behaviours, events, or phenomena in a real-world setting. This method is particularly useful when studying human or natural behaviours. Researchers may choose to observe and record information directly or use video recording equipment to capture data for later analysis. Field notes are often taken during observations to provide context and insights.

◆ *Sensors automatically collect data*

1.2.3.4 Sensors and Measurement Devices

Sensors and measurement devices are tools that automatically collect data from the environment. For example, environmental sensors can monitor temperature, humidity, air quality, and more. GPS trackers record location data, while wearable fitness trackers collect data on physical activity, heart rate, and sleep patterns. These tools are invaluable for fields like environmental science, healthcare, and logistics, where accurate and continuous data collection is essential.

◆ *Digital data*

1.2.3.5 Social Media and Web Analytics

Social media and web analytics tools are used to collect data from online platforms and websites. Social media monitoring tools track trends, user sentiment, and engagement on platforms like Twitter and Facebook. Web analytics platforms like Google Analytics provide insights into website traffic, user behaviour, and conversion rates. These tools are indispensable for digital marketing, e-commerce, and social media management.

◆ *Extract online data*

1.2.3.6 Data Extraction and Scraping Tools

Data extraction and scraping tools are used to extract structured data from websites and online databases automatically.

◆ *Mobile apps to collect field data*

1.2.3.7 Mobile Data Collection Apps

Mobile data collection apps are custom applications developed for smartphones and tablets. They enable users to collect data on the go, even in offline environments. These apps are particularly useful for field surveys, inspections, and data collection in remote areas.

1.2.3.8 Data Logging and Data Loggers

Data loggers are devices used to record data from sensors or instruments over time automatically. They are commonly used in scientific experiments, industrial settings, and

◆ *Record data*

environmental monitoring to ensure continuous and accurate data capture. Log files, on the other hand, capture data generated by software or systems, which can be analysed for various purposes.

◆ *Analyses and visualises spatial data*

1.2.3.9 Geographic Information Systems -GIS

GIS software is designed for the collection, analysis, and visualisation of spatial data. It allows users to create maps, analyse geographic patterns, and make informed decisions based on location-specific information. GIS is essential in fields like urban planning, environmental management, and logistics.

◆ *Insights from groups*

1.2.3.10 Focus Groups

Focus groups involve gathering a small, diverse group of participants to engage in structured discussions on a specific topic. This qualitative research method is commonly used in market research, product development, and social sciences to gain insights into people's perceptions, opinions, and attitudes.

◆ *Extracts information from content*

1.2.3.11 Content Analysis

Content analysis is a method for systematically analysing text, audio, video, or other content to identify patterns, themes, and trends. It is often used in media studies, linguistics, and social sciences to extract meaningful information from a large volume of content, such as news articles, social media posts, or interviews.

◆ *Need-based selection*

Selecting the most appropriate data collection tool or method depends on the research objectives, the type of data needed, the characteristics of the target audience, budget constraints, and ethical considerations. Researchers and analysts should carefully choose the tool that best suits their specific requirements to ensure accurate and meaningful data collection.

1.2.4 Questionnaire

A document containing questions and other types of items designed to solicit information appropriate for analysis. Questionnaires are used primarily in survey research but also in experiments and field research. In asking questions, the researcher has two options. They can ask open-ended questions in which the respondent is asked to provide his or her own answers to the questions. In the case of closed-

◆ *Self-administered*

ended questions, the respondent is asked to select an answer from among a list provided by the researcher. Closed-ended questions are very popular in survey research because they provide a greater uniformity of responses and are more easily processed than open-ended ones.

◆ *Types of questions*

Open-ended responses must be coded before they can be processed for computer analysis. This coding process often requires the researcher to interpret the meaning of responses, opening the possibility of misunderstanding and researcher bias. There is also a danger that some respondents will give answers that are essentially irrelevant to the researcher's intent. Closed-ended questions can often be transformed directly into a computer format. The chief shortcoming of closed-ended questions lies in the researchers structuring of responses. When the relevant answers to a given question are relatively clear, there should be no problem.

◆ *Exhaustive and exclusive*

Two structural requirements should guide the construction of closed ended questions. First, the response categories provided should be exhaustive: they should include all the possible responses that might be expected. Often, the researchers ensure this by adding a category such as "Other". Second, the answer categories must be mutually exclusive. The respondent should not feel compelled to select more than one. To ensure that your categories are mutually exclusive, carefully consider each combination of categories. It's useful to add an instruction to the question asking the respondent to select the best answer. Still, this technique is not a satisfactory substitute for a carefully constructed set of responses.

Advantages of Open-Ended Questions

- ◆ Respondents can answer in their own terms. They are not forced to answer in the same terms as those imposed on them by the response choices.
- ◆ They allow unusual responses to be derived. Replies that the survey researcher may not have contemplated are possible.
- ◆ The questions do not suggest certain kinds of answers to respondents. Therefore, respondents' levels of knowledge and understanding of issues can be tapped.
- ◆ They are useful for exploring new areas or ones in which the researcher has limited knowledge.

- ◆ They are useful for generating fixed-choice format answers.

Disadvantages of Open-Ended Questions

- ◆ They are time-consuming for interviewers to administer.
- ◆ Answers have to be coded, which is very time-consuming.
- ◆ Respondents are likely to talk for longer, which would be the case for a comparable closed question, or in the case of a self-completion questionnaire, they would need to write for much longer.
- ◆ The problem of transcription is that it is continually faced by qualitative researchers using semi-structured and unstructured interviews.

Advantages of Closed-Ended Questions

- ◆ It is easy to process answers.
- ◆ Closed questions enhance the comparability of answers.
- ◆ Sometimes, respondents may not be clear about what a question is getting at, and the availability of answers may help to clarify the situation for them.
- ◆ Closed questions are easy for interviewers and respondents to complete.

Disadvantages of Closed-Ended Questions

- ◆ There is a loss of spontaneity in respondents' answers. There is always the possibility that they might come up with interesting replies that are not covered by the fixed answers that are provided.
- ◆ It can be difficult to make forced-choice answers mutually exclusive. The fixed answers that respondents are provided should not overlap.
- ◆ All possible answers should really be catered for, although in practice, this may be difficult to achieve.
- ◆ There may be variation among respondents in the interpretation of forced-choice answers.
- ◆ Closed questions may be irritating to respondents when they are not able to find a category that they feel applies to them.

- ◆ A large number of closed questions may make it difficult to establish rapport, because the respondent and interviewer are less likely to engage with each other in a conversation.

The things to be considered while preparing the questionnaire:

- ◆ **Make items clear** - The questionnaire items need to be unambiguous. If we have only a superficial understanding of the topic, we may fail to specify the intent of a question sufficiently. Questionnaire items should be precise so that the respondent knows exactly what the researcher is asking.
- ◆ **Avoid double-barrelled questions** - Sometimes, researchers ask respondents for a single answer to a question that actually has multiple parts. Whenever the word 'and' appears in a question or questionnaire statement check whether you are asking a double-barrelled question.
- ◆ **Respondents must be competent to answer** - In asking respondents to provide information, you should continually ask yourself whether they can do so reliably.
- ◆ **Respondents must be willing to answer** - It is necessary to be concerned that the questions should not be like the things that respondents are unwilling to answer.
- ◆ **Questions should be relevant** - Questions asked in a questionnaire should be relevant to most respondents. When the attitudes are requested on a topic that few respondents have thought about or really care about, the results are not likely to be useful. Because the respondents may express attitudes even though they have never given any thought to the issue, you run the risk of being misled.
- ◆ **Short items are best** - The respondent should be able to read an item quickly, understand its intent and select or provide an answer without difficulty.

- ◆ **Avoid negative items** - The appearance of a negation in a questionnaire item paves the way for easy misinterpretation.
- ◆ **Avoid biased items and terms** - Bias refers to any property of questions that encourages respondents to answer in a particular way.

1.2.4.1 Questionnaire Construction

Questionnaires are used in connection with many modes of observation in social research. Although structured questionnaires are essential to and most directly associated with survey research, they are also widely used in experiments, field research and other data-collection activities. Therefore, questionnaire construction can be an important practical skill for researchers.

◆ *Popular research tool*

1. **General questionnaire format:** - The format of a questionnaire is just as important as the nature and wording of the questions asked. As a general rule, a questionnaire should be spread out and uncluttered. If a self-administered questionnaire is being designed, inexperienced researchers tend to fear that their questionnaire will look too long; as a result, they squeeze several questions onto a single line, abbreviate questions and try to use a few pages as possible. Putting more than one question on a line will cause some respondents to miss the second question altogether. Some respondents will misinterpret abbreviated questions.

◆ *Self-Explanatory*

2. **Formats for respondents:** - The most common type of questionnaire item is one in which the respondent is expected to check one response from a series. Rather than providing boxes to be checked, you might print a code number beside each response and ask the respondent to circle the appropriate number.

◆ *Multiple choice options with codes*

3. **Contingency Questions:** - In questionnaires, certain questions will be relevant to some of the respondents and irrelevant to others. Each subsequent question in the series is called a contingency question. The proper use of contingency questions can facilitate respondents' tasks in completing the questionnaire because they are not faced with trying to answer questions irrelevant to them.



1.2.5 Interview Schedule

An interview schedule is a structured and standardised set of questions or topics that an interviewer follows during a face-to-face or remote interview with a respondent. It is a common data collection method in research, market research, and various other fields where gathering detailed information from participants is essential. Interview schedules are designed for trained interviewers who have to guide a respondent through the question-answer process, while a self-administered questionnaire should be totally self-explanatory to respondents. Interview schedules constructed for structured interviews, both over the telephone or face to face, contain, besides the questions, instructions for trained interviewers. As a consequence, a finalised interview schedule contains text to be read aloud by the interviewer, text that can never be read aloud at all, and text that only in certain situations should be read. Here are the features, advantages, and disadvantages of an interview schedule:

1.2.5.1 Features of an Interview Schedule

1. **Structured Format:** An interview schedule provides a predetermined list of questions or topics, ensuring that each participant is asked the same set of questions in the same order. This standardised format helps maintain consistency in data collection.
2. **Open-ended and Closed-ended Questions:** Interview schedules typically include a mix of open-ended questions that encourage participants to provide detailed responses and closed-ended questions with predetermined response options for quick data analysis.
3. **Flexibility:** While the questions are standardized, interviewers have the flexibility to probe deeper into specific topics or ask follow-up questions based on the respondent's responses. This adaptability allows for a more in-depth exploration of issues.
4. **Systematic Data Collection:** Interview schedules are designed to collect specific information systematically, ensuring that researchers gather the necessary data to answer research questions or address specific objectives.

1.2.5.2 Advantages of an Interview Schedule

1. **Standardisation:** Standardized questions ensure consistency across interviews, reducing interviewer bias and enhancing the reliability of collected data.
2. **In-depth Data:** Interview schedules allow for the collection of detailed and nuanced information, making them suitable for complex research topics that require a deeper understanding.
3. **Clarification:** Interviewers can clarify questions and seek additional information when needed, improving data quality and completeness.
4. **Structured Analysis:** The structured format of interview schedules facilitates data analysis by providing a clear framework for organising and coding responses.
5. **Personal Interaction:** Interviews provide a platform for personal interaction between the interviewer and the respondent, potentially creating a more comfortable and engaging environment for participants to share their thoughts and experiences.

1.2.5.3 Disadvantages of an Interview Schedule

1. **Resource-Intensive:** Conducting interviews can be time-consuming and costly, especially if a large sample size is required. It involves preparing interview schedules, training interviewers, and conducting interviews, which may be impractical for large-scale studies.
2. **Interviewer Bias:** Even with standardized questions, interviewers' demeanour, tone, and non-verbal cues can influence participants' responses. This can introduce interviewer bias, which may affect data validity.
3. **Limited Generalizability:** Findings from interviews are often context-specific and may not be easily generalised to broader populations. This can limit the external validity of the research.
4. **Response Variability:** Different interviewers may interpret and ask questions differently, leading to variations in responses. This variability can pose challenges when comparing data across different

interviewers.

5. Participant Fatigue: Lengthy interviews or extensive questionnaires can lead to respondent fatigue, resulting in less reliable or complete responses.

1.2.5.4 Difference between Questionnaire and Interview Schedule

Both questionnaires and schedules are popularly used methods of collecting data in research surveys. The important points of difference are:

1. The questionnaire is generally sent through mail to informants to be answered as specified in a cover letter, but otherwise without further assistance from the sender. The schedule is generally filled out by the research worker or the enumerator, who can interpret questions when necessary.
2. Collecting data through a questionnaire is relatively cheap and economical since we only have to spend money on preparing the questionnaire and mailing it to respondents. To collect data through schedules is relatively more expensive since a considerable amount of money has to be spent in appointing enumerators and in imparting training to them.
3. Non-response is high in the case of questionnaires as many people do not respond, and many return the questionnaire without answering all questions. Bias due to non-response often remains indeterminate.
4. In the case of the questionnaire, it is not always clear as to who replies, but in the case of the schedule, the identity of the respondent is unknown.
5. The questionnaire method is likely to be very slow since many respondents do not return the questionnaire in time despite several reminders, but in case of schedules the information is collected well in time as the enumerators fill them.
6. Personal contact is generally not possible in the case of the questionnaire method as questionnaires are sent to respondents by post, who also, in turn, return the same by post. But in case of schedules, direct personal contact is established with respondents.



7. The questionnaire method can be used only when respondents are literate and cooperative, but in the case of schedules, direct personal contact is established with respondents.
8. A wider and more representative distribution of the sample is possible under the questionnaire method, but within respect to schedules, there usually remains difficulty in sending enumerators over a relatively wider area.
9. The risks of collecting incomplete and wrong information are relatively higher under the questionnaire method, particularly when people are unable to understand questions properly. But in the case of schedules, the information collected is generally complete and accurate as enumerators can remove the difficulties, if any faced by respondents in correctly understanding the questions. As a result, the information collected through schedules is relatively more accurate than that obtained through questionnaires.
10. The success of the questionnaire method lies more on the quality of the questionnaire itself, but in the case of schedules, much depends upon the honesty and competence of enumerators.
11. In order to attract the attention of respondents, the physical appearance of the questionnaire must be quite attractive, but this may not be so in the case of schedules, as they are to be filled in by enumerators and not by respondents.
12. Along with schedules, observation methods can also be used, but such a thing is not possible while collecting data through a questionnaire.

Summarised Overview

Quantitative sampling hinges on the concept that researchers analyse data collected from a carefully chosen sample with the ultimate goal of drawing conclusions about the entire target population from which the sample is derived. Sampling serves the purpose of acquiring cases, events, or actions that contribute to a deeper and more comprehensive understanding of the subject matter. In social scientific research and empirical communication research, the process of data collection holds significant importance. Quantitative research is inherently focused on numerical data, quantifying emotions, opinions, attitudes, behaviours, and various variables to either substantiate or refute hypotheses related to a specific phenomenon. Structured questionnaires play a pivotal role in survey research but are also widely applied in experiments, field studies, and various data collection endeavours. Interview schedules cater to trained interviewers, guiding respondents through the question-answer process, while self-administered questionnaires must be entirely self-explanatory to respondents. Collecting data through questionnaires proves cost-effective as it primarily involves expenses for questionnaire preparation and mailing. In contrast, data collection through schedules tends to be pricier due to the need to hire enumerators and provide training for them.

Assignments

1. Prepare a questionnaire with open- and closed-ended questions on the satisfaction level of students towards online classes.
2. Briefly explain the significance of sampling in quantitative social research.
3. What are the limitations of closed questions?
4. What are the major things you should remember while preparing questions?
5. Why are closed questions frequently preferred to open questions in survey research?
6. Critically evaluate the difference between the questionnaire and the interview schedule.

Suggested Reading

1. Freedman, D., Pisani, R., Purves, R. & Adhikari, A. (1991). *Statistics (1st ed.)*. WW Norton & Co.
2. Bhattacharjee, A. (2012). *Social Science Research: Principles, Methods, and Practices (2nd ed.)*. CreateSpace Independent Publishing Platform.
3. Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage publications.
4. Fowler Jr, F. J. (2013). *Survey Research Methods*. Sage publications.
5. Kumar, R. (2019). *Research Methodology: A Step-By-Step Guide for Beginners*. Sage Publications Limited.

Reference

1. Groves, R. M., Fowler Jr, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey Methodology (2nd ed.)*. John Wiley & Sons.
2. Bryman, A. (2016). *Social Research Methods (5th Ed.)*. Oxford university press.
3. Polgar, S., & Thomas, S. A. (2013). *Introduction to Research in the Health Sciences*. Elsevier Health Sciences.
4. Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). *Good Practice in the Conduct And Reporting Of Survey Research*. *International Journal for Quality in Health Care*, 15(3), 261-266. <https://doi.org/10.1093/intqhc/mzg031>
5. Boynton, P. M., & Greenhalgh, T. (2004). *Selecting, Designing, and Developing Your Questionnaire*. *Bmj*, 328(7451), 1312-1315. <https://doi.org/10.1136/bmj.328.7451.1312>



Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

SGOU





Aspects of Data

Learning Outcomes

After completing the unit, the learner will be able to:

- ◆ differentiate between various types of attributes and variables
- ◆ explain the fundamental steps involved in data analysis, including classification, tabulation, and interpretation, and apply these techniques to organise and summarise quantitative data effectively
- ◆ illustrate the use of graphical representations such as bar charts, pie charts, and histograms

Background

In today's information-driven world, data has emerged as a fundamental cornerstone of knowledge acquisition and decision-making. It serves as the lifeblood of the digital age, propelling innovation, research, and learning to new heights. Data, in its myriad forms, encompasses facts, figures, observations, and insights, all meticulously gathered and organized to uncover patterns, draw conclusions, and drive informed actions. As our understanding of data continues to evolve, its significance as a prerequisite in learning materials becomes increasingly apparent. This importance lies not only in the sheer volume of information available but also in the transformative potential it holds for education and learning processes. In this context, we will delve into the multifaceted aspects of data, explore its role as an essential element in modern learning materials, and highlight the pivotal role it plays in shaping the future of education.

Keywords

Facts, Variable, Classification, Tabulation, Interpretation



Discussion

1.3.1 Data

◆ Focus of information

Data refers to raw facts, statistics, or information that can be in the form of numbers, text, images, or any other format. Data can be collected, stored, and processed to generate meaningful insights, make informed decisions, or support various tasks and operations. It is a fundamental concept in information technology and is essential in fields such as science, business, and everyday life.

Data can be categorised into two main types:

◆ Types of Data

Structured Data: This type of data is organised and follows a specific format, often stored in databases or tables. Examples include spreadsheets, relational databases, and data represented in rows and columns. Structured data is easy to search, filter, and analyse, making it suitable for tasks like data mining and reporting.

Unstructured Data: Unstructured data lacks a specific format or organisation. It includes text documents, emails, images, audio recordings, and video clips. Analysing unstructured data can be more challenging because it doesn't fit neatly into tables or databases. Techniques like natural language processing (NLP) and image recognition are often used to extract valuable information from unstructured data.

Data can also be further categorised based on its source, such as:

◆ Sources of data

Primary Data: Data collected directly from original sources, often through surveys, experiments, or observations.

Secondary Data: Data obtained from existing sources, such as research papers, databases, or government reports.

Data is a valuable resource in today's digital age, and organisations and individuals alike use it for various purposes, including business intelligence, research, machine learning, and decision-making. Extracting meaningful insights from data often involves processing, analysis, and visualisation.

1.3.2 Quantitative data

Quantitative data are numerical and information about

the world in the form of numbers, either counting or scaling or both. Measurement turns data into numbers, and its function is to help us make comparisons. The numbers represent values of variables, which measure characteristics of subjects, respondents or other cases. The numbers are in raw form in the questionnaire, and the researcher reorganises them into a form suitable for computers, presents charts or graphs to summarise their features, and interprets or gives theoretical meaning to the results.

◆ *Data of numerical nature*

Data coding means systematically reorganising raw numerical data into a form that is easy to analyse using computers. A codebook is a document describing the coding procedure and the location of data for variables in a format that computers can use.

A data set can often be viewed as a collection of data objects. In turn, data objects are described by a number of attributes that capture the basic characteristics of an object, such as the mass of a physical object or the time at which an event occurred. Other names for an attribute are variable, characteristic, field, feature or dimension.

1.3.3 Attributes and Types

◆ *Distinguishing property*

An attribute is a property or characteristic of an object that may vary, either from one object to another or from one time to another. For example, eye colour is a symbolic attribute with a small number of possible values (black, brown, blue, grey, hazel, etc). At the same time, temperature is a numerical attribute with a potentially unlimited number of values. A measurement scale is a rule (function) that associates a numerical or symbolic value with an attribute of an object.

◆ *Types of attributes*

There are four types of attributes: nominal, ordinal, interval and ratio. The values of a nominal attribute are just different names. Nominal values provide only enough information to distinguish one object from another. For example, ID number, eye colour, and gender. The value of an ordinal attribute provides enough information to order objects. For interval attributes, the differences between values are meaningful. For example, the calendar dates temperature in Celsius. For ratios, both differences and ratios are meaningful. For example, age, mass, and length. Nominal and ordinal attributes are collectively referred to as categorical or qualitative attributes. The interval or ratio attributes are referred to as quantitative or numeric

attributes. Numbers represent quantitative attributes and have most of the properties of numbers.

1.3.4 Variable

◆ *Varying factor*

The concept of variable (something which varies) is central to quantitative research. Quantitative research design shows how the variables are seen and organised with respect to each other. Quantitative data collection is about how the variables are to be measured, and quantitative data analysis is about how the measurement of the variables is to be analysed.

◆ *Differing values*

A variable, to put it in common statement, is something that can change and or can have more than one value. 'A variable, as the name implies, is something that varies. It may be height, weight, anxiety levels, income, body temperature and so on. Each of these properties varies from one person to another and also has different values along a continuum.

◆ *Attributes are not variables*

"Variable is a property that takes on different values". It is also a logical grouping of attributes. Attributes are characteristics or qualities that describe an object. For example, if gender is a variable, then male and female are attributes. If the residence is the variable, then urban, semi-urban, and rural became the attributes. There is no limit to the number of variables that can be measured, although the more variables, the more complex the study and the more complex the statistical analysis. Moreover, the longer the list of variables, the longer the time required for data collection.

◆ *Independent and depended variable*

1.3.4.1 Types of Variables

The Independent variable is the antecedent, while the dependent variable is the consequent. The dependent variable is the variable that is affected by the independent variable. For instance, if we say that height depends upon age, then height is a dependent variable, and age is an independent variable. Further, if, in addition to being dependent upon age, height also depends upon the individual's sex, then height is a dependent variable and age and sex are independent variables. Similarly, readymade films and lectures are examples of independent variables, whereas behavioural changes occurring as a result of environmental manipulations are examples of dependent variables.

Discrete variables (also called categorical variables and discontinuous variables) vary in kind or qualitatively rather

◆ *Discrete variable*

than in degree, amount or quantity. Examples include eye colour, gender, religious affiliation, occupation and most kinds of treatments or methods. For a discrete variable, the variance is between different categories, and there is no idea of a continuum or scale involved. People are classified into mutually exclusive categories of which there may be any number. A dichotomous variable has two categories, a trichotomous variable has three and so on. Continuous variables vary in degree, level, or quantity rather than in categories.

1.3.5 Classification, Tabulation and Interpretation

◆ *Data analysis*

After collecting accurate and reliable data successfully by using the appropriate method from the source, the next method is to extract the pertinent and useful information buried in the data for further manipulation and interpretation. The process of performing certain calculations and evaluations in order to extract relevant information from data is called data analysis. The data analysis may take several steps to reach certain conclusions. Simple data can be organised very easily, while complex data requires proper processing. Word processing means recasting and dealing with data, making it ready for analysis. Word analysis refers to a closely related operation that is performed with the purpose of summarising the collected data and organising it in such a manner as to yield an answer to the questions. In simple words, it means studying the data to determine inherent facts.

1.3.5.1 Classification of Data

◆ *Categorisation of data*

Classification of data is the process of arranging classes according to some resemblance or common characteristics. The classification is also called the categorisation of data. The classification can be done on the basis of quality or attributes such as gender, colour, literacy, beauty, and IQ. This type of classification is called qualitative classification, second type of classification is called quantitative classification, which is done on the basis of variable height and weight. The third type of classification is geographical classification, such as village, ward, city, urban, and rural. The fourth type of classification is called chronological classification, which is done on the basis of time as weekly, monthly, or yearly.

1.3.5.2 Objectives of Classification

1. To simplify the complexities of the collected data

- Classification eliminates unnecessary details and arranges the required information in a simple, brief and understandable manner.
- 2. To bring out the points of similarity of the various items - Classification brings out clearly the points of similarity and dissimilarity of the data so that they can be easily grasped.
- 3. To facilitate comparison - Classification of data enables one to make comparisons and draw inferences. For example, the results of an examination, when classified into first, second, third and failed classes on the basis of marks, comparison becomes easy.
- 4. To bring out the relationship - Classification helps in finding out the causes and effects of the relation in the data. For example, in a classification of data showing a number of covid positive cases in vaccinated and not-vaccinated populations, we can study the relation between vaccination and its effect.
- 5. To prepare the basis for tabulation - Tabulation is the next stage of classification. Unclassified data cannot be presented in tables.

1.3.5.3 Characteristics of an Ideal Classification

The following principles are to be observed for an ideal classification.

- ◆ Unambiguity: Classification should be unambiguous. The various classes should be defined properly.
- ◆ Stability: A good classification should be stable. It should not change from enquiry to enquiry. When the classification is not stable, comparison becomes difficult.
- ◆ Flexibility: A classification should be flexible as far as possible. It should have the capacity to adjust to new situations and circumstances.
- ◆ Homogeneity: Each class should contain homogeneous items.
- ◆ Suitability: The classification should be suitable to the objects of any statistical enquiry.
- ◆ Exhaustiveness: Classification should be exhaustive. There should be no item which does not find a class.

1.3.5.4 Methods of Classification

Classification is done on the basis of characteristics possessed by the items. The characteristics can be of two kinds: measurable and non-measurable. Height, weight, production, etc, are measurable, while sex, marital status, education, etc. are non-measurable. Measurable characteristics are known as variables, and non-measurable characteristics are known as attributes.

◆ *Attribute based classification*

1. Classification according to attributes (Qualitative classification): Under this method, the data are classified on the basis of qualitative characteristics known as attributes. For example, literacy, unemployment, etc., are attributes. They are called descriptive characteristics. They are not measurable. Classification according to attributes is simple and manifold. In simple classification, the data are divided on the basis of only one attribute. For example, the population of India can be divided on the basis of gender as female, male and third gender. In manifold classification, the data are divided on the basis of more than one attribute. For example, the population of India is divided on the basis of marriage and literacy, and also on the basis of single literacy, single illiteracy, married literacy, married illiteracy, etc.

◆ *Variable based classification*

2. Classification according to variables: Under this method, the data are classified on the basis of quantitative characteristics such as age, height, weight, etc. These characteristics are capable of direct measurement. So their different values can be known. Classification according to variables is also known as classification according to class intervals.

◆ *Geographical differences*

3. Geographical classification: When the data are classified according to geographical differences, we have geographical classification. Here, information relating to different places is shown. For example, the population of India can be shown state-wise. This is a geographical classification.

◆ *Time bound*

4. Chronological classification: When data are collected for a number of periods and they are arranged chronologically, it is chronological classification. For example, the population of India may be collected for a number of years and shown year-wise.

1.3.6 Tabulation or Frequency Distribution

◆ Condense data

The technique of presenting quantitative data like height, weight, BP, temperature and other biological characteristics, which are measured on a physical scale into rows and columns, is called tabulation. The tabulation is also known as the frequency distribution of variables. The main objective of tabulation is to condense the data and to make comparison easy. In the tabular form of data, the required interpretation is easily accessible. The preparation of the table depends upon the size and nature of the data.

1.3.6.1 Frequency Distribution or Frequency Table

◆ Presentation of data

A frequency distribution is an orderly arrangement of data classified according to the magnitude of observations. When the data are grouped into classes of appropriate size, indicating the number of observations in each class, it is frequency distribution. By forming a frequency distribution, we are actually summarising the data effectively. It is a method of presenting data in a summarised form. The objectives of a frequency distribution are:

- ◆ To facilitate the analysis of data
- ◆ To estimate the frequencies of the population on the basis of the sample.
- ◆ To facilitate the computation of various statistical measures.

The important components of a frequency distribution are:

◆ Components of frequency distribution

1. **Classes:** A large number of observations varying in a wide range are usually classified into several groups according to the size of the values. Each of these groups is defined by an interval called class interval. For example, students getting marks between 30 and 40 form a group. Then 30-40 is a class.
2. **Class limits:** The smallest and the largest possible measurements in each class are known as class limits.
3. **Classmark:** The value exactly at the middle of a class interval is called the class mark or the mid value.
4. **Magnitude of a Class interval:** The difference between lower- and upper-class boundaries is called the magnitude of a class interval.

5. Class boundaries: In the case of grouped frequency distribution with class limits having a gap between the upper limit of one class and the lower limit of the next class, the need to obtain class boundaries arises.
6. Class frequency: The number of observations falling within a particular class interval is called its class frequency. Total frequency is the total number of observations.

1.3.6.2 Construction of a Frequency Distribution or Frequency Table

◆ *Frame work of frequency distribution*

- ◆ Finding the range of values in the data: The difference between the largest and smallest observations in the given data is known as the range.
- ◆ Decide on the number of classes: An ideal number of classes for any frequency distribution should be that which gives maximum information clearly.
- ◆ Deciding the size of the class interval: When the range between the observations is divided by the number of class intervals, we get the size of each class interval.
- ◆ Tally mark: The class frequency is counted by making strikes against each class interval on a sheet of paper for each item falling in the class intervals. The tally works do not appear in the final presentation of a frequency distribution.

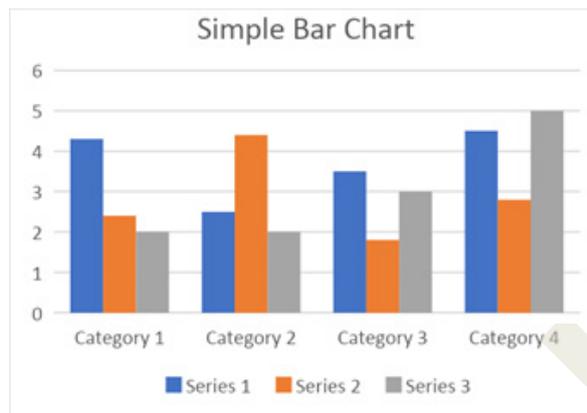
1.3.7 Graphical and Diagrammatic Representation of Data

◆ *Alternative to classification and tabulation*

The data can be displayed with half of a graph and diagram instead of classification and tabulation. The most appealing reason is that one simple graph says more than twenty pages of prose. It is usually suggested that the graphical representation should be looked at before preceding the formal statistical calculation. The graphs give a visual representation of data. The most commonly used graphs and diagrams are

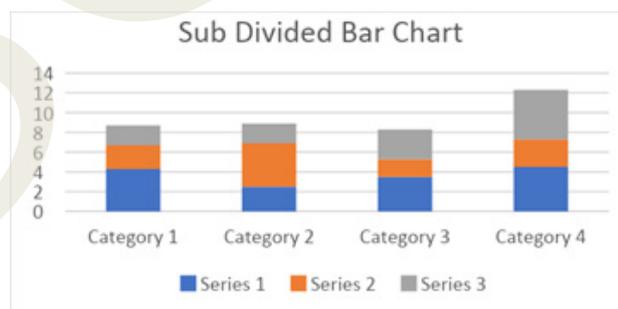
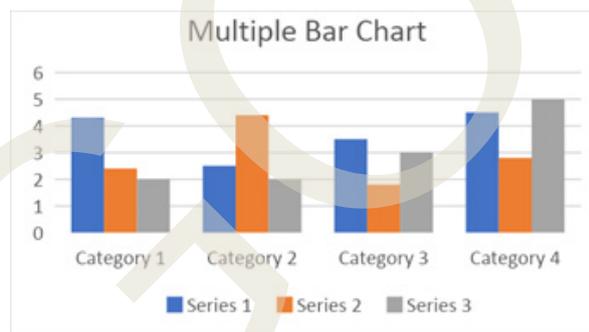
1.3.7.1 Simple Bar Chart

The simple bar chart consists of vertical or horizontal bars of equal width by length proportional to the magnitude of the value they present.



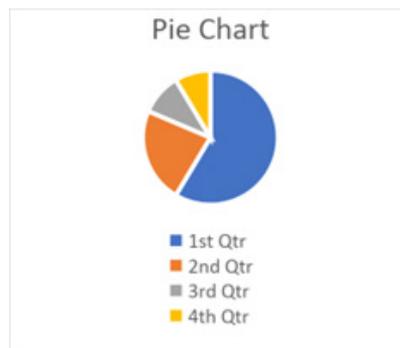
1.3.7.2 Multiple or Subdivided Chart

It is simply the extension of simple bar charts, which represent more than one related set of data.



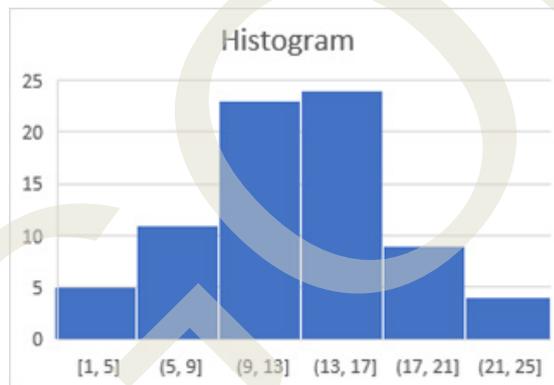
1.3.7.3 Pie Chart

The Pie chart consists of a circle which is subdivided into sectors whose area is proportional to different components of the total quantity.



1.3.7.4 Histogram

A histogram is a graph of continuous data like weight, height, age, etc., to see the theoretical shape of data. The curve of the histogram tells us whether the data is skewed or symmetrical. A histogram consists of a series of adjacent rectangles drawn for a grouped frequency.



1.3.8 Sources and Uses of Metadata

The etymology of the word metadata is 'data about data'. With this broad definition, the metadata could be found everywhere. Indeed, in 2013, metadata became a household term in the United States through heavy media coverage of the National Security Agency's collection of information on domestic telephone calls, including time and location initiated, duration and number dialed. Metadata is pervasive in information systems and comes in many forms.

◆ *Data about data*

1.3.8.1 Census

Almost every country conducts a census or a regular count of its population. Most nations conduct a census survey every 5 to 10 years. In addition to the number of people, census officials collect information on topics such as housing conditions, ethnicity, religious affiliation, education and so forth. The census is a major source of high-

◆ *Holistic survey*

quality existing statistical data, but it can be controversial. In Canada, an attempt to count the number of same-sex couples living together evoked public debate about whether the government should document the changes in society. In Great Britain, the Muslim minority welcomed questions about religion in the 2001 census because they felt that they had been officially ignored. In the United States, the measurement of race and ethnicity was hotly debated, so in the 2000 census, people could place themselves in multiple racial/ethnic categories.

1.3.8.2 NFHS

◆ *Data for welfare*

The National Family Health Survey (NFHS) is a large-scale multi-round survey conducted in a representative sample of households throughout India. Three rounds of the survey have been conducted since the first survey in 1992-93. The survey provides state and national information for India on fertility, infant and child mortality, the practice of family planning, maternal and child health, reproductive health, nutrition, anaemia, utilisation and quality of health and family planning services. Each successive round of the NFHS has had two specific goals: a) to provide essential data on health and family welfare needed by the Ministry of Health and Family Welfare and other agencies for policy and programme purposes, and b) to provide information on important emerging health and family welfare issues. The Ministry of Health and Family Welfare (MOHFW), Government of India, designated the International Institute for Population Sciences (IIPS) Mumbai as the nodal agency responsible for providing coordination and technical guidance for the survey. IIPS collaborated with a number of field organisations for survey implementation. Each field organisation was responsible for conducting survey activities in one or more states covered by the NFHS.

1.3.8.3 Public Records and Archives

◆ *Futuristic purpose*

The record themselves and the processes in which they are created lie at the core of archival theory and of archives and records management practice. A certain characteristic of records is that their value is largely potential; it is not possible to fully predict the future value of records. Within Swedish archival discourse, the use of records has often been connected to the democratic control of society in relation to the legislation concerning freedom of the press and access to official documents. During the 1980s, several

public reports concerning archival issues were published, providing the foundation for the Archives Act in 1990. The main reason for long-term record-keeping was for research purposes, including both academic and popular research. According to Schellenberg, the creating agencies primarily need records for administrative, fiscal, legal and operating purposes. The further use of records is for cultural reasons, including research, thus responding to a wider societal need.

◆ *Storing documents*

Although entirely new and unknown sources arise from time to time, for the most part, the process of discovery goes on within archives, which are collections of documents and texts. In its original meaning, an archive was simply a place where documents were stored, literally the house of the magistrate or an *Arkheion* in ancient Greece. The actual location of documents is not important to their validity, which is established through source criticism. However, location and institution do affect how historians approach and make use of primary sources. An important part of the historian's task is both mastering the institutional matrix in which documents are embedded and finding ways of going around or exceeding any limitations that the matrix imposes.

◆ *Recordical*

Archives are institutions. They have purposes and histories themselves. They structure the very records that will serve as historians' sources. For example, government archives reflect the concern of power and state administration. From the types of records that state actors value and choose to save to the way in which they arrange categories of information, government archives may highlight certain features of the nation's history while marginalising other groups or identities. Likewise, business archives will reflect the strategies, products and cultural traditions of the firm.

Summarised Overview

The Unit discusses quantitative data, including different types of attributes and variables. It explains that quantitative data takes the form of numbers representing values of variables that measure characteristics. Attributes are properties or characteristics of an object that may vary. The four types of attributes are nominal, ordinal, interval and ratio. Variables are properties that take on different values and can be classified as independent or dependent. The process of extracting relevant information from data is called data analysis. This involves steps like classification, tabulation, and interpretation. Classification arranges data into classes based on common characteristics. Its objectives include simplifying complex data, facilitating comparison, and revealing relationships. Tabulation presents quantitative data in an orderly table to summarise and condense the data. Frequency distribution is a tabular arrangement of data classified by magnitude of observations. The components of a frequency distribution are identified. The file then explains the graphical and diagrammatic representation of data using charts like simple bar charts, multiple bar charts, pie charts, and histograms. These visual representations can convey information efficiently. It briefly describes sources and uses of metadata like census, NFHS, public records, and archives. The census provides national data on demographics and topics like housing, ethnicity, education, etc. NFHS is a national survey that collects information on health, family welfare, fertility, mortality, etc. Public records and archives are useful for administrative, legal, and historical research purposes, though their value is often potential and revealed later.

Assignments

1. Prepare a frequency table and its graphical representation using secondary data.
2. Prepare a codebook using a quantitative sample.
3. Briefly explain the difference between attributes and variables.
4. Examine the process of classification, tabulation and interpretation of quantitative data.
5. Define classification and its major characteristics.
6. Explain Secondary data. Examine the significance of secondary data usage in quantitative social research.
7. List out the advantages of the National Family Health survey in quantitative research.

Suggested Reading

1. Ibrahim, M. M. N. (2015). *Descriptive Statistic*. Universiti Teknologi Malaysia Publisher.
2. Riley, J. (2017). *Understanding Metadata: What Is Metadata, and What Is It For?: A Primer*. NISO Press.

Reference

1. Tan, P.-N., Steinbach, M., & Kumar, V. (2016). *Introduction to Data Mining*. India: Pearson Education.
2. Punch, K. F. (1998). *Introduction to Social Research: Quantitative and Qualitative Approaches*. USA: Sage.

Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

SGOU





Scaling Techniques

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ define a scale and demonstrate a clear understanding of the concept, including its role in research and the process of scaling
- ◆ classify scales based on various criteria, such as subject orientation, response form, degree of subjectivity, scale properties, and the number of dimensions
- ◆ gain knowledge about the Thurstone Scaling and Likert Scaling methods, including their purposes, procedures, and advantages and limitations
- ◆ critically evaluate the choice of scales in research, considering factors like research objectives, data collection methods, and the nature of the constructs being measured

Background

Scaling is a crucial aspect of research across various fields, especially in the social sciences. In recent decades, researchers in subjects like sociology, psychology, education, and many others have created thousands of scales to measure things like opinions, attitudes, and various aspects of human behaviour. The terms “indices” and “scales” are often used interchangeably in research, referring to different types of measurement tools, whether they are simple or complex. At its core, scaling is a process where numbers or scores are assigned to different levels of opinions, attitudes, or other factors being studied. These numerical values help researchers analyse and make sense of the data they collect. In this discussion, we will explore the importance of scaling, its various uses, and how it helps researchers make informed decisions and contribute to their fields of study. We will uncover the world of scales and indices that form the foundation of social sciences research.



Keywords

Attitude, Measurement, Qualitative measures, Unidimensional scale,

Discussion

1.4.1 Scale

◆ *Measure*

Scale is defined as a type of composite measure composed of several items that have a logical or empirical structure. The process of creating indicators is called scaling. Scaling is a branch of measurement that involves the construction of measures by associating qualitative judgements about unobservable constructs with quantitative, measurable metric units. According to Stevens, "Scaling is the assignment of objects to numbers according to a rule". In scaling, the objects are text statements, usually statements of attitude, opinion or feeling.

◆ *Dimensions of scales*

Scales can be unidimensional or multidimensional, based on whether the underlying construct is unidimensional, e.g., weight, wind speed, firm size or multidimensional, e.g., academic, aptitude, intelligence. Unidimensional scale measures are constructed along a single scale, ranging from high to low. Multi-dimensional scales, on the other hand, employ different items or tests to measure each dimension of the construct separately and then combine the scores on each dimension to create an overall measure of the multidimensional construct. Unidimensional scaling methods were developed during the first half of the 20th century and were named after their creators. The two most popular unidimensional scaling methods are 1) Thurston's equal appearing scaling and 2) Likert's summative scaling.

1.4.1.1 Bases of Scale Classification

The number assigning procedures or the scaling procedures may be broadly classified on one or more of the following bases:

a. Subject orientation: Under it, a scale may be designed to measure characteristics of the respondent who completes it or to judge the stimulus object which is presented to the

◆ *Measures of characteristics*

respondent. In respect of the former, we presume that the stimuli presented are sufficiently homogeneous so that the between stimuli variation is small as compared to the variation among respondents. In the latter approach, we ask the respondents to judge some specific object in terms of one or more dimensions, and we presume that the between-respondent variation will be small as compared to the variation among the different stimuli presented to respondents for judging.

◆ *Rating scales*

b. Response form: Under this, we classify the scales as categorical and comparative. Categorical scales are also known as rating scales. These scales are used when a respondent scores some object without direct reference to other objects. Under comparative scales, which are also known as ranking scales, the respondent is asked to compare two or more objects. In this sense, the respondent may state that one object is superior to the other or that three models of pen rank in order 1, 2 and 3. The essence of ranking is, in fact, a relative comparison of a certain property of two or more objects.

◆ *Subjective properties*

c. Degree or Subjectivity: With this basis, the scale data may be based on whether we measure subjective personal preferences or simply make non-preference judgements. In the former case, the respondent is asked to choose which person he favours or which solution he would like to see employed, whereas in the latter case, he is simply asked to judge which person is more effective in some aspect or which solution will take fewer resources without reflecting any personal preference.

◆ *Levels of measurement*

d. Scale properties: Considering scale properties, one may classify the scales as nominal, ordinal, interval and ratio scales. Nominal scales merely classify without indicating order, distance or unique origin. Ordinal scales indicate magnitude relationships of 'more than' or 'less than' but indicate no distance or unique origin. Interval scales have both order and distant values but no unique origin. Ratio scale possesses all these features.

◆ *Uni or multiple*

e. Number of dimensions: In respect of this basis, scales can be classified as 'unidimensional' and multi-dimensional scales. Under the former, we measure only one attribute of the respondent or object. In contrast, multidimensional scaling, recognises that an object might be described better

by using the concept of an attribute space of 'n' dimensions rather than a single-dimension continuum.

f. Scale construction techniques: Following the five main techniques by which scales can be developed.

◆ *Designed to measure*

◆ **Arbitrary approach:** It is an approach where scale is developed on an ad hoc basis. This is the most widely used approach. It is presumed that such scales measure the concepts for which they have been designed, although there is little evidence to support such an assumption.

◆ *Evaluating for inclusion*

◆ **Consensus approach:** Here is a panel of judges evaluating the items chosen for inclusion in the instrument in terms of whether they are relevant to the topic area and unambiguous in implication.

◆ *Item based*

◆ **Item analysis approach:** Under it, a number of individual items are developed into a test which is given to a group of respondents. After administering the test, the total scores are calculated for everyone. Individual items are then analysed to determine which items discriminate between persons or objects with high total scores and those with low scores.

◆ *Conforming to positions*

◆ **Cumulative scales:** Cumulative scales are chosen on the basis of their conformity to some ranking of items with ascending and descending discriminating power. For instance, in such a scale, the endorsement of an item representing an extreme position should also result in the endorsement of all items indicating a less extreme position.

◆ *Interrelations of items*

◆ **Factor scales:** may be constructed on the basis of intercorrelations of items, which indicate that a common factor accounts for the relationship between items. This relationship is typically measured through the factor analysis method.

1.4.2 Different Scales for Measuring Attitudes of People

Table no: 1.4.1 Different Scales for Measuring Attitudes of People

<i>Name of the Scale Construction Approach</i>	<i>Name of the Scale developed</i>
1. Arbitrary approach	Arbitrary Scales
2. Consensus scale approach	Differential scales (such as Thurstone Differential Scale)
3. Item analysis approach	Summated scales (such as Likert Scale)
4. Cumulative scale approach	Cumulative scales (such as Guttman's Scalogram)
5. Factor analysis approach	Factor scales (such as Osgood's Semantic Differential, Multi-dimensional scaling etc).

1.4.2.1 Thurstone Scale

◆ *Equal appearing intervals*

Louis Thurston, one of the earliest and most famous scaling theorists, published a method of equal appearing intervals in 1925. This method starts with a clear conceptual definition of the construct of interest. It is a type of composite measure constructed in accord with the weights assigned by 'judges' to various indicators of some variables.

◆ *Operation of thurstone scale*

The initial pool of items should be worded in a similar manner, for instance, by framing them as statements to which respondents may agree or disagree and not as questions or other things. Next, a panel of judges is recruited to select specific items from this candidate pool to represent the construct of interest. Judges may include academics trained in the process of instrument construction or a random sample of respondent's interests. Each judge is then asked to estimate how strong an indicator for a variable each item is – by assigning scores of perhaps 1 to 13. If the variable were prejudice, for example, the judges would be asked to assign a score of 1 to the very weakest indicators of prejudice, a score of 13 to the strongest indicators and intermediate scores to those felt to be somewhere in between.

Once the judges have completed this task, the researcher

◆ *Evaluating*

examines the scores assigned to each item by all the judges and then determines which items produced the greatest agreement among the judges. Those items on which the judges disagreed broadly would be rejected as ambiguous. Among those items producing general agreement in scoring, one or more would be selected to represent each scale score from 1 to 13.

◆ *Inferences*

Respondents who appeared prejudiced on those items representing the strength of 5 would then be expected to appear prejudiced on those having lesser strengths. If some of those respondents did not appear prejudiced on the items with a strength of 6, it would be expected that they would also not appear prejudiced on those with greater strengths.

◆ *Limitation*

Thurston scaling is not often used in research today, primarily because of the tremendous expenditure of energy and time required to have 10 to 15 judges score the items. Because the quality of their judgements would depend on their experience with the variable under consideration, they might need to be professional researchers.

◆ *Criticisms*

The Thurstone method has been widely used to develop differential scales that are utilised to measure attitudes towards varied issues like war, religion, etc. Such scales are considered most appropriate and reliable when used for measuring a single attitude. However, an important deterrent to their use is the cost and effort required to develop them. Another weakness of such scales is that the values assigned to various statements by the judges may reflect their own attitudes. The method is not completely objective; it involves an ultimately subjective decision process. Critics of this method also opine that some other scale designs give more information about the respondents' attitudes in comparison to differential scales.

◆ *Measuring attitudes*

In short, Thurstone scaling is a measurement in accordance with the weights assigned by judges with regard to different categories of variables. This method is widely used for measuring attitudes towards various issues. The most crucial disadvantage is that this scaling needs an investment of energy and effort of 10 to 15 judges to score the items.

1.4.2.2 Likert Scale

The investigation of attitudes is a prominent area in much survey research. One of the most common techniques for conducting such an investigation is the Likert scale, named

◆ *Multiple item measure*

after Rensis Likert, who developed the method. The Likert scale is essentially a multiple-indicator or multiple-item measure of a set of attitudes relating to a particular area. The goal of the Likert scale is to measure the intensity of feelings about the area in question. In its most common format, it comprises a series of statements that focus on a certain issue or theme. Each respondent is then asked to indicate their level of agreement with the statement. Usually, the format for indicating the level of agreement is a five-point scale going from 'strongly agree' to 'strongly disagree,' but a seven-point scale and other formats are used too. There is usually a middle position of 'neither agree nor disagree' or 'undecided' indicating neutrality on the issue. Each respondent's reply on each item is scored, and then the scores for each item are aggregated to form an overall score. Normally, since the scale measures intensity, the scoring is carried out so that a high level of intensity of feelings in connection with each indicator receives a high score. For example, on a five-point scale, a score of 5 for very strong positive feelings about an issue and a score of 1 for very negative feelings.

There are several points to bear in mind about the construction of a Likert scale. They are:

- i. The items must be statements and not questions
- ii. The items must all relate to the same object
- iii. The items that make up the scale should be interrelated.

◆ *Standardised*

A type of composite measure developed by Rensis Likert in an attempt to improve the levels of measurement in social research through the use of standardised response categories in survey questionnaires to determine the relative intensity of different items. Likert items are those using such response categories as strongly agree, agree, disagree, and strongly disagree. Such items may be used in the construction of true Likert scales as well as other types of composite measures. We may sometimes hear people refer to a questionnaire item containing response categories such as 'strongly agree', 'agree', 'disagree', and 'strongly disagree' as a Likert scale. The particular value of this format is the unambiguous ordinality of response categories. If respondents were permitted to volunteer or select such answers as 'sort of agree', 'pretty much agree', 'really agree', and so forth, you would find it impossible to judge the relative strength of agreement intended by the various respondents. The Likert format solves this problem.

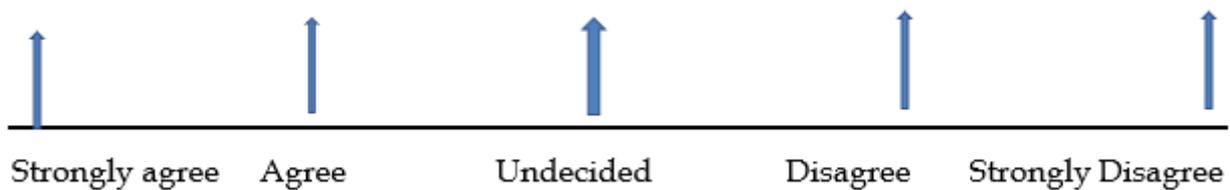


Fig:1.4.1 Illustration of Likert Scale

1.4.2.3 Procedure for Developing Likert Scale

1. As a first step, the researcher collects a large number of statements which are relevant to the attitude being studied, and each of the statements expresses definite favourableness or unfavourableness to a particular point of view or the attitude and that the number of favourable and unfavourable statements is approximately equal.
2. After the statements have been gathered, a trial test should be administered to a number of subjects. In other words, a small group of people from those who are going to be studied finally are asked to indicate their response to each statement by checking one of the categories of agreement or disagreement using a five-point scale.
3. The response to various statements is scored in such a way that a response indicative of the most favourable attitude is given the highest score of 5 and that with the most unfavourable attitude is given the lowest score of 1.
4. Then the total score of each respondent is obtained by adding his scores that he received for separate statements.
5. The next step is to array these total scores and find out those statements which have a high discriminatory power. For this purpose, the researcher may select some parts of the highest and the lowest total scores, say the top 25 percent and the bottom 25 percent. These two extreme groups are interpreted to represent the most favourable and the least favourable attitudes and are used as criterion groups by which to evaluate individual statements. This way, we determine which statements consistently correlate with low favorability and which with high favorability.

◆ *Steps to develop Likert Scale*

6. Only those statements that correlate with the total test should be retained in the final instrument, and all others must be discarded from it.

1.4.2.4 Advantages of Likert Scale

a. It is relatively easy to construct the Likert scale in comparison to Thurstone Scale because the Likert scale can be performed without a panel of judges.

b. The Likert scale is considered more reliable because under respondents each answer statement is included in the instrument. As such, it also provides more information and data than the Thurstone-type scale.

c. Each statement included in the Likert scale is given an empirical test for discriminating ability, and as such, unlike the Thurstone scale, the Likert scale permits the use of statements that are not manifestly related to the attitude being studied.

d. Likert scale can easily be used in respondent-entered and stimulus-centred studies, i.e., through it, we can study how responses differ between people and how responses differ between stimuli.

e. Likert scale takes much less time to construct, the students of opinion research frequently use it. Moreover, it has been reported in various research studies that there is a high degree of correlation between the Likert scale and Thurstone scale.

1.4.2.5 Limitations of the Likert Scale

There are several limitations of the Likert scale as well. One important limitation is that, with this scale, we can simply examine whether respondents are more or less favourable to a topic, but we cannot tell how much more or less they are. There is no basis for belief that the five positions indicated on the scale are equally spaced. The interval between 'strongly agree' and 'agree' may not be equal to the interval between 'agree' and 'undecided'. This means that the Likert scale does not rise to a stature more than that of an ordinal scale, whereas the designers of the Thurstone scale claim to be an interval scale. One further disadvantage is that the total score of an individual respondent often has little clear meaning since a given total score can be secured by a variety of answer patterns. It is unlikely that the respondent can validly react to a short statement on a printed form in the

◆ Disadvantages

absence of real-life qualifying situations. Moreover, there remains a possibility that people may answer according to what they think they should feel rather than how they feel.

Summarised Overview

Scales in research are tools that help quantify and measure various aspects of a phenomenon. One well-known scale is the Thurstone scale, developed based on the assigned weights by 'judges' to different indicators of a particular variable. This method aims to provide a nuanced understanding of the subject under investigation. Likert items are a specific type of measurement often used in research. They utilize response categories such as "strongly agree," "agree," "disagree," and "strongly disagree" to gauge respondents' opinions or attitudes. However, it's important to note that the Likert scale, despite its widespread use, is considered an ordinal scale, meaning that the categories have a relative order but lack a precise measurement of the intervals between them. In contrast, the designers of the Thurstone scale assert that it achieves the status of an interval scale. This implies that not only does it possess a relative order among items, but also that the intervals between the scale points are equal and meaningful. These distinctions in scaling methods play a crucial role in the design and interpretation of research studies, influencing the depth and precision of the insights gained from collected data.

Assignments

1. Prepare a questionnaire item that measures the attitude of students towards online classes.
2. Describe the difference between Likert and Thurstone scaling techniques in social research.
3. Examine the need for scaling techniques in social science research.
4. Find out the advantages and disadvantages of the Likert Scale.
5. Briefly explain the procedure for developing a Likert Scale.
6. Briefly explain the process of developing a Thurstone Scale.



Suggested Reading

1. Babbie, E. (2004). *The Practice of Social Research*. UK: Thomson and Wadsworth.
2. Bryman, A. (2008). *Social Research Methods*. UK: OUP.
3. Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. India: Sage.
4. Elifson, K. (1998). *Fundamentals of Social Statistics*. US: McGraw-Hill.

Reference

1. Kanji, G. K. (2006). *100 Statistical Tests*. India: Vistaar Publications.
2. Kurtz, N.R. (1998). *Statistical Analysis for the Social Sciences*. USA: Allyn and Bacon.
3. Newman, L. (1994). *Social Research Methods: Qualitative and Quantitative Approaches*. UK: Allyn and Bacon.
4. Russell, B. H. (2000). *Social Research Methods: Qualitative and Quantitative Approaches*. USA: Sage.

Space for Learner Engagement for Objective Questions

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SGOU



STATISTICS IN SOCIAL RESEARCH

BLOCK-02



Basic Aspects

Learning Outcomes

Upon the completion of this Unit, the learner will be able to:

- ◆ demonstrate the scope of Quantitative research methods and the usage of statistics in social research
- ◆ identify the different methods and tools for data collection in Quantitative research
- ◆ discuss the primary and secondary sources for social research and its scientific analysis
- ◆ analyse the significance of Scaling techniques in social research

Background

Statistics, as a field of knowledge, boasts a long history deeply intertwined with the demands of governance and administration. It is a venerable discipline that traces its roots to the very beginnings of organised human society. The impetus for the development of statistics, as we know it today, was primarily driven by the compelling needs of government authorities. The origins of statistical thinking can be traced back to the dawn of civilisation, with the earliest documented use of statistical methods dating as far back as 3050 BC in ancient Egypt. In this ancient civilisation, the Pharaohs recognised the importance of systematically gathering and analysing data. Their motivation was clear: they required detailed information on the nation's population and material wealth to efficiently manage the colossal undertaking of constructing the awe-inspiring pyramids. The ancient Egyptians conducted one of the world's first population and wealth censuses, marking a pivotal moment in the history of statistics. The data collected during these early censuses not only served the purpose of monumental construction projects but also laid the foundation for understanding the demographic and economic intricacies of their society.

Over the millennia, the practice of statistics continued to evolve in response to the increasing demands of state administration. It expanded beyond mere data collection and encompassed the development of systematic methods for



data analysis, interpretation, and inference. As societies became more complex and interconnected, the role of statistics expanded, becoming indispensable in addressing a wide array of challenges, from economic planning to public health management. In contemporary times, statistics has emerged as a fundamental tool for decision-making in various fields, including science, business, social sciences, and public policy. Its applications are vast and diverse, ranging from predicting market trends and understanding human behaviour to conducting medical research and informing governmental policies.

Keywords

Empirical, Numerical, Quantification, Analytical, Factual

Discussion

2.1.1 Meaning of Statistics

Statistics is a powerful tool that forms the backbone of how we understand and navigate our complex world. At its core, statistics is about collecting, organising, analysing, and interpreting data to extract meaningful insights and make informed decisions. Whether it's tracking economic trends, evaluating medical treatments, or understanding social behaviour, statistics provides the framework for transforming raw information into knowledge. It enables us to uncover patterns, draw conclusions, and even predict future outcomes based on data. In essence, statistics is the language of data, allowing us to explore, quantify, and communicate the richness of our constantly evolving world. It's a discipline that bridges the gap between raw numbers and the valuable information they hold, shaping our understanding of the world and influencing the choices we make in countless aspects of our lives.

◆ *Enhancing information*

◆ *Study of larger populations*

Statistics is a multifaceted field that can be viewed in different ways. On the one hand, it is a scientific discipline involving the collection, analysis, and interpretation of numerical data. As such, statistics provides tools and methods for summarising large datasets and drawing inferences about populations based on samples. The numbers, tables, charts and other quantitative representations produced

through statistical analysis comprise the tangible results of the statistical process.

◆ *Analytical and informative*

However, statistics has a broader purpose beyond data condensation and calculation. Ultimately, statistics aims to enable data-driven decision-making, hypothesis testing, and knowledge generation. The descriptive summaries and analytical conclusions derived using statistical techniques inform our understanding of real-world phenomena and support evidence-based reasoning. While the numerical outputs of statistics represent necessary intermediate steps, the desired endpoint is extracting meaningful insights that extend our comprehension. Thus, statistics integrates data, analytics, and contextual interpretation to enhance knowledge and facilitate informed choices.

◆ *Origin of Statistics*

According to legend, the word “statistics” comes from the Latin word ‘status’ or the Italian ‘statista’. These words’ very early use and meaning were exclusively applicable to the region’s political situation. Statista was the name given to the website that kept track of a state’s census data or wealth statistics. Its usage and meaning gradually expanded, and as a result, its nature also altered. Its evolution and use have a fairly long history overall.

◆ *Science of statistics*

Statistics refers to quantitative data that a variety of factors has significantly impacted as numerical data. Statistics are the results achieved using a sample, whereas parameters are the results obtained using a population. As a result, statistics examines data to determine its source, cause, and comparability. It works to determine the accuracy estimation in connection to data dispersed throughout several parameters. Statistics is a field of study that deals with data collecting, classification, and analytical analysis. The classification and tabulation of numerical facts for the purpose of providing an explanation and description of occurrences is thus regarded as the focus of this field of study. “Statistics are aggregate of facts affected to a marked extent by a multiplicity of causes numerically expressed, enumerated or estimated according to a reasonable standard of accuracy, collected systematically for a predetermined purpose, and placed in relation to each other,” said Horace Secrist. The use of statistics in research, particularly in social sciences, is to test the tentative solution to a problem. Being a scientific approach, the procedure should be objective on the basis of data.

2.1.2 Use of Statistics

Statistical applications have a wide range of use; they are:

◆ *Review of facts*

1. **Policy planning:** A strategy must be finalised using facts from a prior or anticipated environment in order to be used successfully and produce the most beneficial outcomes possible. For instance, an organisation might analyse its prior sales data in order to create field-based plans for the future that will maximise product sales.

◆ *Statistics for assessment*

2. **Management:** Statistics are a highly helpful tool in an organisation to assess many areas of work and employee well-being as well as to keep track of the organisation's development trend.

◆ *Correlating with numerical data*

3. **Behavioural and social sciences:** Statistics aid researchers in transforming the information in social sciences, where both quantitative and qualitative types of information are utilised in order to understand and anticipate trends in behaviour. When the features of the population being examined are normally distributed, utilising either parametric or non-parametric statistics to explain the pattern of activities allows for the best and statistically significant conclusions concerning the variables being investigated.

◆ *Educational profiling*

4. **Education:** Understanding student profiles, instructor material, and infrastructure is crucial if education is to be widely distributed and effective in the interest of the people. Once more, statistics can be useful since they make it possible to analyse these traits in light of the demands of the country. After analysing the parameters of each component, it is clear which areas require greater attention.

◆ *Financial management*

5. **Commerce and Accounts:** When it comes to financial matters, it is crucial to take extra care to manage the money in a way that supports activities across all sectors. Making informed judgments about where to invest money and how to manage it to get the most value at the lowest cost is made possible with the aid of cost and benefit analyses.

6. **Industries:** Statistics is a fundamental instrument for handling daily issues not just in large organisations but also in small businesses. In order to reduce costs and give each employee a chance to share in the profits,

◆ *Management of industries*

data must be carefully maintained at every level and examined from a variety of angles. Examples of yearly analyses that are crucial to controlling unfavourable factors include those of an organisation's capital, machinery, profit and loss, etc. to generate a balance sheet or a systematic analysis of attendance for payment. Statistical methods are frequently used by psychologists and personnel officers who deal with hiring and training in businesses to distinguish between employees.

◆ *Measuring science*

7. **Pure science and Mathematics:** In the pure sciences, statistical tools are also essential for determining precise measurements and for identifying changes over time and under diverse settings. Statistics is an area of mathematics that aids in understanding the variations in attributes of many mathematical applications.

◆ *Aids in decision-making*

8. **Problem Solving:** Statistics make it feasible for a person to determine the most appropriate solution to a problem situation by letting them know the useful difference between two or more variables. Statistics aids in problem-solving by assisting the individual in analysing their pattern of answers and the ideal response, thus reducing the error factor.

◆ *Testing theories*

9. **Theoretical Research:** On the basis of data gathered from the field, theories are developed. The importance of those findings for a specific paradigm or phenomenon is determined through statistical analysis. Researchers are deciding if a given theory can be maintained or refuted based on the facts and data utilising statistical metrics. The importance of the facts and circumstances enables them to investigate the connections between them.

◆ *Tactical usage*

10. **Army and War Statistics:** Making the most accurate and reliable predictions about a condition or use for military operations requires the use of statistics. Armed forces employ statistics for all of their operations, including recruiting new soldiers, training new recruits, conducting raids, analysing accidents, calculating combat losses and gains, and more.

There are many other fields like agriculture, sports, space, medicine, geology, and technology, where statistics is extensively used to predict the results and find precision in a decision.

2.1.3 Limitations of Statistics

Statistics provides very useful yet imperfect analytical tools. Careful attention must be given to minimising limitations through solid technique, recognising constraints, and avoiding overgeneralization or exaggerated certainty about findings. Thoughtful qualification of statistical insights is essential.

◆ *Barriers in statistics*

◆ *Limited to quantifiable facts*

◆ *Lack of specificity*

◆ *Accurate but may not be applicable*

◆ *Beyond statistical gauge*

◆ *No means to an end*

◆ *Possibility of manipulation*

1. Statistics are merely statements of fact that are numerical in nature. As a result, features like these that cannot be quantified cannot be studied statistically. Therefore, qualitative traits like integrity, intelligence, etc., cannot be directly investigated by statistics.
2. Statistics merely examines the totality of information; it does not examine specific cases. It doesn't focus on any one unit in particular. Assume that in 2021 India's per capita income was 87 000 rupees. Since this is merely the national average income, it conceals the poverty and suffering of the people of India. It is because some people's high salaries balance out their low incomes.
3. Results from statistics are only generally accurate: Like the laws of physics or astronomy, the laws of statistics are not always applicable. They only hold true generally.
4. Statistics do not tell the whole story about the issue: It is not always possible to study a problem in all of its dimensions using a statistical method because many situations are impacted by such factors that are incapable of statistical analysis.
5. Statistics is just one tool for problem analysis: The statistical approach is not the only way to investigate a certain occurrence. It frequently fails to offer a solution to certain issues. These are issues that need to be taken into account in the context of the nation's culture, religion, and philosophy. Statistics won't be of much use in analysing these issues.
6. Numbers can be mistreated: Anyone can misuse statistics and make any kind of inference they choose. In reality, only trained individuals can use statistical approaches correctly. Effectively interpreting the data takes knowledge and experience.

Summarised Overview

Statistics occupies a unique space at the intersection of art and science. It is both an art and a science because it employs a combination of systematic methods and the expertise of skilled individuals. These methods serve as analytical tools, and their effective application requires a depth of experience and knowledge. As a growing branch of human understanding, statistics finds its systematic roots in various fields. It deals with the transformation of data into manageable descriptive terms and the derivation of meaningful inferences from them. This transformation involves the collection, classification, and analytical analysis of data, making statistics a science focused on the systematic organisation of numerical facts for the purpose of explaining and describing various phenomena. In the realm of social sciences, where both quantitative and qualitative information are integral, statistics plays a pivotal role. It serves as a bridge, enabling researchers to manipulate and understand data comprehensively, leading to the explanation and prediction of behavioural patterns. However, statistics is inherently tied to numerical representation. Thus, characteristics that cannot be expressed through numbers fall beyond the realm of statistical analysis. In essence, statistics stands as a dynamic discipline, simultaneously an art and science, wielding systematic methodologies to unlock the rich insights hidden within the world of numbers.

Assignments

1. Explain the importance of statistics and its usage in quantitative analysis of social science research.
2. Discuss the analytical capabilities of statistics.
3. What are the limitations of statistics.
4. Discuss briefly the use of Statistics in various spheres of human activity.

Suggested Reading

1. Asthana, H. S., & Bhushan, B. (2016). *Statistics for Social Sciences*. Delhi: PHI Learning.
2. Babbie, E. (2004). *The Practice of Social Research*. Belmont: Thomson and Wadsworth.



Reference

1. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Delhi: New Age International.
2. Sirkin, R. M. (1995). *Statistics for the Social Sciences*. USA: Sage.

Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

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Measures of Distribution

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ demonstrate the uses of statistical techniques in social research
- ◆ understand the measures of central tendency and its significance in social research
- ◆ explore the measures of dispersion in quantitative analysis
- ◆ identify the different correlation measures and its use in analysing quantitative data

Background

Statistical analysis aims to make sense of data by detecting patterns, trends, and relationships within large datasets. A key element in summarising and describing data is identifying central tendency - what is typical or standard for the distribution of values. Measures of central tendency allow us to characterise the centre point or most likely value within a dataset using a single descriptive statistic. However, simply identifying the central value provides an incomplete picture. To further understand the data distribution, we need measures of dispersion - how spread out or clustered the values are. Common measures of dispersion include the range, variance, and standard deviation. Additionally, statistics helps uncover correlations, which indicate the strength of association between two variables. Correlation coefficients are used to quantify the degree of linear relationship. Together, measures of central tendency, dispersion, and correlation provide crucial descriptive insights into the shape, spread, and relationships within data. This study material will explore essential properties, uses, and interpretations of these fundamental statistical concepts, including the mode, median, mean, range, variance, standard deviation, and correlation coefficient. Developing fluency with these core tools equips learners with the analytical skills necessary for data analysis and real-world applications across many fields and industries. Grasping these foundational statistics concepts provides the baseline knowledge needed to summarise data distributions, uncover patterns, make inferences, and ultimately extract actionable insights from information.



Keywords

Average, Mean, Median, Mode, correlation, Range, Quartile deviation, Mean deviation, Standard deviation

Discussion

2.2.1 Measures of Central Tendency

Everybody finds it challenging to comprehend or retain a huge number of facts. As a result, one would be interested in knowing certain values that would reflect or summarise all of these facts. After all, the fundamental goal of statistical analysis is to provide summary measures that can accurately characterise the data. The averages or measures of central tendency are among the significant summary statistics in statistical analysis. An average is a single significant number that combines the traits of a collection of figures. It reflects the entire series and communicates the overall vibe of the entire crew. An average value lies in the middle of the distribution, between the minimum and maximum values in the series.

◆ Averages

2.2.1.1 Mean

The most common and straightforward way to measure central tendency is the mean. Its main applications include summarising a series' key characteristics and facilitating data comparison. It can be processed algebraically and is utilised in subsequent statistical calculations. It is a central tendency metric that is comparatively stable. However, it has several drawbacks. Extreme items can adversely affect it; it might not match the true value of an item in a series, and it might provide a false impression, especially if the item values are not provided with the average. However, the mean is preferable to other averages, particularly in economic and social studies, where it is possible to make direct quantitative measurements.

◆ central tendency metric

Simple Arithmetic mean can be calculated in the following manner:

If X_1, X_2, \dots, X_n are 'n' individual values, then the arithmetic mean of them is:



$$\frac{X_1+X_2+\dots+X_n}{N}$$

N

The following steps are used to calculate the arithmetic mean.

◆ *Calculating mean*

1. Consider the given values as the value of a variable X
2. Add all the values and call the sum ' $\sum x$ '.
3. Count the number of values. Let the number of values be 'n'.
4. Divide $\sum x$ by n. This is Arithmetic mean and is denoted \bar{x}

Therefore, $\bar{x} = \frac{\sum x}{n}$

Example : Calculate the Arithmetic Mean of the daily income of 10 families.

Rs - 10, 90, 85, 103, 11, 29, 84, 15, 35, 80

Ans :

Income (X)
10
90
85
103
11
29
84
15
35
80
542



Here $\sum x = 542$

$N = 10$

Therefore, Arithmetic Mean $\bar{x} = \frac{\sum x}{n} = \frac{542}{10}$
 $= 54.2$ Rs

The average income of the ten families is 54.2 rupees.

Merits of Arithmetic Mean

◆ Benefits of arithmetic mean

- ◆ Arithmetic Mean is simple to understand
- ◆ Arithmetic Mean can be easily calculated
- ◆ Arithmetic mean can be determined in most of the cases
- ◆ It is based on all the observation of the series
- ◆ It is capable of more algebraic treatment
- ◆ It does not differ from sample to sample

Demerits of Arithmetic Mean

◆ Shortcomings of arithmetic mean

- ◆ Arithmetic mean is affected by extreme values
- ◆ Usually mean does not coincide with any of the observed values
- ◆ It is not suitable for averaging ratios and percentages
- ◆ It cannot be calculated for qualitative data which cannot be measured numerically
- ◆ It may offer misleading and absurd results in some cases
- ◆ In the case of frequency distributions with open end classes, the mid values of all classes cannot be obtained. Therefore, in such distributions, the mean cannot be calculated accurately.

2.2.1.2 Median

◆ Middle-value

When a series is arranged in ascending or descending order of magnitude, the median value is the middle item. The value of the item with the same number of items above and below is called the median. In other words, both the number of items above and below the median are equal. If there are five numbers, for instance, 5, 10, 15, 20, and 30, then 15 is the median. Two items have values above the median, while two items have values below the median. According to Connor, "The median is that value of the variable which

divides the values of the variable into two equal parts, one part containing all values greater than the median value and other part containing all the values smaller than the median values.

Example 1: Find the median of the following values - 4,45,60,20,83,19,26,11,27,12,52.?

Ans : Write the values in the ascending order - 4,11,12,19,20,26,27,45,52,60.

Median = Size of $(\frac{n+1}{2})$ th item = $\frac{10}{2} = 5^{\text{th}}$ item. Therefore, the median is 20.

◆ Calculation of median

Example 2: Calculate the Median. The values in ascending order are 23, 35, 40, 45, 50, 52, 61, 61, 80, 92.

Median = Size of $(\frac{n+1}{2})$ th item = $\frac{10+1}{2} = 5.5^{\text{th}}$ item.

Here, there are two middle items: 5th and 6th. Therefore, take the average of those two.

Hence, Median = $\frac{50+52}{2} = 51$.

2.2.1.3 Mode

The value of the series item that appears most frequently is the mode. In a distribution, the item with the highest concentration is the mode. Mode, which is often the size of item with the highest frequency, may not always be the case with certain items. The mode value therefore, has the highest frequency. For instance, if 70 of a class of 100 kids in a class are under the age of 15, the mode for that class is 15 years. In the examination of widely used sizes, mode is very helpful. For instance, a shoe producer is typically curious to learn which size is most popular so that he may produce that size in greater numbers. To put it another way, he wants a model size to be established because a mean or median size would not be appropriate for his needs. However, the mode has some restrictions as well. For instance, when we have two or more model values in a series, it is not susceptible to algebraic treatment and occasionally stays indeterminate. When we want to assign relative value to the elements under examination, it is deemed inappropriate. According to Kenny, "The value of the variable which occurs most frequently in a distribution is called mode.

◆ Highest concentration

Example: Find Mode. 23, 35, 28, 42, 62, 53, 35, 28, 42, 35,

23, 42, 35.

Ans: Arrange the values in the ascending order. Then by inspection identify the value which occurs a greater number of times. Here it is 35. Therefore Mode = 35.

When no item appears a greater number of times than others, then the formula to find mode is:

$$\text{Mode} = 3\text{Median} - 2\text{Mean}.$$

Example: Find Mode from the values 40, 25, 60, 35, 81, 75, 90, 10.

$$\text{Mode} = 3\text{ Median} - 2\text{Mean}$$

$$\text{Mean} = \frac{\sum x}{n} = \frac{416}{8} = 52$$

Median: 10, 25, 35, 40, 60, 75, 81, 90

$$\text{Median} = \text{Size of } \left(\frac{10 + 1}{2} \right) \text{th item} = 4.5^{\text{th}} \text{ item} = \frac{40 + 60}{8} = 50$$

$$\text{Therefore Mode} = (3 \times 50) - (2 \times 52) = 150 - 104 = 46$$

Hence Mode = 46

◆ Calculation of mode

2.2.2 Use of Averages in Social Research

Average plays an important role in social research. The important uses are:

◆ Simplification

1. Averages give a general idea about the whole group: Averages provide a simple and systematic description of the principal features of a data. Thus, averages simplify the complexity of data. As a result of this, data can be easily understood.

◆ Emphasis on summarising

2. The data can be summarised using averages: It is simple to express the facts in a number using averages. The key characteristics of the data are also shown by this number. For instance, the overall effectiveness of a student can be determined by looking up the average marks that a student received in each course.

◆ Facilitates comparison

3. Comparison is aided by averages: Averages can be used to compare two sets of data. For instance, a comparison of the average incomes of Indians and Americans will show that both groups are equally efficient economically.



◆ *Aids in informative decisions*

◆ *Foundation of statistical analysis*

◆ *Representative*

4. Average helps in decision-making: Average help a great deal in the formulation of policies.
5. Average constitutes the basis of statistical analysis: The basic purpose of statistical analysis is to develop summary measures which will describe data adequately.
6. Average represents the universe: Averages are a summary of the mass of facts. Average possesses the characteristics of the whole group.

2.2.3 Measures of Dispersion

◆ *Deviation from averages*

Dispersion is a term used to describe the variation in item sizes. It discusses the distribution or scatter of the values inside a series. It suggests that the sizes of the things are not consistent. The statistical tools to assess the variability in a series are known as measures of dispersion. They inform us of how much a series' values deviate from one another or their average. The central value of a distribution is shown by the central tendency measurements. The distribution cannot, however, be adequately described by the central value alone. We need a measure of the distribution of the actual scores in addition to the metrics of centrality. Different distributions may have different spreads in terms of size. Two income distributions, for instance, might have the same mean but distinct patterns of distribution; in one, the majority of the incomes might cluster around the mean, while in the other, the incomes might be widely spread, indicating that one distribution has less variability than the other. Measures of dispersion are used to quantify the magnitude of this variability.

Example: Consider the following two series.

Series 1 - 35, 35, 35, 35, 35

Series 2 - 20, 38, 45, 25, 60, 22

◆ *Assessing variability*

These two series have the same average of 35. But, the variability among the values is not the same. In the case of series 1, there is no variability or dispersion since all values are equal, while in the case of series 2, there is dispersion since the values are not the same. A study about this aspect is done with the help of the statistical method known as measures of Dispersion.

2.2.3.1 Purpose of Measuring Dispersion

◆ *Testing reliability*

1. To test the reliability of an average: Only when an average is established from homogeneous data will it serve as an acceptable measurement. An understanding of the distribution's structure and the location of individual items within it can be gained by combining a measure of dispersion with a measure of central tendency.

◆ *Measuring variability*

2. To compare the variability of two or more series: The degree of variability between two or more series can be evaluated on the basis of dispersion. A series lacks uniformity and is less consistent if the measure of dispersion for the series is higher.

◆ *control over variability*

3. To exercise control over variability: Measures of dispersion help us to study the nature and causes of variation, thereby controlling the variation itself. In social sciences, the measurement of inequality in the distribution of income and wealth requires the measure of variation.

Measures of dispersion are classified into two – Absolute Measures and Relative Measures. Absolute measures of dispersion are computed directly from the data. Relative measures of dispersion are based on absolute measures of dispersion and averages. Absolute measures are used for measuring the variability in a series. They are generally not used for comparison. Relative measures are used to compare the variability of two series. The absolute measures of dispersion are:

◆ *Absolute measures of dispersion*

- ◆ Range
- ◆ Quartile Deviation
- ◆ Mean Deviation
- ◆ Standard Deviation

The important relative measures of dispersion are:

◆ *Relative measures of dispersion*

- ◆ Coefficient of Range
- ◆ Coefficient of Quartile Deviation
- ◆ Coefficient of Mean Deviation
- ◆ Coefficient of Variation

◆ Value of difference

2.2.3.2 Range

The range (R) measures the difference between the highest and lowest scores of a distribution. For example, in a set of values 3, 5, 7, 9, and 12, the range is the difference between 12 and 3 = 9. So, Range = Highest Value - Lowest Value. Range, therefore, measures the maximum variation in the values of a series. It can be applied in cases where the distribution is at least on an ordinal level of measurement.

Example: Find the Range and the Coefficient of Range for the following values.

25, 32, 85, 32, 42, 10, 20, 18, 28.

$$\text{Range} = H - L = 85 - 10 = 75$$

$$\text{Coefficient of Range} = \frac{H - L}{H + L} = \frac{85 - 10}{85 + 10} = \frac{75}{95} = .79$$

Example : Compare the two series for their variability.

Series A : 5, 6, 8, 19, 12, 16, 19, 21, 25

Series B : 25, 30, 30, 35, 40, 45

◆ Calculation of Range

$$\text{Coefficient of Range for series A} = \frac{H - L}{H + L} = \frac{25 - 5}{25 + 5} = .67$$

$$\text{Coefficient of Range for series B} = \frac{H - L}{H + L} = \frac{45 - 25}{45 + 25} = .28$$

Therefore, Series A is more variable, since the coefficient of range is more.

Uses of Range

In some domains, range is used to measure variability, especially for data with little variance. For instance, the range of patients' fluctuating temperatures is often of interest to clinicians. Additionally, quality control employs it. When examining price and interest rate variation, range is used. The daily minimum and maximum temperatures are looked at in weather forecasts. With the use of this, they can predict the temperature's likely range.

◆ Variability and prediction

Merits of Range

- ◆ Range is the simplest measure of dispersion

- ◆ It can be easily calculated
- ◆ It can be understood even by a layman

Demerits of Range

- ◆ Range is not based on all items of the series
- ◆ It is highly affected by sampling fluctuations
- ◆ It cannot be computed in the case of open-end distribution.

2.2.3.3 Quartile Deviation

Quartile deviation is defined as half the distance between the third and the first quartiles.

$$\text{Quartile Deviation} = \frac{Q_3 - Q_1}{2}$$

$$\text{Coefficient of Quartile Deviation} = \frac{Q_3 - Q_1}{Q_3 + Q_1}$$

$$Q_1 = \text{size of } \left(\frac{n+1}{4}\right)\text{th item}$$

$$Q_3 = \text{size of } \left(\frac{n+1}{4} \times 3\right)\text{th item.}$$

Example: Find the Quartile deviation for the following values : 28, 32, 25, 42, 55, 82, 10, 25, 40, 38, 39.

Answer: write the values in ascending order - 10, 25, 25, 28, 32, 38, 39, 40, 42, 55, 82.

Here $n = 11$

◆ *Calculating quartile deviation*

$$Q_1 = \text{size of } \left(\frac{n+1}{4}\right)\text{th item} = \frac{11+1}{4} = \frac{12}{4} = 3$$

Therefore, size of 3rd item = 25

$$Q_3 = \text{size of } \left(\frac{n+1}{4} \times 3\right)\text{th item} = \frac{11+1}{4} \times 3 = \frac{12}{4} \times 3 = 9$$

Therefore, size of 9th item = 42

$$\text{Quartile Deviation} = \frac{Q_3 - Q_1}{2} = \frac{42 - 25}{2} = \frac{17}{2} = 8.5$$

2.2.3.4 Mean Deviation

Mean deviation is the average difference of the values of items from some average of the series. Such a difference is technically described as deviation. In calculating the mean

◆ *Average of differences*

deviation, we ignore the minus sign of deviations while taking their total to obtain the mean deviation.

Therefore, Mean Deviation = $\frac{\sum |d|}{n}$ where $|d|$ represents a deviation from an average without a sign, 'n' being a number of items.

When the Mean deviation is divided by the average used in finding out the mean deviation itself, the resulting quantity is described as the coefficient of mean deviation. The coefficient of mean deviation is a relative measure of dispersion and is comparable to a similar measure of other series. Mean deviation is significantly used for measuring the variability of the series relating to Economic and social phenomena. Variability in the distribution of wealth and income is generally measured in terms of Mean deviation. It is a better measure of variability than range as it takes into consideration the values of all items of a series. Even then, it is not a frequently used measure as it is not amenable to algebraic processes.

Steps for calculating Mean Deviation

1. Find an average of the data. (Average can be mean, median or mode).
2. Find the deviation of all the values of the series from the average. Take only the numerical value of these deviations. That is called omit the sign of the deviation.

Let these deviations be $|d|$.

3. Find the sum of all these deviations and divide by 'n'. it is the mean deviation.
4. Therefore, Mean deviation = $\frac{\sum |d|}{n}$.

Example: Find the mean deviation from the mean and its coefficient for the following values. 25, 63, 85, 75, 62, 70, 83, 28, 30, 12.

Answer: First find the mean and then take deviations.

X	d
25	(25-53.3) = 28.3
63	(63-53.3) = 9.7
85	(85-53.3) = 31.7
75	(75 -53.3) = 21.7
62	(62-53.3) = 8.7
70	(70 - 53.3) = 16.7
83	(83 - 53.3) = 29.7
28	(28 - 53.3) = 25.3
30	(30 - 53.3) = 23.3
12	(12 - 53.3) = 41.3
$\sum x = 533$	$\sum d = 236.4$

◆ *Calculating mean deviation*

$$\text{Mean} = \frac{\sum x}{n} = \frac{533}{10} = 53.3$$

$$|d| = x - 53.3 \text{ (without sign)}$$

$$\text{Mean deviation} = \frac{\sum |d|}{n} = \frac{236.4}{10} = 23.64$$

$$\text{Coefficient of Mean Deviation} = \frac{\text{Mean Deviation}}{\text{Mean}} = \frac{23.64}{53.3} = 44$$

Merits of Mean Deviation

- ◆ Mean deviation is a very simple and an easy measure of dispersion.
- ◆ It is based on all the items of the series. So it is more representative.
- ◆ Mean deviation is less affected by extreme values.

Demerits of Mean Deviation

- ◆ Mean deviation suffers from inaccuracy because



'+' or '-' signs are ignored.

- ◆ Mean deviation is not capable of any further algebraic treatment.
- ◆ Mean deviation is not a reliable measure when calculated from mode as the mode is uncertain in some cases.

2.2.3.5 Standard Deviation

Standard deviation is the most widely used measures of dispersion of a series and is commonly denoted by the symbol ' σ ' (pronounced as sigma). According to Spiegel, 'Standard Deviation is the square root of the mean of the squares of the deviations of all values of a series from their arithmetic mean'.

Therefore, Standard Deviation $\sigma = \frac{\sqrt{\sum(x - \bar{x})^2}}{n}$ where n' is the number of items.

When we divide the standard deviation by the arithmetic average of the series, the resulting quantity is known as the coefficient of standard deviation, which happens to be a relative measure and is often used for comparing with similar measures of other series. When the coefficient of standard deviation is multiplied by 100, the resulting figure is the coefficient of variation.

◆ *Deviation from mean*

◆ *Preferred than mean deviation*

The standard deviation is a measure of dispersion in a series that is frequently used in research investigations and is thought to be quite accurate. Because the algebraic signs are taken into account during calculation, it is amenable to mathematical manipulation (as we ignore in case of mean deviation). The effects of sampling fluctuations are less pronounced because of these benefits; standard deviation and its coefficient are frequently used to determine how scattered a series is. It is frequently employed when estimating and testing hypotheses.

Steps to calculate Standard Deviation

- ◆ Calculate the arithmetic mean
- ◆ Find the deviation of each item from the mean
- ◆ Square these deviations and add them
- ◆ Divide this sum by the total number of items
- ◆ Take the square root of this.

Example: Find the Standard Deviation of the values 5, 8, 7, 11, 9, 10, 8, 2, 4, 6

Answer:

x	$x - \underline{x}$	$(x - \underline{x})^2$
5	-2	4
8	1	1
7	0	0
11	4	16
9	2	2
10	3	9
8	1	1
2	-5	25
4	-3	9
6	-1	1
70		68

$$\text{Mean} = \underline{x} = \frac{\sum x}{n} = \frac{70}{10} = 7$$

$$\text{Standard Deviation} = \sigma = \frac{\sqrt{\sum(x - \underline{x})^2}}{n}$$

$$= \sigma = \frac{\sqrt{68}}{10} = \sqrt{6.8} = 2.6$$

$$\text{Coefficient of variation} = \frac{SD}{Mean} \times 100 = \frac{2.6}{7} \times 100 = 37.14$$

◆ Calculating standard deviation

Merits of Standard Deviation

- ◆ Standard Deviation is based on all the values of a series. It does not ignore any value
- ◆ Standard Deviation is a clear and certain measure of dispersion so that it can be measured from all series

- ◆ It is not very much affected by sampling fluctuations
- ◆ It is capable of further algebraic treatment.

Demerits of Standard Deviation

- ◆ Difficult to Compute
- ◆ Depend upon Units of Measurement
- ◆ More Stress on Extreme Values

2.2.4 Correlation

Correlation is defined as “the tendency of two or more groups or series of items to vary together directly or inversely”. Boddington states that “whenever some definite connection exists between the two or more groups, classes or series or data there exists correlation. Two variables are said to be correlated if the change in one variable results in a corresponding change in the other variable. That is, when two variables move together, we say they are correlated. For example, when the price of a commodity rises, the supply for that commodity also rises. On the other hand, if the price falls the supply also falls. Hence price and supply are correlated. The word correlation usually implies cause and effect relationship, called mutual independence. A positive correlation between the increase in cigarette smoking and the increase in cancer may prove that one causes the other. But correlation does not always imply a cause-and-effect relationship.

◆ *Cause-effect relationship*

2.2.4.1 Uses of Correlation

1. It helps to study the association between two variables. For example, we can examine whether there is any relation between sales and profit with the help of correlation.
2. Correlation measures the degree of relation between two variables. Karl Pearson’s coefficient of correlation provides a formula for finding the degree of relation between two variables.
3. From the correlation coefficient, we can develop a measure called probable error. Probable error indicates whether the correlation is significant or not.
4. Correlation analysis helps to estimate the future

◆ *Studying variables in different capacity*

values. For example, from the correlation coefficient between income and investment, one can predict the possible quantum of investment for a particular amount of income.

2.2.4.2 Different kinds of Correlation

1. Positive and Negative Correlation

Correlation can be either positive or negative. When the values of two variables move in the same direction, the correlation is said to be positive. An increase in the value of one variable results in an increase in the value of the other variable, or if a decrease in the value of one variable results in a decrease in the value of the other variable, correlation is said to be positive. If, on the other hand, the value of two variables moves in opposite directions, an increase in the value of one variable results in a decrease in the value of the other variable or a decrease in the value of one variable results in an increase in the value of the other variable, the correlation is said to be negative. Generally, price and supply are positively correlated because when the price increases, supply also increases and when the price comes down, supply follows. The correlation between price and demand is said to be inverse or negative because, with a fall in price, demand goes up and with a rise in price, demand comes down.

◆ *Mutually inclusive*

2. Linear and Non-linear Correlation

Correlation may be linear or nonlinear. When the amount of change in one variable leads to a constant ratio of change in the other variable, correlation is said to be linear. For example, if the price goes up by 10% it leads to a rise in supply by 15% each time, then there is a linear relation between price and supply. When there is a linear correlation, the point plotted on a graph will give a straight line. Correlation is said to be non-linear when the amount of change in one variable is not in constant ratio to the change in the other variable.

◆ *Same and constant*

3. Simple, Partial and Multiple Correlation

In the study of the relationship between variables, if there are only two variables, the correlation is said to be simple. For example, the correlation between price and demand is simple. When one variable is related to a number of others, correlation is not simple. Then, the study of the relationship between the variables is done with the help of partial or

multiple correlation.

◆ *Correlation with more than one*

The degree of relationship between one variable on one side and all the other variables combined on the other side is measured in the research of multiple correlations. That is, if the relationship between yield with both rainfall and temperature together is multiple correlations. In partial correlation, we study the relationship of one variable with one of the other variables, presuming that the other variables remain constant. For example, yield, rainfall and temperature. Each is related to the other. Then, the relationship between yield and rainfall, where temperature is constant, it is a partial correlation.

2.2.4.3 Coefficient of Correlation

◆ *Algebraic technique*

Both a visual and an algebraic approach can be used to measure the correlation between two variables. The two most crucial graphic techniques are the scatter diagram and correlation graph. The coefficient of correlation, on the other hand, is an algebraic technique for calculating correlation. With this approach, we calculate the correlation using the proper formula. The correlation coefficient is a number. It demonstrates how strongly two variables are correlated.

The coefficient of correlation is a pure number lying between -1 and +1. When the correlation is negative, it lies between 0 and 1. When the coefficient of correlation is zero, it indicates that there is no correlation between the variables. When the correlation coefficient is 1, there is a perfect correlation.

Coefficient of correlation can be computed by applying:

- ◆ Karl Pearson's method
- ◆ Spearman's method

2.2.4.3.1 Karl Pearson's Coefficient of Correlation

The most widely used method of measuring the degree of relationship between two variables is Karl Pearson's or simple correlation. This coefficient assumes the following:

- ◆ That there is a linear relationship between the two variables.
- ◆ The two variables are causally related,

◆ *Measuring degree of variation*

which means that one of the variables is independent and the other one is dependent.

- ◆ A large number of independent causes are operating in both variables so as to produce a normal distribution.

Karl Pearson, the great biologist and statistician, has given a formula for the calculation of the coefficient of correlation. The Pearsonian coefficient of correlation is denoted by the symbol 'r'. The formula for computing the Karl Pearson coefficient of correlation is

$$r = \frac{\Sigma(x-\bar{x})(y-\bar{y})}{n\sigma_x\sigma_y}$$
 where σ_x = the standard deviation of x series, σ_y = the standard deviation of y series. n = Number of pairs of observations.

The above formula can be expressed in the following form also

$$r = \frac{n\Sigma xy - (\Sigma x \cdot \Sigma y)}{\sqrt{n\Sigma x^2 - (\Sigma x)^2} \sqrt{n\Sigma y^2 - (\Sigma y)^2}}$$

Example 1: Calculate the coefficient of correlation

X - 2, 3, 4, 5, 6, 7

Y - 4, 5, 6, 12, 9, 5, 4

Ans:

x	y	xy	x ²	y ²
2	4	8	4	16
3	5	15	9	25
4	6	24	16	36
5	12	60	25	144
6	9	54	36	81
7	5	35	49	25
8	4	32	64	16
35	45	228	203	343

$$\begin{aligned}
 r &= \frac{n\sum xy - (\sum x \cdot \sum y)}{\sqrt{n\sum x^2 - (\sum x)^2} \sqrt{n\sum y^2 - (\sum y)^2}} \\
 &= \frac{7 \times 228 - (35 \times 45)}{\sqrt{7 \times 203 - (35)^2} \sqrt{7 \times 343 - (45)^2}} \\
 &= \frac{1596 - 1575}{\sqrt{1421 - 1225} \sqrt{2401 - 2025}} \\
 &= \frac{21}{\sqrt{196} \sqrt{376}} = \frac{21}{14 \times 19.39} = \frac{21}{271.46} = 0.077
 \end{aligned}$$

Calculating Karl Pearson's Coefficient of correlation

2.2.4.3.2 Spearman's Rank Correlation

It is the technique of determining the degree of correlation between two variables in case of ordinal data where ranks are given to the different values of the variables. The main objective of this coefficient is to determine the extent to which the two sets of ranking are similar or dissimilar. For example, we cannot measure beauty or intelligence quantitatively. But it may be possible, in their case, to rank the individuals in some order. According to Spearman's method, the formula for rank correlation coefficient is $1 - \frac{6\sum D^2}{n[n^2-1]}$

Correlation between two variables

Where 'D' is the difference between ranks and n is the number of items.

Example: The Ranking of 10 individuals at the start and at the finish of a course of a training are as follows.

Individuals	Rank Before	Rank After	D = Rank Difference	D ²
A	1	6	5	25
B	6	8	2	4
C	3	3	0	0
D	9	2	7	49
E	5	7	2	4
F	2	10	8	64
G	7	5	2	4
H	10	9	1	1
I	8	4	4	16
J	4	1	3	9
				176

◆ *Calculating Spearman's Rank Correlation*

$$\begin{aligned} \text{Rank correlation coefficient is} &= 1 - \frac{6\sum D^2}{n[n^2-1]} \\ &= 1 - \frac{6 \times 176}{10 [10^2 - 1]} \\ &= 1 - \frac{6 \times 176}{10 [100 - 1]} = 1 - \frac{1056}{990} = 1 - 1.07 = 0.07 \end{aligned}$$

Merits of Rank Correlation

- ◆ It is easy to calculate
- ◆ Simple to understand
- ◆ It can be applied to both quantitative and qualitative data

Demerits of Rank Correlation

- ◆ Rank correlation coefficient is only an approximate measure as the actual values are not used.
- ◆ It is not convenient when 'n' is large.
- ◆ Further algebraic treatment is not possible.

Summarised Overview

Measures of central tendency, dispersion, and correlation constitute vital statistical techniques leveraged by quantitative researchers in social science. These different analytical methods help systematically estimate and scientifically analyse data. The in-depth quantification enabled by these tools has made quantitative data analysis hugely popular among social scientists. In particular, correlation studies are useful for predicting the probable change in one variable based on observed changes in another, yielding insights that closely mirror reality. An average serves as a representative value, encapsulating the central features of a wider data group. However, an average only provides meaningful insight when derived from relatively homogeneous data. Coupling central tendency measures with dispersion metrics offers a crucial understanding of a distribution's structure and the positioning of individual data points within it. Ultimately, correlation allows examination of the interconnected tendencies and variances between different variables. Taken together, measures of central tendency, dispersion, and correlation furnish social scientists with the rigorous quantitative apparatus to derive actionable knowledge from complex socio-behavioural data.

Assignments

1. Calculate the Mean and Median of the following data.
 - a. No of Children: 0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14
 - b. Families: 42, 26, 26, 35, 60, 45, 50
2. Find Range, Coefficient of Range, Quartile Deviation and Coefficient of Quartile Deviation of the series: 43, 25, 18, 29, 20, 9, 52, 69, 71, 50, 10
3. Is there any correlation between X and Y?
 - a. X: 200, 270, 340, 310, 400
 - b. Y: 150, 162, 170, 180, 180
4. Calculate the coefficient of correlation by Spearman's method from the following data.
 - a. Roll No: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
 - b. Marks in Statistics: 45, 56, 39, 54, 45, 40, 56, 60, 30, 35
 - c. Marks in law: 40, 56, 30, 44, 36, 32, 45, 42, 20, 36
5. Define statistical average.
6. Compare mean, Median and Mode.
7. List out the various measures of Dispersion
8. Why is standard Deviation considered to be the best measure of dispersion?
9. Write notes on Karl Pearson's Coefficient of correlation.
10. Distinguish between positive and negative correlation.

Suggested Reading

1. Asthana, H. S., & Bhushan, B. (2016). *Statistics for Social Sciences*. Delhi: PHI Learning.
2. Babbie, E. (2004). *The Practice of Social Research*. Belmont: Thomson and Wadsworth.

Reference

1. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Delhi: New Age International.
2. Sirkin, R. M. (1995). *Statistics for the Social Sciences*. USA: Sage.

Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.



SGOU



Parametric and Non-parametric Tests

Learning Outcomes

Upon completion of this unit, the learner will be able to:

- ◆ comprehend the key concepts of parametric and non-parametric tests
- ◆ gain knowledge of major parametric tests, including t-tests, with its assumptions and applications
- ◆ learn important non-parametric techniques like chi-square

Background

Statistical hypothesis testing is a core technique in data analysis that allows researchers to make statistical decisions using sample data. There are two major types of hypothesis tests - parametric and non-parametric. Parametric tests make certain assumptions about the underlying population data, such as following a normal distribution. These tests use parameters like mean, standard deviation and correlation to assess sample differences. Popular parametric tests include the t-test, ANOVA, Pearson correlation and linear regression. Non-parametric tests do not assume normality or make distributional assumptions. They use the distribution of ranks and order statistics rather than parametric values to test hypotheses. Common non-parametric methods include the Chi-square, Spearman correlation, Wilcoxon signed-rank and Kruskal-Wallis tests. Determining whether to use parametric or non-parametric analysis requires evaluating factors like sample size, underlying distribution, and measurement scale. While parametric tests are more powerful when assumptions are met, non-parametric methods provide robustness against outliers and irregular data. Mastering these fundamental statistical testing approaches provides crucial analytical skills for learners across disciplines like economics, psychology, health sciences and more. Learning when and how to leverage parametric versus non-parametric methods will equip learners with flexibility in selecting the most valid analysis technique for diverse real-world data.



Keywords

Tests, Hypothesis, Variable, Parameter, Validity

Discussion

◆ *Statistical inferences*

A parameter is a function of the population variables. It is a statistical measure derived from the population. For example, the population mean is a parameter, whereas the function of sample values is sample statistic. The primary objective of a sample study is to draw inferences (or conclusions) about the population by examining only a part of the population. Such inferences are called statistical inferences. One of the main branches of statistical inferences is the testing of a hypothesis. The tests conducted to accept or to reject the hypothesis are known as statistical tests of hypothesis.

◆ *Testing of hypothesis*

The hypothesis testing determines the validity of the assumption with a view to choose between two conflicting hypotheses about the values of a population parameter. Hypothesis testing helps to decide, on the basis of a sample data, whether a hypothesis about the population is likely to be true or false. Statisticians have developed several tests of hypothesis, also known as tests of significance, for the purpose of testing hypotheses. The test of significance used for hypothesis testing are of two types:

- ◆ The parametric tests or standard tests of hypotheses
- ◆ Non-parametric tests or distribution-free test of hypotheses

2.3.1 Parametric Test

Parametric tests usually assume certain properties of the parent population from which we draw samples. Assumptions like observations come from a normal population, sample size is large, and assumptions about the population parameters like mean, variance etc, must hold good before parametric tests can be used. But, there are situations when the researcher cannot or does not want to

◆ *Statistical testing of hypotheses*

make such assumptions. In such situations we use statistical methods for testing hypotheses which are called non-parametric tests, because such tests do not depend on any assumption about the parameters of the parent population. Besides, most non-parametric tests assume only nominal or ordinal data, whereas parametric tests require measurement equivalent to at least an interval scale.

Important types of Parametric Tests are:

◆ *Comparison between two*

1. T-tests - T-tests allow researchers to compare the means between two groups or conditions. The t-test assumes interval/ratio data, independent observations, and normal distributions. It determines whether the mean difference between groups is statistically significant by calculating a t-value and p-value from sample data. Independent samples t-tests evaluate differences between separate groups, whereas paired samples t-tests assess mean differences before and after a treatment for the same subjects. T-tests help determine with confidence whether an actual difference exists between the means or if it is likely due to chance.

◆ *A statistical test for hypothesis*

2. The z-test is a statistical hypothesis test that compares a sample mean to a known population mean to determine if there is a significant difference between the two. It assumes the population variance is known and the sample size is large. The z-test calculates a z-score based on how far the sample mean deviates from the population mean in standard error units. The z-score's corresponding p-value indicates whether the z-value is statistically significant. If p is less than the chosen significance level (usually 0.05), the null hypothesis that the sample mean equals the population mean is rejected in favor of the alternative. A significant z-test result suggests the sample mean is different enough from the population parameter that it is unlikely due to chance or random sampling error alone. The z-test is useful when the population standard deviation can be reliably estimated before drawing the sample. It has applications in quality assurance and polling, where existing data can indicate variability.

3. ANOVA - Analysis of variance (ANOVA) evaluates differences in group means by analysing comparisons between and within groups. It extends the t-test for more than two groups. ANOVA assumes independent

◆ *Differences in group*

observations, normality, and equal variance across groups. It separates sample variance into partitions for between group and within group comparisons. An F-ratio is calculated from the partitions and used to determine statistical significance. ANOVA allows simultaneous comparison of three or more group means rather than performing multiple t-tests, controlling for increased Type 1 error.

◆ *Linear relationship*

4. Pearson Correlation - Pearson's correlation evaluates the linear relationship between two continuous variables. It determines the correlation coefficient (r), which measures the strength and direction of the association between the variables. Values range from -1 to 1, with 0 indicating no relationship. Pearson's r assumes bivariate normality and linearity. Strong correlations allow the prediction of one variable given the other. However, correlation does not automatically mean causation - other lurking variables may be involved.

◆ *Value of a variable based on the value of another variable*

5. Linear Regression - Linear regression models the relationship between a continuous dependent and one or more independent variables. It fits a linear equation to minimize residuals and quantify the predictor variables' effects. Key outputs include R-squared, which represents the proportion of variance explained, and the regression coefficients. Regression assumptions include linearity, normality, lack of autocorrelation, and lack of multicollinearity between predictors. Regressions determine the relative contributions and statistical significance of each independent variable.

◆ *Relationship between single dependent variable and multiple independent variables*

6. Multiple Regression - Multiple regression predicts a single dependent variable from a set of multiple independent variables. It determines the overall fit of the model and the relative contribution of each predictor. R-squared is interpreted as the combined explanatory power of all the independents. Regression coefficients quantify each variable's effect when controlling for the others. Assumptions remain similar to simple regression but with an additional focus on limited multicollinearity between predictors.

7. ANCOVA - Analysis of covariance evaluates differences between group means while statistically controlling for additional covariates. The continuous

◆ *Analysis of covariance*

covariate(s) are incorporated into the model to account for their effects on the dependent variable. This increases power by reducing within-group error variance. ANCOVA assumptions include normality, linearity, homogeneity of regression slopes, and independence. It has advantages over ANOVA when additional continuous nuisance variables are known.

◆ *Testing across multiple vectors*

8. MANOVA - Multivariate analysis of variance incorporates multiple dependent variables at once rather than isolating a single outcome. It tests for differences across multiple vectors of means, determining if groups differ significantly across the combination of dependents. Assumptions are multivariate normality and variances/covariance equality across groups. MANOVA controls type 1 error and offers statistical power advantages with multiple dependents. Follow-up tests help diagnose the variables contributing to overall differences.

◆ *Reducing for significance*

9. Factor Analysis - Factor analysis technique reduces a large set of observed variables into fewer latent factors or components that explain significant patterns in the data. It determines the extent of cross-loading and separation between underlying dimensions. Factor analysis assumptions include independent observations, linear relationships, and a correlation matrix devoid of issues like multicollinearity. The derived factors condense the data's dimensionality while retaining its essence.

◆ *Observed and latent variables*

10. Structural Equation Modelling - Structural equation modelling (SEM) estimates relationships between observed and latent variables (unobserved constructs). It assesses structural theory by analysing a system of simultaneous equations. SEM assumptions include large sample size, independence, and multivariate normality. It determines how well the hypothesised conceptual model aligns with the empirical data results. SEM provides insight into complex multidimensional variable relationships.

2.3.2 The t -Test

t - Test is based on t-distribution and is considered an appropriate test for judging the significance of a sample mean or for judging the significance of the difference

◆ Judging significance of sample

between the means of two samples in case of small sample when population variance is not known. In case two samples are related, we use paired t-tests for judging the significance of the mean of difference between the two related samples. It can also be used for judging the significance of the coefficient of simple and partial correlations. The relevant test statistic, t is calculated from the sample data and then compared with its probable value based on t-distribution at a specific level of significance concerning degrees of freedom for accepting or rejecting null hypotheses. It may be noted that t-test applies only in case of small samples when population variance is unknown.

Uses of t-Test are:

- ◆ To test the given population, mean when the sample is small and the population SD is not known.
- ◆ To test the equality of two samples means when the samples are small and population SD is unknown.
- ◆ To test the difference in values of two dependent samples.
- ◆ To test the significance of correlation coefficient.

Assumptions of t - Test

- ◆ The parent population from which the sample drawn is normal
- ◆ The sample observations are independent
- ◆ The population SD ' σ ' is unknown
- ◆ When the equality of two population means is tested, the sample are assumed to be independent and the population variances are assumed to be equal and unknown.

$$t = \frac{\bar{x} - \mu H_0}{\sigma_s / \sqrt{n}} \text{ with d.f.} = (n-1)$$

\bar{x} = mean of the sample, μH_0 = Hypothesised mean for the population, σ_s = standard deviation of sample, n = number of items in sample one.



$$\text{Here } \sigma_s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{(n-1)}}$$

Where x_i = mean of sample one.

2.3.2.1 Procedure of Testing the Given population Mean

1. First set the hypothesis that there is no significant difference between sample mean and population mean. That is the given population mean is true. This can also be expressed as ' $\mu' = \mu_0$ '. Here μ_0 stands for the numerical value of population mean given.
2. Secondly, decide the test criteria. If the sample is large the test is z -test. If the sample is small, but population SD is known, then the test is Z. if the sample is small and population SD is not known the test applied is t-test.
3. Using the formula $\frac{\bar{x} - \mu_0}{\text{standard error}}$ compute the test static. Here \bar{x} is the sample mean and μ_0 is the population mean. Standard error is computed by one of the following formulae:
 - ◆ $\frac{\sigma}{\sqrt{n}}$ [when population SD is known and the sample is small or large.
 - ◆ $\frac{s}{\sqrt{n}}$ [when population SD is not known and sample is large]
 - ◆ $\frac{s}{\sqrt{n-1}}$ [when population SD is not known and sample is small]

' σ ', ' s ' and ' n ' are respectively population SD, sample SD and sample size.

4. For z test the degree of freedom is infinity, while for the t -test it is n-1.
5. Then get the table value of the test statistic, for the degree of freedom and level of significance.
6. Finally take a decision either to accept or to reject the hypothesis originally set in step 1. When the calculated value of test statistics as per step 3 is numerically less than the table value. We accept the hypothesis. Otherwise reject it.



Example 1: The average life of 26 electric bulbs were found to be 1200 hours with a standard deviation of 150 hours. Test whether these bulbs could be considered as a random sample from a normal population with mean 1300 hours.

Ans : $H_0 : \mu = 1300$

Since the sample is small and population SD of population is not known, apply t -test.

$$t = \frac{\bar{x} - \mu_{H_0}}{\sigma_s / \sqrt{n}} \text{ where } \bar{x} = 1200, \mu = 1300$$

$$S.E = \frac{s}{\sqrt{n-1}} = \frac{150}{\sqrt{26-1}} = \frac{150}{\sqrt{25}} = 30.$$

Therefore, $t = \frac{1200-1300}{30} = 3.3$. For t=Test, degree of freedom = $n-1 = 26-1 = 25$

Level of significance = .05

Table value of t at 0.05 level of significance = 2.06

Here the calculated value is greater than the table value numerically. We reject the null hypothesis. Therefore, the bulbs could not be a random sample from a normal population. With mean 1300 hours.

2.3.3 The Non-Parametric Tests

◆ *Population free test*

The non-parametric tests are population free tests, as they are not based on the characteristics of the population. They do not specify normally distributed populations or equal variances. They are easy to understand and to use. The non-parametric tests are the only one usable with nominal data; they are also the most appropriate technically correct tests to use with ordinal data.

◆ *Power*

We must comprehend the statistical idea of power in order to comprehend the significance of non-parametric tests in social science research. The power of a test is the probability of rejecting the null hypothesis when it is actually false and should be rejected. The power varies from one test to another. When the requirements of a test are not met, it is not possible to know the power of the test. Under such circumstances, the non -parametric tests are relevant and hence their importance in social science research. The important non parametric tests are : the chi square test, the Median test, the Mann-Whitney U tests, the sign test, the Wilcoxon matched pairs test and Kolomogorow Smirnov (LS)test.

2.3.3.1 The Chi -Square Test (χ^2)

◆ *Non parametric test of significance*

The Chi-square test is the most popular non parametric test of significance in social science research. It is used to make comparisons between two or more nominal variables. Unlike the other tests of significance, the chi-square is used to make comparisons between frequencies rather than between mean scores. This test evaluated whether the difference between the observed frequencies and the expected frequencies under the null hypotheses can be attributed to chance or actual population differences.

◆ *Identifying non correlation*

Typically, in social science research, we are interested in finding factors that are dependent upon each other – education and income, occupation and prestige, age and voting behaviour. By ruling out independence of the two variables, the chi square can be used to assess whether two variables are ‘not correlated with’ or ‘independent of’ the other if an increase in one variable is not associated with an increase in another. If two variables are correlated, their values tend to move together, either in the same or in the opposite direction. A chi-square value is obtained by the formula:

$$\chi^2 = \sum \frac{(O-E)^2}{E} \text{ where } O = \text{observed frequency and } E = \text{expected frequency.}$$

We calculate the expected frequency for each cell by multiplying the row total by the column total and dividing by the total number of observations.

Characteristics of χ^2 test

1. It is a non – parametric test. Assumptions about the form of the distribution or its parameters are not required.
2. It is a distribution-free test, which can be used in any type of distribution of population.
3. It analyses the difference between a set of observed frequencies and a set of corresponding expected frequencies.

Uses of χ^2 test

1. With the help of χ^2 test we can find out whether two attributes are associated or not.



2. χ^2 the test can be used to ascertain how well theoretical distributions fit the data. We can test whether there is goodness of fit between the observed frequencies and expected frequencies.
3. Tests of independence are concerned with the problem of whether one attribute is independent of another, while tests of homogeneity are concerned with whether different samples come from the same population.
4. χ^2 a test can be used for testing whether the given population variance is acceptable on the basis of samples drawn from that population.

Procedure for testing the independence of attributes

1. Lay down the null hypothesis that the two attributes are independent (they are not associated).
2. Find the values of χ^2 by the formula $\chi^2 = \sum \frac{(O-E)^2}{E}$ where O refers to the observed frequencies and E refers to the expected frequencies.
3. Decide the level of significance and degree of freedom.
4. Degree of freedom = $(r-1) \times (c-1)$ where 'r' is the number of rows and 'c' is the number of columns.
5. Obtain the table value for the degree of freedom and the level of significance.
6. Take the decision either to accept or to reject the null hypothesis. If the calculated value is less than the table value accepts the null hypothesis. Otherwise reject it.

Example: From the following data use χ^2 test and conclude whether inoculation is effective in preventing tuberculosis.

	Attacked	Not Attacked	Total
Inoculated	31	469	500
Noninoculated	185	1315	1500
Total	216	1784	2000

Ans :

Observed frequency (O)	Expected Frequency (E)	(O-E) ²	(O-E) ² /E
31	$216 \times 500/2000 = 54$	$(31-54)^2 = 529$	$529/54 = 9.8$
469	$1784 \times 500 /2000 = 446$	$(469-446)^2 = 529$	$529/446 = 1.19$
185	$216 \times 1500/2000 =162$	$(185-162)^2 = 529$	$529/162 = 3.27$
1315	$1784 \times 1500/2000 =1338$	$(1315-1338)^2 = 529$	$529/1338 = 0.40$
			Total = 14.66

$$\chi^2 = \sum \frac{(O-E)^2}{E} = 14.66$$

Degree of freedom = (r-1) (c-1) = (2-1) (2-1) = 1 × 1 =1

Table value of χ^2 at 5% level of significance is 3.841.

Here the calculated value is greater than the table values, so we reject the null hypothesis. This means attack and inoculation are not independent, rather inoculation is effective.

Summarised Overview

Sample studies aim to make inferences about broader populations by analyzing a representative subset through statistical testing of hypotheses. A parameter refers to a quantitative summary measure derived from the full population, while a sample statistic provides an estimate of that parameter. Non-parametric tests make minimal assumptions about population distributions and are therefore “distribution free.” These tests compare medians, ranks or frequencies rather than means. The chi-square test is a commonly used non-parametric method in social science research. It allows comparison between two or more nominal variables organized into categorical groups or frequencies. Chi-square analyses differences between observed and expected frequencies to determine if results could reasonably have occurred by chance. Overall, non-parametric techniques like chi-square provide robust hypothesis testing alternatives when population parameters cannot be reliably assumed or calculated from the sample.



Assignments

1. A soap manufacturing company was distributing a particular brand of soap through a number of retail shops. Before a heavy advertisement campaign, a sample of 20 shops was taken and mean sales was found to be 147 dozen with standard deviation 16. Can you consider the advertisement effective, using t Test?
2. A stenographer claims that she can take dictations at the rate of more than 120 words per minute. Of the 12 tests given to her, she could perform an average of 135 words with a standard deviation of 40. Is her claim valid? Use t-Test.
3. Given the following data relating to social status and state of intelligence. Test whether intelligence is related to social status.

	Dull	Intelligence	Brilliant	Total
Lower middle	22	35	23	80
Middle	38	70	32	140
Upper middle	60	20	20	100
Total	120	125	75	320

4. Define degree of freedom.
5. Explain the uses of χ^2 .
6. Explain the procedure of testing independence of two attributes.
7. What do you understand by sampling distribution?
8. How do you go on testing a statistical hypothesis?

Suggested Reading

1. Diamond, I. J. (2001). *Beginning Statistics. An Introduction for Social Scientists*. USA: Sage.
2. Kanji, G. K. (2006). *100 Statistical Tests*. India: Sage.
3. Kurtz, N.R. (1999). *Statistical Analysis for the Social Sciences*. US: Allyn and Bacon.

Reference

1. Babbie, E. (2004). *The Practice of Social Research*. Belmont: Thomson and Wadsworth.
2. Kothari, C. R. (2004). *Research Methodology: Methods and techniques*. New Delhi: New Age International.

Space for Learner Engagement for Objective Questions

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SGOU



Computer Applications in Social Research

Learning Outcomes

Upon completion of this unit, the learner will be able to:

- ◆ comprehend the role of computer in social science research
- ◆ explore the various statistical techniques and analysis with statistical packages
- ◆ find out the usage of SPSS and other related software's and its usage in quantitative analysis

Background

Computers and software have become essential tools in social research methodology and data analysis. Statistical packages like SPSS, SAS, Stata, and R are used by over 95% of sociologists and up to 80% of sociology graduate students for quantitative research. While SPSS has been the dominant statistical software since the 1960s, open-source platforms like R and Python have gained popularity more recently, used by around 30% and 15% of social scientists respectively. Beyond statistics, tools like NVivo and Atlas.ti help qualitative researchers code and analyse textual data, with NVivo having over 500,000 users as of 2020. Online survey tools like Qualtrics simplify data collection, with over 90% of researchers using them. Data visualisation software like Tableau enables new visual analysis approaches, with at least 10% annual revenue growth recently. New computational social science techniques are emerging but unevenly distributed between countries. Overall, the adoption of computer applications in social research has grown enormously in recent decades.

Keywords

Analysis, Software, Quantification, Qualitative



Discussion

◆ *Computer mediated social research*

The digital revolution has profoundly transformed social research methodology and data analysis over the past several decades. Computers and statistical software have enabled researchers to work with much larger datasets, conduct more complex analyses, and develop new computational techniques that leverage big data. While they supplement rather than replace fundamental research skills, computer applications have become indispensable tools across the diverse fields of social research.

◆ *Computer programs for quantitative analysis*

Statistical software like SPSS, SAS, Stata, and R have become the standard for quantitative data analysis across the social sciences. Over 95% of sociologists regularly use these platforms, with SPSS the dominant program since the 1960s, used by around 80% of sociology graduate students. Statistical packages include a wide range of tools for managing, manipulating, analysing, and visualising data. Researchers can run descriptive and inferential statistics, regression models, ANOVA, factor analysis, and many other techniques to test hypotheses and derive insights from surveys, experiments, observational studies, and merged datasets. This enables more rigorous analysis of trends, patterns, and relationships within large datasets that would be impossible to analyse manually.

◆ *Computer programs for qualitative analysis*

For qualitative research, text analysis software has unlocked new potential for working with non-numerical data. Programs like NVivo, Atlas.ti, and MAXQDA allow social scientists to import, organise, systematically code, annotate, and analyse large bodies of interview transcripts, focus group data, historical texts, social media posts, open-ended survey responses, and other unstructured text. This enables qualitative techniques like thematic analysis, content analysis, and discourse analysis to be applied to much larger samples than feasible manually. NVivo surpassed 500,000 users globally across academia, government, and business by 2020.

Online survey tools like Qualtrics, SurveyMonkey, and Google Forms have massively grown in popularity, with over 90% of researchers reporting use in a 2016 review. By simplifying the creation, customisation, distribution, and analysis of digital surveys, these tools have slashed the time

◆ *Modified survey tools online*

and cost of data collection. Advanced features like display logic, randomisation, and piping allow more complex experimental and quasi-experimental survey designs. And seamless integrations with statistical software enable straightforward data analysis.

◆ *Spatial orientation in social research*

Geographic information systems (GIS) like ArcGIS integrate spatial data management, analysis, and visualisation capabilities. GIS enables new spatially oriented approaches to social research, from creating maps to spatial queries and cluster analysis. Spatial tools can uncover geographic patterns in phenomena like health outcomes, environmental hazards, segregation, and voting behaviour. But, their use remains relatively niche due to the complexity of spatial data.

◆ *Big data to trace human behaviour*

New interdisciplinary fields like computational social science and social network analysis are emerging at the intersection of social research and computer science. Leveraging big data, machine learning, and computational modelling, researchers are studying human behaviour and social systems at an unprecedented scale. Social media data, mobile phone records, satellite imagery, and other digital traces provide new insights into networks, mobility, segregation, and aggregate trends. However, access to advanced computing resources and proprietary big datasets remains unequal between developed and developing countries.

◆ *Computer application as an add on*

Computer applications enable more diverse, large-scale, and complex social research than ever before imaginable. But technology is a supplement, not a replacement for, fundamental research skills like thoughtful research design, instrument development, and interpretation of results. The thoughtful and responsible application of modern tools alongside domain expertise is key to their impact.

2.4.1 Statistical Packages

Statistical packages are computer programs written for statistical analysis. These programs have simplified the work of researchers who have to do statistical analysis in their research work. Many statistical packages known as SPSS, MSTAT, INDOSTAT, MINITAB, EXCEL etc are now developed for statistical analysis. These packages are useful in employing most of the statistical techniques like calculating averages, standard deviation, coefficient of correlation,

◆ *Software mediated statistical analysis*

Regression Equations etc and conducting statistical tests like t -test, F -test, X²- test etc.

◆ *Informed usage of statistical softwares*

A researcher who makes use of these packages must use them with care. It must be verified whether the formula and methods used in the package are correct. Different packages use different methods, different assumptions and different ways of presentations. The form of the output also differs from package to package. So a researcher, before using a package for his purpose, must test its validity by applying the program on one or more model data.

Here is a brief description of programmes commonly used by social scientists while doing numerical and quantitative studies:

2.4.1.1 Statistical Package for the Social Sciences – SPSS

◆ *Statistical software for quantitative analysis*

First released in 1968, SPSS is the most widely used statistical software in the social sciences. It provides a user-friendly graphical interface along with an array of tools for managing, analysing, and visualising quantitative data. Core features include data manipulation, descriptive statistics, plots, regression models, ANOVA, factor analysis, clustering, and survey tools. It allows testing of hypotheses and theories using large datasets from sources like surveys, experiments, and administrative records. SPSS enables social scientists to quickly generate key outputs like crosstabs, correlations, and complex statistical models without coding. Its popularity stems from ease of use and the comprehensive nature of its statistical techniques relevant to many fields. It is commonly used for survey analysis, experimental studies, and secondary analysis of data from sources like census records. SPSS is widely used in disciplines like sociology, psychology, political science, and communication. While proprietary, its ubiquity makes it an accessible entry point for new users.

Advantages of SPSS

1. User-friendly graphical interface and menu-driven navigation make it easy to learn and use
2. Comprehensive range of statistical tests and analysis techniques relevant for most social science research
3. Output is well-structured and easy to interpret

◆ *Positive role of conflict*

4. Fast, automated execution of complex statistical procedures on large datasets
5. Easy data management through the SPSS spreadsheet editor
6. Built-in procedures for data checking, cleaning, transformation, recoding etc.
7. Powerful charting, graphing and visualisation capabilities
8. Macros allow automation of repetitive tasks
9. Widely used in social sciences, so results are shareable/ understandable
10. Technical support is available as it is commercial software

Disadvantages of SPSS

1. As proprietary software, can be expensive to purchase/ renew license
2. Limited flexibility for customising analyses or automation
3. Advanced techniques may require add-on modules at additional cost
4. Not optimised for very large and complex datasets
5. Being menu-driven can be constraining for experienced users
6. Statistical programming knowledge is still required for complex analysis
7. Less suited for the latest techniques like machine learning
8. Weaker for advanced text/network/spatial analysis compared to other packages

2.4.1.2 Statistical Analysis System - SAS

First released in 1976, SAS has a strong focus on advanced data management alongside statistical analysis capabilities. It is commonly used by government agencies, health researchers, and corporations for analytics and

business intelligence. SAS includes modules for forecasting, econometrics, psychometrics, and multivariate analysis, among other advanced techniques. It also has strong capabilities for handling messy real-world data from sources like electronic health records. SAS is optimised to efficiently analyse very large datasets efficiently and produce detailed output reports. Due to its extensive data manipulation tools, it is widely used by epidemiologists and public health researchers working with complex population health data. Market researchers also rely on SAS for techniques like conjoint analysis and survey sampling. While SAS has a steep learning curve, its array of features has sustained its popularity at research organisations with access to large administrative data repositories.

Advantages of SAS

1. Very powerful data manipulation capabilities for handling messy, real-world data
2. Can efficiently analyse extremely large datasets with advanced techniques
3. Modules are available for specialised analysis like forecasting, econometrics, psychometrics
4. Generates detailed output reports and high-quality graphics
5. Trusted by government agencies and corporations for analytics and business intelligence
6. Technical support available as proprietary commercial software
7. Integrates seamlessly with other SAS products like SAS Enterprise Guide
8. Advanced analytic capabilities like multivariate analysis, conjoint analysis etc.
9. Wide range of industry/domain-specific solutions tailored for needs

Disadvantages of SAS

1. Expensive proprietary software with high licensing costs
2. The steep learning curve, less intuitive than GUI-

driven software like SPSS

3. Heavy reliance on coding and programming knowledge
4. Limited visualisation capabilities compared to R and Python
5. Statistical programming still required despite menu-driven modules
6. Lack of transparency due to closed-source proprietary algorithms
7. Limited flexibility to extend functionality compared to open-source platforms
8. Weak support for the latest techniques like machine learning and AI
9. Code-heavy approach is less accessible for entry-level users
10. Advanced skills needed to utilise many domain-specific solutions
11. Collaboration can be challenging compared to open ecosystems

2.4.1.3 R

R is a free, open-source programming language and software focused on statistical analysis and graphics. It was initially released in 1995 but has surged in popularity in recent decades due to its flexibility and free access. R has over 16,000 user-contributed packages which allow specialised statistical techniques and visualisations. It has strong capabilities for data wrangling and cleaning. R provides access to cutting-edge machine learning and data mining techniques. It is widely used in fields like biostatistics, econometrics, and computational social science. Many packages have been tailored for social network analysis, text mining, geospatial analysis, and other complex data types encountered in social research. R has a steep learning curve but enables customization and large-scale automation of analyses. It is combined with other tools like RStudio IDE, R Markdown, and Shiny for added functionality. R's rise highlights the growing power of open-source software for data science applications.

◆ *Software for statistical analysis and graphic presentation*



Advantages of R

1. Free and open-source software with access to latest techniques
2. Highly flexible and extensible with over 16,000 packages available
3. Strong capabilities for data wrangling, cleaning, and manipulation
4. Access to cutting-edge machine learning, data mining, and AI capabilities
5. Powerful support for visualisations and high-quality graphical output
6. Wide range of specialised packages tailored for social network analysis, text mining, geospatial analysis etc.
7. Highly active developer community continuously expanding functionality
8. It integrates well with tools like RStudio IDE, R Markdown, Shiny, etc.
9. It reproduces analysis workflows and the transparency of code
10. Can handle very large datasets and computationally intensive tasks

Disadvantages of R

1. The steep learning curve, especially for non-programmers
2. No graphical user interface requires coding and scripting skills
3. It is less intuitive and accessible compared to menu-driven software like SPSS
4. Loading and integrating multiple packages can be challenging
5. The limited built-in functionality, extensions required for advanced techniques
6. Packages can have less documentation, testing, and user support

7. Collaborative work and version control are more difficult
8. Weaker data management capabilities compared to SAS
9. Lack of technical support as a community-driven open-source project
10. Requires learning additional tools to maximise effectiveness
11. Harder to share results with non-R users compared to proprietary software

2.4.1.4 STATA

Stata is a popular “middle ground” statistical package, first launched in 1985. It provides a balance of advanced statistical techniques, excellent data visualisation tools, and good data management capabilities. Stata excels at handling many common data types like survey data, time series, and panel data. It includes methods for general linear models, regression, time series analysis, survival analysis, panel data models, and multivariate models. Stata also has strong capabilities for managing messy real-world data. It produces high-quality graphical output for exploration and presentation. Stata offers a simple programming language for automation and reproducibility. While not as widely used as SPSS across all social sciences, Stata is popular in many subfields, including labour economics, biostatistics, political science, and public policy/program evaluation research. It offers accessible complexity between standard packages like SPSS and fully coding-based platforms like R.

◆ *Balanced statistical tool*
 ◆ *Trio of advantage: statistical technique, data visualisation and data management*

Advantages of STATA

1. Provides a good balance of power, simplicity and ease of use
2. Handles common social science data types like surveys, time series, and panel data very well
3. It includes a wide range of statistical techniques like regression, time series analysis, survival analysis, etc.
4. It produces high-quality graphs and visualisations for analysis and presentation

5. Good capabilities for managing and working with messy real-world datasets
6. A simple programming language allows automation and reproducibility
7. More accessible complexity compared to R but more flexibility than SPSS
8. Popular in fields like econometrics, political science, and public policy research
9. Technical support is available as proprietary commercial software

Disadvantages of STATA

1. As proprietary software, it can be expensive to purchase initially
2. Not as widely used across all social sciences as SPSS
3. Advanced statistical capabilities are weaker compared to SAS
4. Limited support for latest techniques like machine learning
5. Menu-driven interfaces can be restrictive compared to coding platforms
6. The steep learning curve for incorporating Python/R code
7. Collaborative work not as seamless as with open-source platforms
8. Weaker text/network/spatial analysis capabilities compared to R packages
9. Statistical programming knowledge is still required for customisation
10. Lack of transparency due to closed-source proprietary algorithms
11. Add-on modules and technical support incur additional charges
12. It is harder to share results with non-Stata users compared to open ecosystems

◆ *Advanced machine learning library*

2.4.1.5 Python

Python is an open-source general programming language that has gained popularity for social data analysis in recent years. It provides access to advanced machine learning libraries like scikit-learn, statistical packages like Pandas, and visualisation libraries like Matplotlib. Python is especially prominent in text mining and natural language processing. Its flexibility enables customised analysis workflows to be created for social media data, electronic texts, online forums, and other unstructured textual data. Python is also widely used for social network analysis based on packages like NetworkX. The availability of specialised libraries makes Python well-suited to computer-assisted qualitative data analysis and computational social science applications. Python's rise highlights a shift toward open-source coding-based platforms for advanced techniques as opposed to proprietary GUI software. But it does have a significant learning curve, especially for researchers without programming experience.

Advantages of Python

1. Open source programming language with thriving community support
2. Highly flexible for custom analysis workflows and automation
3. Access to powerful machine learning and data science libraries like Pandas, NumPy, Scikit-Learn
4. Strong capabilities for text mining and natural language processing
5. Leading platform for social network analysis based on NetworkX library
6. Integrates well with visualisation libraries like Matplotlib and Seaborn
7. Handles unstructured data like text corpora, social media data, web content etc.
8. Scales well to large datasets and computationally intensive tasks
9. Reproducible analysis scripts promote transparency
10. Free access lowers barriers for students and researchers with limited resources



Disadvantages of Python

1. Requires programming skills and coding knowledge
2. The steep learning curve, especially for non-programmers
3. No graphical user interface, less accessible than menu-driven software
4. Weaker built-in functionality for statistical testing and data management
5. It is harder to collaborate and share work compared to proprietary platforms
6. Version control and dependency management can be challenging
7. Scattered documentation requires synthesising from various sources
8. Limited built-in technical support, relies on community forums
9. Presentation-ready outputs require more work than proprietary software
10. Difficult for non-Python users to view and work with code/outputs
11. Weaker security, auditing and regulatory compliance compared to commercial solutions

2.4.1.6 NVivo

NVivo is a widely used qualitative data analysis software, originally released by QSR International in 1999. It provides tools for organising, analysing and finding insights in unstructured textual data - from the interview and focus group transcripts to open-ended survey responses, social media posts, and historical records. Key features include importing data, coding text, annotating, querying data, and visualising concepts. NVivo allows large volumes of textual data to be systematically encoded and classified using methods like thematic analysis, grounded theory, and content analysis. Patterns and meaningful themes can be derived from across larger samples than feasible manually. NVivo has surpassed 500,000 users globally across academia, government, and business. It is widely used in disciplines with rich textual

◆ *Software for qualitative analysis*

◆ *Analyses unstructured textual data*

data, like anthropology, sociology, communication studies, and marketing research. NVivo simplifies collaborative qualitative analysis and makes interpretive methods more transparent.

Advantages of NVivo

1. Systematic organization and analysis of large volumes of textual data
2. Facilitates coding and classification using methods like thematic analysis
3. Powerful querying and visualization of coded concepts/themes
4. Collaborative analysis with multiple researchers coding same data
5. Maintains links between coded extracts and original source context
6. Enables transparency by allowing others to review coding
7. Widely used and recognized in fields relying on rich textual data
8. User-friendly interface accessible to new qualitative researchers
9. Technical support is available as it is proprietary commercial software

Disadvantages of NVivo

1. Expensive proprietary software with licensing costs
2. Data needs to be imported and managed in limited ways
3. The steep learning curve to utilise full functionality
4. Can be restrictive and rigid for experienced analysts
5. Requires nuanced understanding to avoid misrepresentation
6. Potential for de-contextualisation and fragmentation of data
7. Still requires fundamentally strong analytical skills



8. The temptation to quantify qualitative data inappropriately
9. May encourage surface-level coding lacking depth
10. Technical issues and clunky operation at times
11. Lack of transparency due to closed-source algorithms
12. Collaborative analysis features can be limiting

Summarised Overview

Researchers today have access to powerful tools for storing, retrieving, and analyzing large amounts of data. Software packages like SPSS, STATA, and SAS facilitate quantitative and statistical analysis techniques through user-friendly interfaces. SPSS in particular makes it easy for all types of users to apply analytical methods. STATA offers both point-and-click and command-line options, enabling flexibility as well as easy graphing and plotting. SAS is well-suited for intermediate to advanced users working with large datasets, given its robust capabilities. The ample data storage and retrieval capacities of computers greatly benefit researchers by allowing convenient access to information when needed. Overall, the data management and analysis capabilities provided by current software and hardware technology significantly aid researchers in their work.

Assignments

1. What do you understand about statistical packages?
2. Explain the uses and applications of computers in social science research?
3. Pick any two statistical software packages covered in the discussion and compare their relative strengths and limitations for social research applications.
4. Discuss the advantages and potential pitfalls of increased reliance on statistical software platforms in social research methodology and practice.
5. Provide an overview of how qualitative data analysis software like NVivo has enabled new approaches to working with non-numerical data in sociological research.
6. Analyse the key benefits qualitative software offers for organizing, classifying and deriving insights from large volumes of textual data compared to manual approaches.

Suggested Reading

1. Sirkin, R. M. (1995). *Statistics for the Social Sciences*. India: Sage.
2. Nie, H. Norman H., Hull., C. H., & Bent, D. H (1970). *SPSS: Statistical Package for Social Sciences*. New York: McGraw-Hill.

Reference

1. Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A. L., Brewer, D., Christakis, N., Contractor, N., Fowler, J., Gutmann, M., Jebara, T., King, G., Macy, M., Roy, D., & Van Alstyne, M. (2009). *Computational Social Science*. *Science*, 323(5915), 721-723. <https://doi.org/10.1126/science.1167742>
2. Cunningham, B. James and Aldrich O. James. (2012). *Using SPSS: An Interactive Hands-On Approach*. New Delhi: Sage.
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SGOU

UNDERSTANDING QUALITATIVE RESEARCH

BLOCK-03



Philosophical Approaches to Qualitative Research

Learning Outcomes

Upon the completion of this unit, the learner will be able to:

- ◆ explain philosophical approach of qualitative research
- ◆ comprehend post-positivism and other perspectives
- ◆ narrate social constructionism in qualitative research

Background

Qualitative research encompasses a broad range of philosophical perspectives and methodological approaches aimed at understanding human experiences, interactions, and cultures in their natural settings. The philosophical underpinnings shape how qualitative researchers view reality, knowledge, and the ethics of research. This study material provides an overview of major philosophical approaches that inform qualitative inquiry. While post-positivism adheres more closely to scientific realism and objectivity, social constructionism emphasizes the culturally and historically relative nature of knowledge constructed through social interactions and language. These contrasting ontological and epistemological assumptions result in divergent approaches to qualitative inquiry.

Keywords

Interpretive, Subjective, Social research, Modernist, Scientific inquiry

Discussion

◆ *Research perspectives*

Qualitative researchers generally hold one of two research perspectives: interpretivist or critical. Interpretive researchers in this text (in the fields of biography and life story research, historical research, ethnographic research, auto ethnography, narrative inquiry, case study research, arts-based research, practitioner action research, and program evaluation) assume that people create their own meanings in interaction with the world around them. Qualitative research has two dimensions: the interpretive perspective, which focuses on uncovering participants' views, and a critical perspective, which builds on the interpretive perspective but also examines ways in which power is embedded in social settings.

◆ *Qualitative resources*

Qualitative research is a mature field of study with its own literature base, research journals, special interest groups, and regularly scheduled conferences. Indeed, staying current is a daunting task for any single individual. The qualitative, interpretive, or naturalistic research paradigm defines the methods and techniques most suitable for collecting and analyzing data. Qualitative inquiry, which focuses on meaning in context, requires a data collection instrument that is sensitive to underlying meaning when gathering and interpreting data. Humans are best suited for this task, especially because interviewing, observing, and analyzing are activities central to qualitative research. The principles of qualitative research methodology, focusing primarily on methods of analysis. Qualitative researchers offer a large range of terms to represent the approaches, genres, and methodologies and to distinguish between different types of qualitative research. Qualitative research is not characterized by one global methodology, but by many methodologies.

◆ *Humanistic element in qualitative research*

Qualitative research is characterized by three elements:

- ◆ Research in the natural human language, in the context of natural human life
- ◆ Research based on the intuitive human research skills, focused on closeness, participation, and empathy with the investigated phenomena
- ◆ Using analytic human research skills, focused on distancing, reflection and control of the process.



3.1.1 Post-Positivism

◆ *In opposition to positivism*

Post-positivism emerged in the 20th century as a critique of logical positivism, the view that empirical science is the only source of meaningful knowledge. Post-positivists recognize that absolute truth cannot be found and all observation is fallible. However, they still believe in an external reality that can be examined scientifically. Validity, rigorous methods, and multiple levels of data analysis are employed to get as close to the truth as possible. Post-positivist research is largely hypothesis-driven and aims to explain phenomena by identifying influencing factors. It focuses on enhancing the internal and external validity of findings. Key features include reductionism, empirical measurement, and theory verification. This approach is common in fields like psychology that aim to find generalizable causal explanations through scientific inquiry.

◆ *Postulates of post positivism*

Post-positivism grew out of the positivist view of science, and together these have dominated research in psychology for much of the field's history. Positivism rests on the ontological assumption that some objective truth or reality exists that is independent of our beliefs and constructions and can be ascertained through direct observation and experience. The efforts of science, thus, are put toward establishing universal laws of nature and, within psychology, universal laws of human development and experience. The attainment of this knowledge and our confidence in it depends on following systematic procedures through which claims about truth can be verified. Hypothesis generation and testing using valid measures of operationally defined variables are primary tools, and the goal is to be able, with confidence, to generalize the knowledge obtained to some larger general population. Post-positivism introduces the idea that hypotheses can never actually be proven beyond any doubt and that theory should be tested in order to check for falsification and or verification. Issues of validity and reliability are of central importance in research within this paradigm, as are considerations of credible alternative hypotheses to explain the phenomenon being studied.

History of Post-positivism is rooted in logical positivism, a term coined by a group of scientists, mathematicians, and philosophers in the early 1900s known as the Vienna Circle. Building on the "positive philosophy" of Auguste Comte, but also emphasizing on the importance of formal logic in scientific investigation, these thinkers determined

◆ *Objection to empirical and scientific methodology alone*

that science required a systematic way of organizing our direct observations of experience and sought to inductively build laws of the natural world based on the construction of meaningful and unambiguous logical statements. Only statements of fact that could be verified in some way or tested empirically were considered to be meaningful in the scientific endeavor. Karl Popper objected to the idea that this kind of inductive construction and confirmation of factual, logical statements that were purportedly free from personal and theoretical bias could lead to certainty about the natural world. Instead, he argued that the laws of science had to be built through a process of falsification or testing of hypotheses. He argued that data disproving hypotheses are more definitive than those supporting them, as in any given study there is always the risk that the data gathered do not accurately or fully represent the real world being studied. The disconfirming case or cases may simply have not made it into the sample drawn for study

3.1.1.1 Foundational Assumptions

Post-positivism retains the belief that in an observable external reality and the existence of universal truths but contends that a fully accurate representation of them can never be achieved with certitude. Although things exist beyond our experience of them, it is recognized that our knowledge of this world is socially constructed. Bias is unavoidable. All observations are fallible because they are inherently laden with our individual and cultural biases. Although we can never get to the truth with any certainty, post-positivists contend that we should continually strive to come as close as we possibly can. Because all measurement is biased and introduces error, issues of reliability and validity are paramount. Great attention is paid to reducing or controlling for bias through the design of the research and the use of clearly defined techniques such as controls groups and multiple forms of measurement or triangulation. This attempt to remove or at least reduce bias extends to the subjectivity of the researcher as well as to the intentions of the research. The researcher is to remain as neutral as possible throughout the research process and should not engage in research in the service of advocacy for any particular position within their field. From a post-positivist perspective, the existence of multiple worldviews does not extend into a belief in complete relativism and an incommensurability of perspectives – the belief that our differences in experiences

◆ *Objectivity and subjectivity in research*

and culture mean that we can never understand each other. Whereas we may never achieve objectivity in the true sense of the word, we can employ systematic ways of checking our biases both individually and collectively through engaging in the scientific enterprise within a community of people who critically review one another's work.

Post-positivist research has the following characteristics:

- ◆ Research is broad rather than specialized – lots of different things qualify as research.
- ◆ Theory and practice cannot be kept separate. We cannot afford to ignore theory for the sake of just facts.
- ◆ The researcher's motivations for and commitment to research are central and crucial to the enterprise.
- ◆ The idea that research is concerned only with correct techniques for collecting and categorizing information is now inadequate.

3.1.1.2 Positivist Views of Research

Positivist researchers believe that they can reach a full understanding based on experiment and observation. Concepts and knowledge are held to be the product of straightforward experience, interpreted through rational deduction. The dominance of positivist assumptions about research has at least two effects. First, it leads people to assume that if social research is done properly it will follow the model of the natural sciences and provide a clear, unambiguous road to the causes of certain social or psychological phenomena. Some assume that it can predict social trends and can even be used to control events. It was at one time assumed that positivist-empiricist modes of enquiry could produce a science of society. This assumption was in turn made possible by the assumption that there were one-to-one correspondences between social phenomena and their causes. Most people rightly treat assumptions about causes with caution, recognizing that it is rarely possible to show a direct cause for some aspect of the social world. But even when people recognize the complexity of social phenomena and the difficulty of pinning them down in a

◆ *Empirically observable truths*

scientific way, assumptions may persist about how research should be carried out.

◆ *Inadequacy of positivism in social research*

Second, the idea that the only way to do social research is to follow a scientific model can lead to the dismissal of research as a valuable tool in understanding the rich complexity of social life. This scientific approach which positivism espouses is rightly thought to be inadequate when it comes to learning about how people live, how they view the world, how they cope with it, how they change it, and so on.

3.1.1.3 The Context for Positivism

◆ *Promoters of positivism*

Each one of us live out our lives in the context of a worldview, which influences how we think and behave and how we organize our lives, including how we approach research. But worldviews often go unarticulated or unnoticed, and we often fail to realize that the assumptions we carry about research are related to a particular worldview or mental model. We need to uncover our worldviews and subject them to scrutiny. This is especially important for those doing research. As social researchers, we work within, not outside, broader historical, social and theoretical contexts. These contexts serve as the scaffolding for the questions we ask and how we go about answering them. The bigger scaffolding that supports positivism is a modernist worldview.

◆ *Lack of emphasis on humanistic elements*

Modernism, A modernist outlook is the cumulative outcome of four foundational movements in European thought – the Renaissance, Reformation, Scientific Revolution and Enlightenment. Within modernist ways of knowing the world, only certainty and empirical knowledge are valid, and the rational is valued over other ways of knowing, such as intuition. Positivism seeks to reduce everything to abstract and universal principles, and tends to fragment human experience rather than treat it as a complex whole.

◆ *Model of natural science in social research*

Modernity led to a split between science and literature as different ways of understanding human experience. The natural science model came to dominate in social research. This became known as positivism or positivist-empiricism. Positivist research places faith in quantification and on the idea that using correct techniques will provide correct answers. It is also concerned to some extent with prediction and with control.

The foregoing review represents classical positivism



◆ *Positivism and Post positivism for research*

and there are many variations of it. It is, therefore, more appropriate to think of positivisms. We should not forget that a modernist worldview has played a large part in the development of ideas concerning liberation, justice and freedom. Spaces exist within positivism for radical practice. Many Irish and international researchers have used positivist research approaches in the drive to create a more equal and just society. Setting up positivism and post-positivism in opposition to each other does not adequately represent the messier on-the-ground realities of how research proceeds. Most studies in the natural sciences do not in fact proceed in a defined linear fashion, but are the product of web-like and cyclical thinking. The way they are written up however often makes it seem as if they proceeded in a linear manner. Positivist visions of science do not always reflect the actual practice of doing science.

3.1.1.4 Epistemology

The ideas, assumptions and beliefs associated with positivism and modernism constitute what is called an epistemological base. Epistemology is a study of how people or systems of people know things and how they think they know things. It is thus concerned with the nature of knowledge, what constitutes valid knowledge, what can be known and who can be a knower. In recent decades, increasing attention is falling on the limitations of the epistemological base of positivism. Within positivism, knowledge has been treated as follows:

◆ *Positivism and modernism as base of epistemology*

- ◆ What counts is the means (methodology) by which knowledge is arrived at. These means must be objective, empirical and scientific
- ◆ Only certain topics are worthy of enquiry, namely those that exist in the public world
- ◆ The relationship between the self and knowledge has been largely denied – knowledge is regarded as separate from the person who constructs it. The political is separate from the personal
- ◆ Math's, science and technical knowledge are given high status, because they are regarded as objective, separate from the person and the private world;

- ◆ Knowledge is construed as being something discovered, not produced by human beings.

What has prompted a move away from positivism?

Opposition to positivist epistemologies has come from feminism, post structuralism, critical psychology, anthropology, ethnography and developments in qualitative research. Critiques of positivism are implicit in other movements for social change, as well as in the knowledge of Eastern, Asian and indigenous societies, who see all events and phenomena as interconnected. This kind of knowledge, for so long despised by the Western scientific tradition, has now been revitalised. This has come about because the movements and peoples concerned have:

◆ *Criticism of positivist epistemologies*

- ◆ emphasised that there is no neutral knowledge
- ◆ showed the inadequacies of dualistic, that is, either/or, or black/white thinking
- ◆ emphasized the ethical aspects of research.

In addition, complexity of science has challenged the dominance of reductionist scientific models. Recognizing that there is no neutral knowledge, critics of positivist epistemologies have insisted that divisions between objectivity and subjectivity, or public and private knowledge, or scientific and emotional knowledge, are socially constructed. Just as important, these artificial divisions, or dualistic ways of viewing the world, are used to control ideas about what knowledge is legitimate. Knowledge cannot be divorced from ontology (being) and personal experience.

◆ *Mutual existence*

3.1.1.5 Collapse of Faith in Dualistic Thinking

There has been a collapse of faith in dualistic thinking. Post-positivist values in research are not about being either subjective or objective, nor do they prefer subjectivity over objectivity. They emphasize multiplicity and complexity as hallmarks of humanity. Post Positivist approaches are interpretive and this has led to an emphasis on meaning, seeing the person, experience and knowledge as 'multiple, relational and not bounded by reason'. These are:

◆ *Multiplicity rather than singularity*

1. **Ethical considerations:** Post-positivism has also reawakened questions about the uses and purposes of research, research practice and research knowledge,

◆ *Moral considerations*

which are at least as much ethical as they are technical. No longer is it good enough for the researcher to see the people s/he is researching simply as research subjects from whom information is 'extracted'. The emphasis is on good principles, adequate for working with human participants in all their complexity. Procedures, techniques and methods, while important, must always be subject to ethical scrutiny.

◆ *Conversion of social factors to scientific expressions*

2. **Complexity science:** This historical period is not the first in which a challenge was mounted to the reductionist approach of positivism. In the eighteenth century, 'a few prophetic members', of the western scientific tradition, such as Goethe and von Humboldt, tried to resist the reductionism and mechanistic outlook of the developing natural sciences. Later, systems theory, drawing on organic biology, gestalt psychology and theoretical ecology, studied 'organised complexity'. But interest was withdrawn from these theories after World War Two, because their concepts could not be expressed mathematically.

◆ *Need for artistic imagination along with logico - deductive scientific method*

However, the natural sciences themselves have today been able to take up those ideas again, facilitated by the development of fast computers. Complexity science has shown that 'various properties of a system emerge through its dynamic behavior and interactions. Such properties cannot be predicted mechanistically at the outset from knowledge of the component parts. The most challenging themes and theoretically exciting questions are not reached by the logico-deductive scientific method. Instead they are reached by a process that resembles artistic imagination. Einstein imagined that he was riding on a moonbeam, looking at the earth, as part of his work.

Positivism challenged but not much work in the natural sciences could now be said to be post-positivist. Nevertheless, the modernist worldview or paradigm is still strong. Positivism, although challenged, is still the dominant public model for research. Researchers can still find it difficult to get funding for post-positivist projects. The mechanistic view of the natural sciences continues to dominate the public perception of science, and in turn it affects views of what social research should be. Four main tools of Post-Positivist research in the search for meaning, which can lead to value led social change at the disposal of

post-positivist researchers:

◆ *Tools for post positivist research*

- ◆ concept of discourse
- ◆ concern with power
- ◆ value of narrative
- ◆ need to be reflexive

◆ *Discourse in post positivist research*

The post-positivist emphasis on meaning and the relationship between language and meaning is addressed in the concept of discourse. A discourse is a web of statements, categories and beliefs, habits and practices. Discourse is used to filter and interpret experience and the discourses available at a certain historical moment construct the ways that people can think, talk about, or respond to phenomena. Discourses 'invite' us to be human in certain ways, or to respond to others in certain ways. They produce certain assumptions (about, for example, women, men, economics, work, childcare, or money) and they provide subject positions from which people speak and act.

3.1.1.6 The need to be reflexive

◆ *Post positivist – Extra positivist*

Post-positivism is not trying to substitute a more secure and firm foundation as an alternative to positivism. Rather, it strives to 'produce an awareness of the complexity, historical contingency and fragility of the practices that we invent to discover the truth about ourselves'. It is thus much more than 'post' - it is actually extra-positivist, because it provides vantage points from outside positivism, from which you can approach research. This is why a reflexive attitude is so important. This means sticking with the contradictions and tensions that arise in the course of our research and not flinching from the challenges inherent in them. Ongoing reflexivity on the part of the researcher means that we must look critically at what is assumed in any approach that assumes that we can 'empower' somebody else. As Lather points out, even 'an intendedly liberatory pedagogy might function as part of the technology of surveillance and normalization'. The same could be said of research.

3.1.1.7 Implications for Research Methods

Research rooted in post-positivism aims to explain psychological phenomenon by identifying factors that predict particular outcomes and the relationships between them. A priori theory about how things are related is used to guide the research, which then seeks to verify or falsify these

◆ *Creation and examination of new knowledge for social justice*

theory-based ideas. Having confidence in the findings from such research rests on the rigor with which systematic steps in the research process are employed. Multiple levels of data analysis and taking steps to ensure validity contribute to the rigor of the research, and the results of these studies are typically written in the form of scientific reports similar in structure to that used for the reporting of quantitative studies. Post-positivist research principles emphasize meaning and the creation of new knowledge, and are able to support committed social movements, that is, movements that aspire to change the world and contribute towards social justice.

◆ *Limitation of post positivist research*

Post-positivist researchers also recognize that there are limits to research. Research and the analysis in which it engages are explicit – both provide evidence for conclusions. The need for evidence means that research is not always able to access areas of human experience that are more intuitive or ontological. Also, research can be used as an excuse for not acting. We say we need more information before we can proceed. But often this is just procrastinating, when our intuition broadly defined as extra-rational ways of knowing, honed from experience – tells us what needs to be done. Poetry, visual arts, novels, and drama also try to make the familiar strange and can often do that extremely well. The post-positivist mode is nothing if it does not also recognize the value of other forms of enquiry.

3.1.2 Social Constructionism

◆ *Evaluation of human life: Influencing social factors*

Social Constructionism or the social construction of reality is a theory of knowledge of sociology and communication that examines the development of jointly constructed understanding of the world. Social constructionism may be defined as a perspective which believes that a great deal of human life exists as it does due to social and interpersonal influences. Although genetically inherited factors and social factors are at work at the same time, social constructionism does not deny the influence of genetic inheritance, but decides to concentrate on investigating the social influences on communal and individual life.

‘Social constructionism: sources and stirrings’ – the ‘sources’ component will be fairly clear: we have aimed to present some core ideas that have developed in often unrelated efforts that we find useful to our own efforts of elucidating ‘what’s going on, and how can it be assisted to

◆ *Sources and Stirrings*

keep going on in more respectful ways'. On 'stirrings', our conversations about our sources have certainly stirred us up in the course of combining our ideas into what we hope has some coherence as a narrative. We have felt pressured, on a number of occasions, to strive for at least a semblance of coherence, because that is something readers of books expect. But, at the same time, we have not been seeking an authoritative coherence that we could then, as experts, hold out as a party line that must be obeyed.

◆ *Schools of social constructionism*

Social constructionism appears to us, at this point, to be very much a work in progress. It is here that we have found our two initial aims were not as simple as we first suspected: social constructionism has more sources and resources than we expected, and quite often those who might think of themselves as social constructionists appear to be unaware of them. Thus, our intention is more to stir up ideas for you, as the reader, to interact with, and evaluate as to how they might, or might not, be taken up in your own work. There is no one school of social constructionism. Rather, it is a broad church. There are, though, some expansive tenets that hold it together.

◆ *Understanding human activities*

First, it is concerned with meaning and understanding as the central feature of human activities. With respect to meaning, the focus is on how it is that a symbolically based language does what it does, which is to provide a very different quality of social experience for two people who speak the same language as compared to two people who are speaking different languages. We have an immediate grasp of what is being said in the former case; we just hear noise in the latter case. Over developmental time, new skills in interrogating symbols to reach understandings become possible: we might talk through an argument to ourselves in private, or wrestle with the assembly instructions for some piece of knock-together furniture. But these private activities retain a conversational structure.

Second, then, is the view that meaning and understanding have their beginnings in social interaction, in shared agreements as to what these symbolic forms are to be taken to be. Third, ways of meaning-making, being inherently embedded in socio-cultural processes, are specific to particular times and places. Thus, the meanings of particular events, and our ways of understanding them, vary over different situations. These variations can be trivial: people

- ◆ *Understanding social interaction*
- ◆ *Making meaning of socio cultural processes*

wish to present themselves as fashionably dressed, for example, and clearly what is regarded as fashionable varies within cultures over time (compare how people are dressed in photographs in 1900 and in 2000) and across space (how the President of the United States dresses as compared to the King of Saudi Arabia). On the other hand, they can be much more substantive. Hepworth, for example, has pointed out how western ways of making sense of self-starvation have changed quite markedly over historical time: medieval women who adopted this practice were regarded as saints who were shedding their attachment to worldly pleasures and sustaining themselves on heavenly rather than physical nourishment. These women did not relate to their experience through the modern discourse of 'anorexia'. Similarly, the Delphic Oracle was revered for hearing the voices of Gods, rather than positioned as 'schizophrenic'. Such Oracles were revered as 'blessed' rather than marginalized as 'ill'. The different discourses in which their experiences were available to be constituted and made sense of place both of these historical examples in very different relations to very different problems from their modern counterparts.

- ◆ *Essentialism*

Fourth, and following from this, most social constructionists have an uneasy relationship with 'essentialism': that is, with the idea that one of the major goals of psychology is to uncover the essential characteristics of people. If people fashion who they are within their varying socio-cultural traditions, then they are instrumental in creating the discourses they use to define themselves. Thus, people are self-defining and socially constructed participants in their shared lives. There are no pre-defined entities within them that objective methods can seek to delineate but, rather, our ways of making sense to each other are constructed to yield quite different ways of being selves. This is similar to saying that there is no inherent model inside a piece of clay that a potter works to reveal, as this time a cup, this time a plate, this time a vase: the actions of the potter work with the physical properties of the clay to create the resulting forms. In this sense, social constructionists are interested in delineating the processes that operate in the socio-cultural conduct of action to produce the discourses within which people construe themselves.

This fifth point is the adoption of a critical perspective to the topics at hand, that is, a concern with revealing the operations of the social world, and the political apportioning

◆ *Critical perspective of social world*

of power that is often accomplished unaware, so as to change these operations and replace them with something that is more just (this being opposed to traditional theorizing which seeks only to explain and understand these processes). This sense of 'critical' gets its modern impetus from Marx in the eleventh of his 'Theses on Feuerbach': 'Philosophers have only interpreted the world in certain ways; the point is to change it.'

◆ *Construction of artifacts and social interaction corresponding to it*

Social constructionism is in the sense that people are working together to construct artifacts. Social constructionism focuses on the artifacts that are created through the social interactions of a group and it focuses on an individual's learning that takes place because of their interactions in a group. According to constructionism, particularly radical constructionism, a child functions in relation to its environment, constructing, modifying and interpreting the information he/she encounters in his/her relationship with the world. The individual's capacity to construct his/her own understanding of the world is connected with thinking and with the fact that the individual is able to construct. The constructionism is a semiotic paradigm which begins from the interpretative axiom according to the map through the reality is read, is nothing but a continuous negotiation. Any type of speech is interpreted as a social construction reality from a cultural consensus.

3.1.2.1 Features of Social Constructionism

According to McLeod, there are several features of social constructionism:

1. Social constructionists reject the traditional positivistic approaches to knowledge that are basically no reflexive in nature.
2. Social constructionists take a critical stance in relation to taken-for-granted assumptions about the social world, which are seen as reinforcing the interests of dominant social groups.
3. Social constructionists uphold the belief that the way we understand the world is a product of a historical process of interaction and negotiation between groups of people.
4. Social constructionists maintain that the goal of research and scholarship is not to produce knowledge

that is fixed and universally valid, but to open up an appreciation of what is possible.

5. Society is viewed as existing both as a subjective and objective reality. Social constructionism focuses on meaning and power. Meaning is not a property of the objects and events themselves, but a construction. Meaning is the product of the prevailing cultural frame of social, linguistic, discursive and symbolic practices. Persons and groups interacting together in a social system form, over time, concepts or mental representations of each other's actions. These concepts eventually become habituated into reciprocal roles played by the actors in relation to each other. The roles are made available to other member of society to enter into and play out, the reciprocal interactions are said to be institutionalized. In this process of this institutionalization meaning is embedded in society. Knowledge and people's conception (and belief) of what reality is become embedded in the institutional fabric of society.

◆ *Social construction of knowledge and social world with historical underpinning's*
◆ *Focus on meaning and power*

Social constructionism can be described as part of the movement in postmodernism which attempts to "replace the objectivist ideal with a broad tradition of ongoing criticism in which all productions of the human mind are concerned" and is inextricably linked to postmodernism as a set of lenses that enforces an awareness of the way in which we perceive and experience the world. In essence, social constructionism is the claim and viewpoint that the content of our consciousness, and the mode of relating we have to other, is taught by our culture and society; all the metaphysical quantities we take for granted are learned from others around us. From a social constructionist perspective, language is more than just a way of connecting people. People 'exist' in language. Consequently, the focus is not on the individual person but rather on the social interaction, in which language is generated, sustained, and abandoned. Furthermore, Berger and Luckman state that people socially construct reality by their use of agreed and shared meaning communicated through language. Thus, our beliefs about the world are social inventions.

◆ *Social construction in social invention*

Anderson and Goolishian concur that from the social constructionist perspective there are no 'real' external entities that can be accurately mapped or apprehended. We are thereby forced to resign our cherished position

◆ *Artifacts of socially mediated discourses*

as 'knowers' and our assumptions that there are 'facts' that we can come to know. These 'facts', along with other ideas and assumptions, are social constructions, artifact of socially mediated discourse. However, this does not mean that anything goes. Knowledge and systems are inherently dependent upon communities of shared intelligibility and vice versa. They are, therefore, governed to a large degree by normative rules that are historically and culturally situated. As a result, social constructionists do not claim to provide the 'truth'.

◆ *Individual in a holistic social view*

Social constructionism regards individuals as integral with cultural, political and historical evolution, in specific times and places, and so resituates psychological processes cross culturally, in social and temporal contexts. Apart from the inherited and developmental aspects of humanity, social constructionism hypothesizes that all other aspects of humanity are created, maintained and destroyed in our interactions with others through time. The social practices of all life begin, are recreated in the present and eventually end. For psychotherapy, this view emphasizes the importance of the acquisition, creation and change of emotional behavior, therapeutic ability and ways of interpreting things and people. Because the genetic material of each race and region is different, as well as the cultural practice, then we say right from the start that there is no universal human nature. What social constructionism shows to be important are the ways in which socialization and enculturation, amongst the people we have known, plus the current influence of those whom we now know, are the most active in shaping our mutual existence with others.

◆ *Absence of objectivity*

Social constructionism argues that true objectivity is absent in the human sciences because all methods require one set of subjective humans to rate another set of subjective humans. So, "the tool for knowing" is inevitably subjective people themselves. As regards the community of human scientists, until a truth-claim is acceptably demonstrated to be a universal or local truth, then it must be held separate and used only with caution. However, many human scientists throw caution to the wind and put their belief and life force into provisional claims which are not shared by the whole community of workers.

3.1.2.2 History and Development

Social constructionism has many roots some are in

◆ *Historical construct of social construction*

existential phenomenological psychology, social history, hermeneutics and social psychology. Several of its major themes have occurred in the writings of authors at different times and places. Giambattista Vico, Immanuel Kant and Karl Marx have all made constructionist and constructivist remarks. The disciplines of the history of ideas and the sociology of knowledge also have much in common with social constructionism. In Britain, two leading social constructionists are Rom Harre at the University of Oxford and Michael Billig and his team at Loughborough University. Michael Billig's *Arguing and Thinking* concludes that attitudes are features of rhetoric. Rom Harre has written on the social construction of personality and emotional behavior which has touched on some of the more important implications for the theory and practice of therapy. Harre has also produced a series of works on the body, individuality, social life and motivation. Harre takes the work of Bakhtin on the Russian cultural-historical school of Vygotsky, Leontiev, Luria, Voloshinov, Bakhtin and Ilyenkov, as being particularly social constructionist. For instance, Bakhtin describes a view of mind that regards the capacity to think as the ability to live in a meaningful world. These views challenge the orthodoxy of current individualistic psychology and the assumptions which it holds dear. Social constructionism wonders to what degree people are individual and collective, the same as others or different from them. Just because we can each say "I" and have separate bodies does not mean that thoughts and emotions are located solely within individuals. Rather, these exist between individuals. Humans are part of shared collective aims, values and experiences.

◆ *Social construction through linguistic analysis*

A recent influence within social constructionism is to investigate the ways in which events, processes and qualities are presented and modelled in language, the discursive, which could be called linguistic analysis, as it concentrates on how descriptions of what is real are made, passed on and undergo change through time. The role language plays in memory has also been tackled. But the study of appropriate language games does not reflect the interrelation of the non-verbal relationships of humanity in connection with the possible ways of verbalizing them. The currently acceptable ways of talking about the mind show the linguistic representation of ontological assumptions about the nature of the mind. For instance, the mind in itself does not exist and never has or ever will. The mind, like any other

concept, is created by talk from professionals and lay people as to what the mind is. The mind, as it is usually assumed to be is the receptacle for “individuality” and “thoughts”. “Individuality” is a Western assumption that people are separate and unique and fully self-responsible in all aspects of their life, from catching a cold, to having children who become delinquents, or their career going into decline.

Social constructionism as it is now infiltrating British and North American psychology and social psychology cannot be traced to a single source. It has emerged from the combined influences of a number of North American, British and continental writers dating back more than thirty years. Many of the fundamental assumptions of social constructionism have been alive and well living in sociology for some time. Sixty years ago, Mead, writing in USA, founded ‘symbolic interactionism’ in his book *Mind, self and society*. Fundamental to symbolic interactionism is the view that as people we construct our own and each other’s identities through our everyday encounters with each other in social interaction. In line with this way of thinking, the sub discipline of ethnomethodology, grew up in North America in the 1950s and 1960s, it tried to understand the processes by which ordinary people construct social life and make sense of it to themselves and each other. But the major social constructionist contribution from sociology is usually taken to be Berger and Luckmann’s book *The Social Construction of Reality*. Berger and Luckmann’s anti-essentialist account of social life argues that human beings together create and sustain all social phenomena through social practices. They see three fundamental processes as responsible for this: externalization, objectivation and internalization. People externalise when they act on their world, creating some artifact or practice. For example, they may have an idea (such as the idea that the sun revolves around the earth) and externalise it by telling a story or writing a book. But this then enters into the social realm; other people re-tell the story or read the book, and once in this social realm the story or books begin to take on a life of its own. The idea it expresses has become an object of consciousness for people in that society (objectivation) and has developed a kind of factual existence of truth; it seems to be out there, an objective feature of the world which appears as natural, issuing from the nature of the world itself rather than dependent upon the constructive work and interactions of human beings. Finally, because future generations are born into a world where

◆ *Creation and sustaining of social phenomena through social practices*

◆ *Externalisation, Objectivation, Internalisation: Social construction of reality*



this idea already exists, they internalize it as part of their consciousness, as part of their understanding of the nature of the world. Berger and Luckmann's account shows how the world can be socially constructed by the social practices of people, but at the same time by experienced by them as if the nature of their world is pre-given and fixed.

3.1.2.3 A Postmodern Approach to Knowledge

◆ Outcome of post modernism

Social constructionism can be seen as a source of the postmodern movement, and has been influential in the field of cultural studies. Some have gone so far as to attribute the rise of cultural studies to social constructionism. Within the social constructionist strand of postmodernism, the concept of socially constructed reality stresses the ongoing mass-building of world views by individuals in dialectical interaction with society at a time. The numerous realities so formed comprise, according to this view, the imagined worlds of human social existence and activity, gradually crystallized by habit into institutions propped up by language conventions, given ongoing legitimacy by mythology, religion and philosophy, maintained by therapies and socialization, and subjectively internalized by upbringing and education to become part of the identity of social citizens. In the book *The Reality of Social Construction* the British sociologist Dave Elder-Vass places the development of social constructionism as one outcome of the legacy of postmodernism. He writes "Perhaps the most widespread and influential product of this process is social constructionism, which has been booming since the 1980s".

Social constructionism is a theoretical movement that brings an alternative philosophical assumption regarding reality construction and knowledge production. It is concerned with the ways in which knowledge is historically situated and embedded in cultural values and practices. According to this approach, meanings are socially constructed via the coordination of people in their various encounters; therefore, it is always fluid and dynamic. In the last few decades, social constructionism has been presented and embraced in different areas of knowledge in the international literature. As a field of interest about the constructed nature of reality, it has been influenced by different psychological, philosophical, and social perspectives, such as the analytical philosophy, the sociology of the knowledge, and the rhetoric. Centering on the process of the social construction of reality, social constructionist

◆ *Diverse inclusion of knowledge*

perspectives have been used to support a variety of practices in the fields of education, health care, community work, conflict resolution, and organizations. Although it cannot be translated into a clear-cut set of guidelines, given the nature of its epistemological proposal, it has enriched a variety of research and professional practices from different fields of knowledge with a generative vocabulary, allowing innovative practices to emerge. Some of these practices include a focus on strengths and what is already working well instead of on problems and how to fix them, an emphasis on a diversity of perspectives instead of on commonalities of ideas, transdisciplinary teams, decentralized decision making, and increased flexibility in terms of approaches and policies, all of which are informed, in turn, by an appreciation for a multicultural and polyphonic environment. Having a postmodern intelligibility, social constructionism invites a review of some modern assumptions about knowledge production, such as:

- (a) individual rationality
- (b) empirical evaluation
- (c) language as representation
- (d) the narrative of progress

◆ *Rationality as a consequence of cultural convention*
◆ *Social constructionism allows for alternative intelligibilities*

In a constructionist perspective, individual rationality is not conceived of as an attribute of individual thinking but as a consequence of cultural convention. It is through the coordinated actions with each other that the meaning of rationality is eventually reached. This constructionist statement invites other forms of evaluating knowledge production, which goes beyond a focus on individual rationality, and moves to relationality and creativity with the ability to generate involvement and to promote change. In the same way, the empirical method is not understood as conveying the correct knowledge about reality, but as being a phenomenon defined and studied by a specific theory and its methods. The results of the systematic observation of reality are a priori circumscribed by the theory used. The constructionist invitation is to comprehend how aspects of the world that are taken for granted are socially constructed, thereby opening up space for a variety of alternative intelligibilities. Methodologically, the challenge is not to prove and persuade the other about the correct interpretation of the phenomenon, but to broaden the possibilities of

understanding. This fluid and dynamic approach has helped to foster communication, dialogue, and integration of perspectives.

◆ *Language in social construction of knowledge*

Language, a fundamental aspect for the process of knowledge production, is not conceived of as describing and representing the world, but as a way of constructing it, being a form of social action. Language gains its meaning from its use in context. The constructionist approach emphasizes the ability to create realities through language, in its varied forms of presentation, stimulating a process of continuous creation.

◆ *Narrative in science*

Considering the critique of individual rationality, empirical evaluation, and the representational view of language, there is a questioning of the narrative of progress in science. Historical analysis of the recent developments of scientific knowledge shows that it does not have a linear and cumulative nature that neither has making achieved the control of nature yet, as it was intended by the modern researchers, or science has led society to a life free of suffering. This analysis helps to prevent the naive acceptance of scientific authoritative claims and methods, and it also invites us to take scientific knowledge as an intelligibility that may guide our actions depending on its contextual value.

◆ *Constructional dimension of knowledge*

The constructionist review of modern assumptions has important consequences for knowledge production in the organizational field. First, it favors processes of deconstruction by stimulating a reflexive stance in the production of the knowledge that allows a critique of traditional practices in the society and its cultural implications. Second, it promotes theoretical and practical reconstructions through generative theories that can contribute to social transformation and promote the approach between institutions as well as academia. Also, it invites openness to alternative ways of producing and presenting knowledge, which goes beyond traditional scientific texts, moving toward lively expressions of language that capture the imagination of people. There is room for narratives, social poetics, images, and videos in knowledge production and expression. Knowledge, in this approach, is meant to offer new intelligibilities and creatively construct new realities. Finally, it emphasizes the contextual value of knowledge production and its practices, strengthening the relationship between research

and intervention, claiming the need of involvement and collaboration of those who will use the knowledge in its production.

◆ *Social constructionism for making meaning of change*

The constructionist theory is very sensitive to changes generating new forms of practices and behaviors. In times of rapid transformation in the world, social constructionism can be a useful approach to address and embrace changes in context, pointing to new possibilities of doing research and intervention. Besides this, the option for the constructionist alternative has ethical implications. It is a way of thinking and doing that moves away from expertise-based, rational, hierarchical, and result-focused models going toward more participatory, co-creative and process centered ones.

Summarised Overview

This unit provides an overview of the major philosophical perspectives that underlie qualitative research methodology, including post-positivism, social constructionism, symbolic interactionism, phenomenology, hermeneutics, critical theory, feminist theory, and queer theory. It outlines the historical development, foundational assumptions, and key implications of each approach, highlighting their differing epistemological orientations. While post-positivism aligns more closely with scientific realism in its focus on objective measurement and theory verification, perspectives like social constructionism emphasize the subjective, intersubjective nature of meaning-making and knowledge production through language and shared cultural understandings. The material explains how these philosophical assumptions shape the goals and practices of qualitative researchers, whether aimed at hypothesis testing, understanding lived experiences, empowering marginalized voices, or critically examining taken-for-granted beliefs and power structures. Gaining insight into the philosophical foundations provides important context for understanding the emergence of various qualitative research methodologies.

Assignments

1. Compare and contrast the assumptions of post-positivism versus social constructionism.
2. Explain the concept of reflexivity. Why is it considered important in post-positivist qualitative research?
3. What are some key features of critical theory as a philosophical approach to qualitative inquiry? How does it differ from post-positivism?
4. Choose two philosophical approaches covered in the material. For each, summarize their main assumptions and describe how those assumptions would likely influence methodological practices.

Suggested Reading

1. Willig, C., & Stainton-Rogers, W. (Eds.). (2017). *The SAGE Handbook of Qualitative Research in Psychology (2nd ed.)*. UK: SAGE Publications.
2. Mertens, D. M. (2021). *An Introduction to Research as Praxis: Philosophical Foundations for Mixed Methods Research*. UK: SAGE Publications.

Reference

1. Levers, M. D. (2013). *Philosophical Paradigms, Grounded Theory, and Perspectives on Emergence*. *SAGE Open*, 3(4), 2158244013517243. <https://doi.org/10.1177/2158244013517243>
2. Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th Ed.)*. UK: SAGE Publications.
3. Galbin Damaschin, Alexandra. (2014). *An Introduction to Social Constructionism*. *Social Research Reports*. 26. 82-92. https://www.researchgate.net/publication/283547838_AN_INTRODUCTION_TO_SOCIAL_CONSTRUCTIONISM



Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

SGOU





Nature and Scope of Qualitative Research

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ summarize the nature and scope of qualitative research, including its aims, strengths, and how it is applied in sociology
- ◆ explain the major preoccupations and areas of focus in qualitative research such as understanding subjective meanings, social processes, contextual description, and others
- ◆ describe key concepts like site and fieldwork in qualitative research, and discuss the role of the researcher and changing paradigms

Background

Qualitative research methods aim to understand social phenomena in depth through detailed examination of cases and experiences. These methods emerged from fields like anthropology, sociology, and education as alternatives to quantitative approaches focused on statistics and numbers. Some key developments in qualitative research include Ethnography, Chicago School and Grounded Theory: Ethnography - Originating from anthropology, ethnography involves immersive field research to study cultures and communities from an insider's perspective. Early ethnographers like Bronislaw Malinowski and Franz Boas lived within communities for extended periods. This allowed holistic understanding of cultural dimensions like beliefs, rituals, social structures, etc. Chicago School - In the 1920s-1930s, sociologists at the University of Chicago pioneered qualitative urban studies using methods like participant observation. They studied topics like crime, immigration, and urbanization. Grounded Theory - Developed by Glaser and Strauss in the 1960s, grounded theory builds conceptual frameworks inductively from qualitative data rather than testing hypotheses. It uses systematic coding and comparison of data to generate theories. Postmodern Turn - Since the 1980s, qualitative research has embraced postmodern perspectives emphasizing subjective meanings, the co-construction



of knowledge, reflexivity, and giving voice to marginalized groups. Qualitative research emerged from diverse social science traditions and now provides flexible tools to study social meanings, interactions, and contexts in depth. The attached study material reflects important principles and developments in qualitative inquiry.

Keywords

Subjective, Reflexivity, Site, field, Narrative, Social reality

Discussion

◆ *Narratives and interpretations*

Qualitative research aims to understand social phenomena in depth, often through detailed examination of individual cases or small groups. Rather than focusing on measurements and numerical analysis, qualitative research seeks to understand social processes, meanings, and subjective experiences. It typically involves detailed, thick description and interpretation of social life in its natural setting. Researchers may immerse themselves in a social setting to gain first-hand perspectives. The depth of qualitative research allows for nuanced understanding of complex social realities.

◆ *In-depth understanding*

In sociology, qualitative methods are used to understand a wide range of social experiences, interactions, cultures, and institutions. Sociologists might conduct in-depth interviews or focus groups to understand people's perspectives and meanings. Observation enables examining social processes as they unfold. Document analysis provides insight into cultural artifacts and records. Ethnography involves immersive field research to understand a social setting. These and other qualitative approaches allow sociologists to study topics like families, schools, neighbourhoods, organizations, social movements, deviance, inequality, and more in real-world contexts.

The scope of qualitative sociological research is broad, as it can examine almost any social phenomenon or topic of

◆ *Social investigation*

interest. For example, researchers might explore the culture of a group, interactions in a setting, individual life histories, the role of rituals, participation in a movement, operation of an institution, community change over time, impacts of policies, and countless other sociological topics amenable to qualitative inquiry. The flexibility of qualitative research allows new, unexpected insights to emerge.

◆ *Descriptive narratives for understanding social research*

Qualitative research provides rich, descriptive data about the social world. Detailed narratives, field notes, interviews, and other qualitative data convey the perspectives and meanings of research participants in their own words. This allows sociologists to study complex social processes as they unfold, capture diverse subjective voices, examine how events emerge over time, and understand the influence of social contexts. The descriptive emphasis reveals the nuances of social life.

◆ *Qualitative research*

In summary, qualitative research in sociology yields in-depth understanding of the social world through flexible use of interviews, observation, field research and other methods to examine social meanings, processes, and contexts. It complements quantitative approaches in sociological research.

3.2.1 Major Preoccupations in Qualitative Research

The following are the major preoccupations in qualitative research:

1. Understanding subjective meanings, perspectives, and experiences of individuals and groups
2. Examining social processes and dynamics as they unfold in naturalistic settings
3. Capturing and interpreting linguistic, visual, and cultural texts
4. Describing social contexts and giving voice to underrepresented populations
5. Understanding how events emerge and change over time
6. Gaining insider (emic) perspectives on groups and cultures

7. Developing new theories and conceptual frameworks inductively from the data
8. Interpreting social worlds and processes holistically
9. Reflexively examining researcher perspectives and the research process

3.2.1.1 Understanding Subjective Meanings, Perspectives, and Experiences of Individuals and Groups

◆ *Subjective narratives and impressions*

A core aim of qualitative research is to understand how people in different social settings make sense of their lives and interpret their experiences. Researchers use interviews, observations, and immersion to gain insight into the meanings people attach to their relationships, actions, and social worlds. The emphasis is on capturing subjective understandings, not seeking objective facts.

3.2.1.2 Examining Social Processes and Dynamics as they Unfold in Naturalistic Settings

◆ *Naturalistic inquiry*

Rather than isolating variables in a controlled environment, qualitative researchers are interested in studying real-world social processes as they emerge and interact in their natural contexts. This naturalistic inquiry allows examination of complex social dynamics as people engage in meanings and practices in real sites and situations.

3.2.1.3 Capturing and Interpreting Linguistic, Visual, and Cultural Texts

◆ *Interpretation of content*

From interview transcripts to historical records to media images, qualitative researchers analyse different types of texts to gain insight into social worlds. Researchers interpret the significance of language use, examine cultural products, and deconstruct visual representations through qualitative analysis.

3.2.1.4 Describing Social Contexts and Giving Voice to Underrepresented Populations

◆ *Representation of marginalised and dense qualitative accounts*

Detailed description of social settings, groups, and individuals is a hallmark of qualitative research. Rich accounts convey a sense of place and social relationships. Qualitative approaches can also elevate voices of marginalized groups and shed light on overlooked experiences.



3.2.1.5 Understanding How Events Emerge and Change Over Time

◆ *Longitudinal change*

Longitudinal qualitative research looks retrospectively at personal biographies or traces community/societal development forward through periods of change. The emphasis is on understanding temporal sequences, turning points, and evolving social processes.

3.2.1.6 Gaining Insider (Emic) Perspectives on Groups and Cultures

◆ *Alternative to researchers accounts*

Ethnography and other immersive practices allow researchers to experience settings from an insider perspective. Prolonged fieldwork enables developing cultural understanding from within a group's frames of meaning and observing practices first-hand.

3.2.1.7 Developing New Theories and Conceptual Frameworks Inductively from The Data

◆ *Inductive process of research*

Unlike hypothesis testing, qualitative research builds conceptual interpretations from the ground up based on detailed case analysis and close engagement with evidence. Theories emerge inductively to explain key patterns, relationships, and dimensions of a phenomenon.

3.2.1.8 Interpreting Social Worlds and Processes Holistically

◆ *Holistic interpretation*

Rather than isolating variables, qualitative research provides holistic accounts that convey complexity and context. The emphasis is on painting a bigger picture that considers multifaceted interactions and broad influences shaping social life.

3.2.1.9 Reflexively Examining Researcher Perspectives and The Research Process

◆ *Introspection in research*

Qualitative researchers reflect on how their own backgrounds, assumptions, and positioning impact inquiry. Some keep reflexive journals to examine personal biases and research relationships.

3.2.1.10 Pursuing Social Justice Aims and Interpreting Phenomena Critically

◆ *Interest in social action*

Many qualitative studies critique power, challenge mainstream views, and advocate for equity. Researchers often apply critical theories/lenses to question dominant

ideologies and shed light on issues of oppression, race, gender, class, etc.

◆ *Ethical and objective*

Qualitative research does not introduce treatments or manipulate variables, or impose the researcher's operational definitions of variables on the participants. Rather, it lets the meaning emerge from the participants. It is more flexible in that it can adjust to the setting. Concepts, data collection tools, and methods can be adjusted as the research progresses. Qualitative research aims to get a better understanding through first-hand experience, truthful reporting, and quotations of actual conversations. It aims to understand how the participants derive meaning from their surroundings, and how their meaning influences their behaviour.

3.2.2 SITE

◆ *Outline of research*

The research proposal outlines the setting or population of interest and plans for the selection of people, places, and events. There are two waves of decision: The first identifies the setting or population of interest and the second details how you will sample within the setting or population, for example, those individuals you intend to interview or those events you intend to observe. Here, you provide the reader with a sense of the scope of your study and whether the intensity and amount of data you can generate will help you fully respond to the research questions. And remember, since qualitative research relies on detail and thick descriptions, you are aiming for depth over breadth in your choices. You cannot gather data intensively and in depth about all possible participants, events, or places. You make choices. The first and most decision of choosing the setting, population, or phenomenon of interest is fundamental to the entire study. This early significant decision shapes all your subsequent ones and should be described and justified clearly. Some research is site specific.

A decision to study the phenomenon of community involvement in the arts is even less constrained by either place or population. If the study is of a specific program, organization, place, or region, your reader needs some detail regarding the setting. Also, you should provide a rationale that outlines why this specific setting is more appropriate than others. The ideal site is one where entry is possible. There is a rich mix of the processes, people, programs, interactions, structures of interest, or all of these. There is likely the possibility to build strong relations with the participants,

◆ *Justification for site selection*

ethical and political considerations are not overwhelming, at least initially. Although this ideal is seldom attained, your proposal should describe what makes the selection of this particular site especially sound. A site may be well suited for its representativeness, interest, and the range of examples of the phenomenon under study, but if one cannot advance to get beyond the front desk, the study will be thin. Similarly, if one feels very uncomfortable or endangered in a site, or believe the participants may be particularly uncomfortable or come to harm, reconsider doing the study. The second decision wave identifies the specific participants. When the focus of the study is on a particular population one should present a strategy for selecting individuals from that population as well. Also need to provide assurances that your selection process is likely to be successful and indicate why these particular individuals are of interest.

◆ *Representative sample*

The site-based approach we describe is designed to generate a representative or stratified sample for qualitative research in large community-based studies. It is efficient for use in complex societies and avoids the problems of bias inherent in other sampling plans. We first describe the general procedure for recruiting a site-based sample.

3.2.2.1 A General Site-Based Procedure for Locating and Recruiting Qualitative Study Participants

This procedure for identifying and recruiting qualitative study participants focuses on “sites” and consists of five general steps:

◆ *Population for sampling*

The first is to specify the characteristics relevant to sampling. These will reflect the goals of the research and the population to which the researcher intends to generalize. Specifying these characteristics helps to set the boundaries of the sample, restricting it, for example, by demographic characteristics (e.g., gender or age), sociocultural factors (e.g., ethnicity, education, or area of residence) or employment characteristics (e.g., working, retired, or unemployed).

The second step is to generate a list of sites. “Sites” are places, organizations, or services used by members of the population of interest. They may include churches, community centers, social clubs, clinics, and service groups, as well as residential areas such as housing projects or apartment buildings. A list of sites for a population should

◆ *Representative site*

be compiled so that, theoretically, every member of the population is a member of at least one site. The investigator need not include every site in a community, but must include a representative set of sites. The investigator begins identifying appropriate sites during reconnaissance of the study community. As the investigator becomes more familiar with the community's/he can enlarge this initial list of sites. Sites will have overlapping clientele. For example, the members of a church will also use a clinic. The sites for a study are selected to maximize coverage in terms of characteristics important to the study. Sites are added until the sites contacted cover these characteristics and have a sufficient number of clients from which study participants can be recruited.

◆ *Role of gatekeeper*

The third step in the sampling procedure is to estimate the composition of the clientele at each site. This is usually best accomplished by the investigator contacting the "gatekeeper" for each site: the pastor of a church, the director of a service agency, the owner of a market. The investigator meets with the gatekeeper, explains the study, and asks for help in recruiting study participants from the site's clientele. The gatekeeper is then asked to provide approximate statistics on the characteristics of the site's members. In particular, the gatekeeper should be asked about the number of site members and the proportion with those characteristics that were specified in the first step of the procedure as relevant sampling characteristics. A gatekeeper may be able to provide very precise statistics e.g., from membership rolls or annual reports, but even educated guesses are acceptable. The investigator can also ask the gatekeeper for suggestions of other sites that should be contacted, helping to enlarge the list of potential sites.

◆ *Assistance from gate keeper*

Many site gatekeepers are also community leaders and experts. In addition to providing the investigator access to members of their sites, these community experts and leaders can help project staff gain entrée to the community, sanction the study, and build community support for the study. The site gatekeeper can contact individual members whom the researcher and gatekeeper think would be appropriate for the study (i.e., meet the inclusion criteria and have the ability to complete an in-depth interview) and ask each individual for consent to give the investigator the individual's name; then the investigator can contact the individual. This procedure

is well suited to clinics, social service agencies, and markets, but steps must be taken to minimize possible bias of the gatekeeper in selecting participants.

◆ *Selection of participants*

The fourth step of the procedure, participant recruitment, begins once site-specific statistics have been gathered: the investigator decides on a list of sites from which to begin recruiting study participants and approximately how many participants will be recruited from each site. Concerns about final sample size, the distribution of the target population across sites, and the heterogeneity of clientele within sites will all play a role in these decisions.

◆ *Fulfillment of criteria and selection of participants*

The fifth and final step of the procedure is accomplished as individuals from sites are recruited. The investigator should maintain a table indicating the characteristics of the participants in the sample. Comparing this to the desired distribution of characteristics and the time taken to recruit can help the investigator decide when to begin recruiting at other sites and which sites to select for recruitment. This step is an important and dynamic one, allowing the investigator to monitor the progress of accruing the sample and to act strategically to adjust the sampling plan as needed to achieve the desired final sample in a timely fashion. At the end of this site-based sampling process the investigator can expect to have achieved several important results. First, a group of participants with the characteristics needed for the qualitative study will have been identified and recruited. Second, the investigator will have learned a great deal about the community through discussions with each site's gatekeeper. Finally, the investigator will have gained entrée into the study community through contact with the sites.

◆ *Bias by gatekeeper*

In cases where the site gatekeeper provided contacts with individuals, we monitored the type of participants being referred, relative to the composition of the site clientele, to note apparent selection bias by the gatekeeper. If we suspected selection bias, an investigator recontacted the gatekeeper to discuss the issue. One such bias was toward choosing "model" site members who would convey a good impression to an outsider. Another bias was choosing members who were handy e.g., relatives, daily rather than occasional participants in a site. Such individuals alone might not have been representative of the site, so it is important to recontact the site gatekeeper before recruitment proceeded.

3.2.3 Field Research in Qualitative Research

Field research, also known as fieldwork, is a qualitative research method used extensively in sociology. Sociologists conduct field research by going out into the real world to observe and interact with people in their natural environments. The goal is to gain an in-depth, first hand understanding of people's lives, experiences, and social worlds. Unlike quantitative research which relies on surveys, field research employs more flexible, naturalistic, and open-ended techniques. The researcher might observe interactions and events as they unfold, engage in informal and formal interviews, collect documents or artifacts, or participate in activities as an observer. By being immersed in the research setting, the researcher can develop a nuanced perspective from the inside.

◆ *First hand interaction with subject in their own social setting*

Field sites might include neighbourhoods, political or religious gatherings, schools, support groups, businesses, etc. Researchers need to gain access by getting permission from gatekeepers and building rapport with participants. To protect human subjects, ethical guidelines regarding informed consent, anonymity, and avoiding harm must be followed. Participant observation is a key technique which involves taking field notes about interactions, scenes, and one's own perceptions. This requires being attentive to details, dynamics, subtle meanings, and themes. Interviews allow participants to describe experiences, perspectives, and histories in their own words. The qualitative nature of field research means the data takes the form of nonnumerical information like field notes, transcripts, and artifacts.

◆ *Access to field*
◆ *Field notes to generate qualitative data*

Analysing the large amount of descriptive data involves coding and categorizing to identify key patterns, concepts, and theories grounded in real world observations. The subjective nature of data interpretation in field research requires reflexivity on the researcher's part to be aware of biases. Field research is optimal for exploratory research, discovering how people behave and think in everyday life, uncovering marginalized perspectives, and understanding social processes over time. Key advantages are the ecological validity and richness of the data. Challenges include gaining access, time intensity in data collection, and difficulties establishing reliability. Prominent sociological studies using field research include William Foote Whyte's Street

◆ *Processing of qualitative data*



Corner Society about urban gangs, Elliot Liebow's Tally's Corner about black men seeking employment, and Mitchell Duneier's Sidewalk on homeless vendors. Field research has made major contributions to sociological understanding.

3.2.3.1 Advantages of Field Research

1. Ecological validity: By observing and interviewing people in their natural settings, field research has high ecological validity. This means findings accurately reflect real-life contexts, situations, and behaviours. Quantitative research conducted in contrived lab settings lacks this quality.
2. Rich, detailed data: Immersive field research produces a wealth of descriptive data about people's lives, actions, beliefs, and social worlds. Deep case studies and thick description provide insights that surveys cannot. Subtle dynamics missed by brief experiments emerge during extended field research.
3. Discovers marginalized views: Field research accesses hard-to-reach or stigmatized populations and settings. Giving voice to overlooked groups exposes their perspectives. For example, sociologists have conducted fieldwork with gangs, homeless youth, and sex workers.
4. Theory building: The depth of field data aids constructing theoretical explanations grounded in empirical observation. Fieldwork helps develop, refine, or challenge existing theories based on how social processes unfold in natural contexts.
5. Uncovers hidden aspects: Field research reveals undisclosed practices, interactions, and meanings not accessible through surveys or lab research. Sustained first-hand experience exposes tacit, informal, illegal, or unconscious dimensions of real life.
6. Temporal understanding: Extended observation over time provides understanding of how social phenomena develop and change. Unlike one-time experiments, long-term field research like ethnography studies people, communities, and events dynamically.

◆ *Inclusive,
representative and
detailed*

3.2.3.2 Disadvantages of Field Research

1. Access challenges: Gaining access to settings

and populations can be difficult in field research. Gatekeepers may block access or participants may be unwilling, suspicious, or unable to participate. Researchers may need to negotiate access over a long period.

◆ *Challenging, time consuming and lack of objectivity*

2. Time-intensive: Data collection through extended observation, interviews, and immersion requires enormous investments of time in the field setting. This includes time building rapport and traveling. Field research can take months or years.
3. Lack of generalizability: Since field studies use small, purposive non-random samples, findings cannot be generalized statistically to a broader population. However, analytical generalization is possible if the research relates to a theory.
4. Researcher bias: The qualitative nature of fieldwork means the researcher is the data collection instrument. Their subjectivity shapes interpretation of observations and interviews. Reflexivity and transparency about positionality can counter bias.
5. Hawthorne effect: Participants may change their behaviours if they know they are being studied. The researcher's presence inevitably affects the setting. Making observations unobtrusively or over an extended period can reduce reactivity.
6. Reliability issues: It is difficult to demonstrate reliability in field research since the descriptive data cannot be replicated precisely. Using multiple observers, detailed protocols, audit trails, and data recording can boost reliability.
7. Ethical concerns: Overt or covert field research introduces ethical issues around informed consent, anonymity, deception, privacy, and potential harm. Following ethical guidelines is essential.

3.2.4 Researcher in Qualitative Research

The role of the researcher in qualitative research differs from quantitative research in several ways:

1. Researcher as instrument - In qualitative research, the researcher is the primary data collection instrument.



◆ *Primary lead in research*

The researcher's observations, impressions, and interactions shape the data and analysis. This contrasts with quantitative research which uses standardized instruments like surveys and assessments.

◆ *Researchers influence*

2. Subjectivity acknowledged - Qualitative researchers accept that the researcher's background, experiences, beliefs, and perspectives impact the research process. Researchers practice reflexivity by examining their own subjectivities rather than striving for detached objectivity.

◆ *Immersive and interactive*

3. Immersion in setting - Qualitative researchers immerse themselves in research settings through participant observation, fieldwork, and relationship building. Direct contact and insider access inform the researcher's understanding.

◆ *Dynamic nature*

4. Flexibility - Qualitative researchers are open to adapting inquiry based on emerging insights. Design evolves fluidly in response to the lived realities encountered rather than rigidly sticking to predetermined protocol.

◆ *Inductive process*

5. Description and interpretation - Qualitative researchers describe social phenomena and then interpret meanings, themes, and theories from the data. Complexity is captured through thick description and conceptual development is inductive.

◆ *Inclusive*

6. Holistic perspective - The qualitative researcher examines contexts, interactions, processes and interrelations as complete units rather than isolating variables. The emphasis is on understanding the whole rather than its parts.

◆ *Participatory and engaged researcher*

7. Personal involvement - Qualitative inquiry involves personal engagement and often forms meaningful connections between researcher and participants. Sensitivity, transparency and rapport facilitate openness.

In summary, qualitative researchers have an interpretive, holistic, flexible, and participatory role compared to the detached manipulation and control of variables in quantitative research. The researcher is the tool through which subjective qualitative data is revealed and analyzed.

3.2.5 Qualitative Research in Sociology – Changing Paradigm

◆ *Alternative models*

Traditionally, qualitative sociological research was dominated by positivist and postpositivist approaches rooted in the natural sciences. Researchers aimed for objectivity, generalizability, falsifiability, and causal determinism. However, contemporary sociology has seen a shift toward alternate paradigms:

3.2.5.1 Interpretivist/Constructivist Paradigm

◆ *Constructed multiple realities*

This paradigm emerged out of phenomenology and hermeneutics and holds that reality is socially constructed. The goal is to understand lived experiences, meanings, and social worlds from the viewpoint of participants. Researchers use qualitative methods like ethnography, open-ended interviewing, and textual analysis to elicit thick descriptions. There is no objective reality, only multiple realities constructed intersubjectively through language, interactions, and culture. Research is an interpretive process, not an attempt to identify external causes and fundamental laws. Critics argue this approach lacks critical perspective and that researchers impose their own interpretations.

3.2.5.2 Critical Paradigm

◆ *Critical inquiry*

Critical theory aims to critique social power relations and transform society. Research examines how injustice and subjugation shape realities. Methods like ideology critique, discourse analysis, and emancipatory inquiry expose hidden power dynamics and challenge taken-for-granted assumptions that perpetuate societal ills. Marginalized groups are empowered to share hidden perspectives. The researcher is an advocate seeking emancipation by revealing hegemony through ideological and institutional critiques. Critics contend that the political agenda risks biasing findings.

3.2.5.3 Feminist Paradigm

◆ *Alternative to mainstream research*

Feminist research challenges male-centric biases in sociology and emphasizes women's lives and gender inequalities. Researchers center women's voices through interactive interviews, consciousness-raising, and collaborative approaches based on building rapport and mutual understanding. Standpoint epistemology values lived experience as a source of knowledge. Analysis highlights

systems of patriarchy and gender-based marginalization. Critics argue that claims of a singular women's perspective overlook differences among women.

3.2.5.4 Postmodernist Paradigm

◆ *Reevaluating meaning*

Postmodern frameworks are skeptical of scientific authority, objective knowledge, and overarching meta narratives. Research focused on deconstruction to unsettle meaning, highlight hyperreality and simulation, reveal the nexus of power-knowledge, and explore subcultures. Methods include discourse analysis, semiotics, and textual criticism. Critics contend postmodernism promotes relativism and undermines scholarly rigor.

3.2.5.5 Participatory Paradigm

◆ *Involved and active participation*

Participatory action research tries to break down the divide between researcher and subjects by having community members help shape the research. Local perspectives guide the focus. The aim is collective learning and social transformation through praxis. Critics argue results may not be broader or theoretical.

Summarised Overview

This unit covers the aims, strengths, and applications of qualitative research in sociology, which involves using flexible methods like interviews, field research, and observation to gain in-depth understanding of social phenomena in real-world contexts. It describes major preoccupations like examining subjective meanings, social processes, marginalized perspectives, and theoretical development grounded in data. Key concepts like site, fieldwork, and changing research paradigms are discussed. Qualitative research provides rich descriptive data, captures complexity, gives voice to overlooked groups, and builds theories inductively. The role of the researcher as an instrument who is immersed in the setting is highlighted. Though qualitative research has challenges like access, bias, and lack of generalizability, it offers vital insights into the nuances of social life.

Assignments

1. Summarise the nature and scope of qualitative research in sociology.
2. Discuss three major strengths of qualitative research methods and provide examples to illustrate your points.
3. Explain the concept of “field research” in qualitative sociological research. What are two advantages and two potential challenges of using field research methods?
4. Choose one of the research paradigms discussed in the unit and explain its core assumptions and approach to qualitative research.
5. Analyze the role of the qualitative researcher. How does it differ from the role of a researcher in quantitative studies?
6. Discuss the issues of subjectivity, reflexivity, and researcher bias.

Suggested Reading

1. Glesne, C. (2016). *Becoming Qualitative Researchers: An Introduction*. Pearson.
2. Patton, M. Q. (2015). *Qualitative Research and Evaluation Methods*. SAGE Publications.
3. Saldaña, J. (2016). *The Coding Manual for Qualitative Researchers*. SAGE Publications.

Reference

1. Babbie, E. R. (2010). *The Practice of Social Research*. Wadsworth Cengage Learning.
2. Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications.
3. Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The SAGE Handbook of Qualitative Research*. SAGE Publications.
4. Schwandt, T. A. (2015). *The SAGE Dictionary of Qualitative Inquiry*. SAGE Publications.



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SGOU



Field Research in India

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ inculcate basic understanding of the history and development of field research in India
- ◆ impart the knowledge of multi dimensionality in qualitative research
- ◆ generate the in-depth understanding about the field studies in India

Background

This unit provides an overview of the history and development of field research in the Indian context. Field research is defined as a qualitative method of data collection that aims to observe, interact and understand people while they are in a natural environment. For example, nature conservationists observe behavior of animals in their natural surroundings and the way they react to certain scenarios. In the same way, social scientists conducting field research may conduct interviews or observe people from a distance to understand how they behave in a social environment and how they react to situations around them.

Field research encompasses a diverse range of social research methods including direct observation, limited participation, analysis of documents and other information, informal interviews, surveys etc. Although field research is generally characterized as qualitative research, it often involves multiple aspects of quantitative research in it.

Field research is a qualitative method of research concerned with understanding and interpreting the social interactions of groups of people, communities, and society by observing and interacting with people in their natural settings. The methods of field research include: direct observation, participant observation, and qualitative interviews. Each of these methods is described here.

Field research typically begins in a specific setting although the end objective of the study is to observe and analyse the specific behavior of a subject in that

setting. The cause and effect of a certain behavior, though, is tough to analyse due to presence of multiple variables in a natural environment. Most of the data collection is based not entirely on cause and effect but mostly on correlation. While field research looks for correlation, the small sample size makes it difficult to establish a causal relationship between two or more variables.

Keywords

Participatory, Indological, In-depth

Discussion

3.3.1 History of Field Research in India

The evolution from the prehistoric period to the present one, Indian society has been built on a composite culture characterized by heterogeneity of patterns. The present-day Indian culture is essentially the result of cultural contact, cultural diffusion, cultural conflict, accommodation, assimilation and integration that have given a new outlook to the Indian Society. Sociocultural change in India, under the influence of the modern West, gives yet another important dimension of sociocultural dynamics. Though India has always been a highly traditional society, the process of modernization emerged from the Western soil reached to the Indian society and its impact introduced new technologies and new form of culture. The sociologists have viewed these changes as more diversified and effective. Moreover, though the Portuguese, the French and the Dutch had colonies in India, it is the British influence that has a strong impact on Indian society.

◆ *Pre historic to colonial India*

The culture in India was highly traditional, whereas the one in the West was modernising in terms of rationalism, individualism and utilitarianism. The Western culture propounded egalitarianism and universalism. With the advent of British rule, a new structure of society developed in India. A lot of changes were executed in education, judiciary and military, and these changes set in a new criterion for the stratification of society. The Western impact predominantly

◆ *Western influence*

affected the education system after the introduction of English language and secular education. Before the British rule, the official and the administrative correspondence was done in Sanskrit, Persian, and Urdu. After the British introduced English language, it became a window to the outside world. It also facilitated the Indians with an exposure to a new value system based on egalitarianism, rationalism and secularism.

◆ *Transition and egalitarian*

Introduction of new and modern means of transport and communication increased spatial and social mobility. The new printing technology, postal services and radio spread new ideas across the country. Those new ideas awakened the people from traditional clusters and became a sign of radical, social change. The introduction of a new penal code changed the legal system and distribution of justice. The principle of equality before law was mandated along with a uniform legal system for the whole country. Industrialization and urbanization important factors of change recorded a sharp rise. The process of industrialization brought in new determinants of social status. For instance, material indicators were introduced to the Indian society. A new attitude called 'nationalism' emerged and unified the entire Indian society on one ground.

◆ *New social order*

It is important to note that the impact of Westernization resulted in the emergence of a new Westernised elite in place of the traditional elite of Indian society. The modern elite were inspired by a new ideology and value system in a way they looked at their own society. It proposed the new interpretation to the Hinduism and the caste system, which was progressive and humane, and this signalled a new social order. Thus, the impact of Westernization brought about immense changes for the technological and cultural modernization of India.

◆ *Understanding change*

Modern contemporary India has been a matter of debate, and sociologist Dipankar Gupta has been cynic about India's mistaken modernity. But the fact is that the Indian society would undergo changes after it had come under the influence of the West. Yet it is also true that these changes did not happen through the total replacement of traditional structures. The traditional structures in India have also exhibited a surprising resilience and have retained their core features by adopting new roles. Castes and religions can exemplify it well.

3.3.1.1 Approaches to the Study of Indian Society

◆ *Study of Indian society*

The effort to revive and energize traditional culture and establish Indian sociology in its own footing quite different from that of Western or colonial categories led to the popularity of Indological approach. But Indological approach itself did not give rise to any uniform and common explanation about Indian society and culture. The religious texts of different ages that Indologists very often studied not only emanated the idea of a 'Hindu India'; they also proposed contrasting and conflicting visions of time, space and object. The whole discourse of Indology is eventually interrupted by theories on post-colonialism and Orientalism. As a corollary, the need for supplementing those with field view was also felt by some of our pioneers. Gradually, Indian sociologists have started critically responding to the challenges of studying Indian society using diverse perspectives, approaches, and paradigms. This paper tries to reflect on the criticality of these issues in the context of demand for contextualising Indian sociology by avoiding any 'methodological fundamentalism'.

◆ *Recorded and systematic analysis of Indian society*

A sociological approach is simply a way of looking at the social world. The sociological approach to study Indian society goes beyond everyday common sense knowledge about the society and use systematic methods of empirical observation and theorization. Sociological approaches on Indian society make an attempt to understand the social world by situating social events in their socio-cultural context and historical and temporal locations. Along with this situated understanding, sociologist collects and analyses empirical data to understand social phenomenon. This systematic and scientific study of society differentiates sociology from common sense understanding, because sociologists test and modify their understanding of how the world works through scientific analysis. The earliest writing on Indian society starts from the ancient time. These are by travellers and traders who came to India from time to time. There are recorded observations on Indian society since the third century BC. These records are by traders, travellers and scholars who came to India in these early times. They were Greeks, Romans, Byzantine Greeks, Jews and Chinese. They are the Greek ambassador Megasthenes, Chinese, Arab and the Europeans. During the British period the British administrators began to study Indian society for administrative purposes. These writings on Indian Society were based on their first hand contact with

the people. They wrote on the social institutions and customs of the people. Therefore, they are a source of information on Indian society in the early times.

◆ *Indian sociology*

The use of the Indological approach during the early formative years of Indian sociology and social anthropology is seen in the works of S.V. Ketkar, B.N. Seal and B.K. Sarkar, G.S. Ghurye, Louis Dumont, K.M. Kapadia, P.H. Prabhu and Irawati Karve have tried to explore Hindu social institutions and practices, either with reference to religious texts or through the analysis of contemporary practices. The journey of 'Sociology of India' that began with 'colonial Anthropology' or 'colonisation' of the non- Western mind, prepared the ground for our pioneers, some of whom were involved in the nationalist struggle against the British, to rely on a textual view for offering alternative explanations about its society and culture. Like the Western sociology, Indian sociology took its shape in response to the structural crisis that the Indian society faced under colonial rule as well as its aspirations for political freedom. It was under such a situation that pioneers of Indian sociology searched for their specific identity in the traditional cognitive value frame.

◆ *Indological approach*

The effort to revive and energize traditional culture and establish Indian sociology in its own footing quite different from that of Western or colonial categories led to the popularity of Indological approach. But Indological approach itself did not give rise to any uniform and common explanation about Indian society and culture. The religious texts of different ages that Indologists very often studied not only emanated the idea of a 'Hindu India'; they also proposed contrasting and conflicting visions of time, space and object. As a corollary, the need for supplementing those with field view was also felt by some of our pioneers. The whole discourse of Indology is also interrupted by theories on post-colonialism and Orientalism. Interestingly, notwithstanding scholars using different sources of information, the analysis in the final count became Brahminical in nature and spirit. This further raised doubts about the possibility of 'confluence of Indology and Sociology' suggested by Dumont. The challenges of studying Indian society today are enormous given the diversity of perspectives and paradigms.

3.3.1.2 Challenges of Studying Indian Society Today

The issue of comparing and distinguishing between the

◆ *Understanding Indian society*

ideal and the actual behaviour is one of the most vital and useful agenda of social research globally. More importantly, interpretations based on texts differ so widely that it is often impossible to arrive at a common conclusion based on Indology. The tendency to either romanticise the past or rely on limited ethnography may result in distorted explanations of social reality. Even those who relied on field as a source of data got involved in the 'insider-outsider' debate to determine what is best for social anthropologists. For Srinivas studying one's own society is as difficult as studying the other'. The issue of relationship between the field and the method is also a complicated one and it has been argued that even though participant observation was an appropriate method to study the other, to study one's own society one can resort to a plurality of methods.

◆ *Field work in Indian context*

As compared to Indology and even history, ethnography appeared as a central method to sociological studies since early days of 20th century. In late 19th century, the ethnographic tradition was also strengthened by official initiatives like establishment of Ethnographic Survey of Bengal. Sociology in India has benefitted from the contributions of descriptive and analytical ethnography of scholars like W. H. R. Rivers, S. C. Roy, L. A. K. Iyer and N.K. Bose. River's study on *The Todas* (1906) was based on intensive field work. Roy's first monograph *The Oraons of Chota Nagpur* (1915) dealt with the origin and early history of the Oraons. Iyer produced accounts of castes and tribes of Cochin and Mysore along with a study on the Syrian Christians of Kerala. Bose conducted intensive fieldwork to study the social life of many tribal communities of Orissa and Chota Nagpur since 1930s. This tradition became prominent after Independence due to intermittent village studies by sociologists like Mandelbaum, McKim Marriot, Oscar Lewis, M. N. Srinivas, S.C. Dube, D. N. Majumdar and F. G. Bailey.

◆ *Limitation in the approach*

The ethnographic tradition of sociological research however came under heavy criticism for ignoring history and totality. As against limited ethnography, the large-scale surveys found enormous popularity among those who favoured extensive data to generalise or find statistical correlations among variable on many aspects of social life. Deshpande has argued that our attachment with micro studies since Independence has denied us the benefit of conducting survey on issues like industry, class structure or media seriously as they fell outside the purview of anthropology.

But it is equally true that such extensive data enumeration often lacks serious theoretical engagement and ignores the question of subjectivity. They do not reveal 'concrete human experiences' – talk, feelings, action as evident in their social and economic organization.

◆ *Different approaches and methods*

The quantitative methods do not allow the researcher to learn the way human beings respond to social constraints and construct their social worlds. Hence, in recent times, there has been growing interest in applying qualitative techniques of data collection in sociology. For instance, the use of narratives, feminist methods, focused group discussion (FDG), life history and case study method, participatory rural appraisal (PRA), visual or unobstructed methods have started gaining ground in social sciences and this trend has started questioning the monopoly of quantitative methods in academic sociology. There has been a growing interest among even quantitative researchers to use some of the methods associated with qualitative research. Qualitative and quantitative data derived from different sources are, therefore, illuminating, comprehensive and when properly combined, one approach enhances the other.

◆ *Challenges in the methods being utilised*

The challenge of studying Indian society is not restricted only to the choice between judicious mixture of text and field. There are serious epistemological issues involving the use or interpretation of both textual and field data. Thus, if Dumont's analysis based on text gave rise to Brahminical explanation of Indian society and Culture, scholars like Ghurye, Bose or Srinivas, despite their choices for different methodologies, eventually reflected such upper caste bias. Upadhyaya has shown that Ghurye's brand of sociology, by building itself around a particular understanding of Indian civilisation and 'Indian Culture', emerges finally as an elaboration of a narrow Hindu/Brahminical nationalist ideology that advocates cultural unity and nation building rather than political and economic emancipation. Similarly, N.K. Bose also noticed a pattern of civilizational unity and resilience among different segments of Indian culture and did not bother to discuss untouchability and its consequences. Like Gandhi and unlike Ambedkar, he had no objection to Varnashram Dhrama.

Even Bailey who challenged the obsession with caste, kinship and religion and equated indologically constructed Hinduism with the unity of India discovered a process of sanskritization as a mechanism to restore traditional caste

◆ *Compartmentalisation and generalisation*

equilibrium in a seminal study on Orissa. Pathy further argues that Bailey's book entitled *Caste and Economic Frontier* does not figure the term 'class' even once in the index. Critics have argued that Srinivas's sociology asserted civilizational continuity, focused on the caste system and asserted this traditional structure through the prism of village. It is also alleged that Srinivas did not take up for analysis the issues of the dalits or Muslims, nor was he interested in class issues or exogenous changes as he was engrossed with Brahminical Hinduism. Srinivas and later his scholar Beteille recognised the limits of their ethnographic ventures as they stayed with upper caste families to conduct participant observation. It was in such a context that Oommen traced a cognitive black-out of the life world experience of Dalit bahunians in Indian social science. As the Indological notion of a Pan-Indian Hinduism is not subscribed by the Dalit bahunians, he argued for an alternative perspective from below to counter hegemonisation.

◆ *Issues of conducting field research*

It is apparent that the epistemological and ontological issues of conducting even field research in India are marked by serious controversies. Those who studied the growth of Indian sociology have also noticed a narrowing of the horizon of knowledge due to institutionalisation of the discipline and rise of professional sociologists. R.K. Mukherjee has lamented that "Most of the sociologists and anthropologists in India stop at 'what' and 'how'. They don't go for 'why there is a strong pressure to stop at 'how'. The moment you ask the 'why', they say that you are going beyond science". He however believed that since 1970, Indian sociology is marked by rise of new concerns and methodology even though he was worried about its "gloomy prospect". In this period the Marxists started criticising the dominant Structural-Functional analysis. Issues like class, conflict, and revolution became popular issues. In that context, 'why' question began to re-emerge in place of 'how' and 'what' questions to explain social reality. The demand for an 'indigenous Indian sociology' again came to forefront in place of imitative sociology. In such a context, Mukherjee witnessed a new trend that allows better coordination between theory and research through i) critical formulation of concepts, ii) search for new avenues to appraise social reality, and iii) reconsideration of methods suggested by the pioneers. To him, the deductive process prohibits our understanding of the classification of 'knowable'. Hence he stressed on historical, comparative, large data base, and classification methods and these are well

accepted by many in social science circle.

◆ *Current social research*

It is interesting to note that R.K. Mukherjee's arguments have found some solid support in the way we conduct our research today. Thus, to begin with, social scientists today acknowledge the need for interdisciplinary approach to analyse a fact, object or event. Another way of realising the goal of complete understanding about a phenomenon is the argument in favour of triangulation of research to arrive at a balanced judgement of facts and figures. The growing popularity of mixed methods research also means that the age-old argument of 'paradigm wars' between natural science and social science models has lost its vitality to certain extent. Triangulation is favoured because social reality is inherently complex to be grasped in its entirety with one method of investigation.

◆ *Mapping the evolution of Indian sociology*

In an excellent review of theory and methods of Indian sociology, Maitrayee Chaudhuri and Jesna Jayachandran have noted deployment of new concepts, tools including new objects of enquiry in the sociological writings on India since the first decade of 21st century. But in the second decade of this century, they noted a new shift towards political economic analysis. They feel that these concerns have made it possible to initiate serious theoretical questioning in Indian sociology. In the context of dalit and women's movement in India, for instance, a new conceptualisation of caste and gender arose. The post-colonial analysis also deconstructed the traditional notion of caste⁴. All these interventions again popularised the need for use of indigenous categories and concepts. But it is equally true that search for cultural categories necessitate a comparison among societies. The point that emanates from this analysis is that concern for theory and methods in Indian sociology is closely linked to changes in context. And the credibility of Indian sociology rests on it being concerned about time, space and people.

3.3.2 Multidimensionality and Scope of Qualitative Research

◆ *Multiplicity*

Most researchers in human information behavior have elected to conduct their work within either the psychological or the social approach. However, a growing number of researchers believe that for a thorough understanding of human information interaction, both are necessary, and possibly other approaches as well. One of the motivations behind this approach is the need to account for the complexity

that exists in human information interaction in the real world. Unlike the other approaches, which focus on one dimension and thus reduce complexity, the underlying assumption of this approach is that the better this complexity is understood and analyzed, the more relevant the outcomes of research will be to the design of information systems and services.

◆ *Trying out different tactics*

Some researchers have attempted to uncover the dimensions that should be considered. One tactic has been to employ one's experience and suggest relevant dimensions. Allen, for example, identified four dimensions that should be employed simultaneously: the cognitive, social, social-cognitive, and the organizational. Baldwin and Rice went a step further. They developed a model based on the assumption that both individual characteristics and institutional resources influence information behavior. They then tested the model through phone interviews with 100 securities analysts. They found that in this context individual characteristics had little effect on this behavior, while institutional resources played a significant role in the analysts' information activities. Another tactic has been to uncover these dimensions through field studies. Solomon, for instance, observed and analyzed information behavior in three different contexts. He created an information mosaic for each context that represented patterns of action.

◆ *Studying human information interaction*

When he compared these mosaics, he found that common to all were the factors: action preference; way of thinking (cognitive); knowledge about task, problem, etc.; and response to the actions of others (affective). While these attributes are of the actors, he explained some of the differences among the mosaics by the dissimilarities in the constraints each context presented. A different tactic to study the complexity involved in human information interaction has been to employ a multidimensional conceptual framework. Such a framework can guide an investigation by pointing to elements that could be explored and by providing a conceptual construct through which findings in a particular context can be related to those in other contexts. Because of our limited understanding of all the facets of information behavior, frameworks that have been developed through field studies have proven most promising. One such framework that incorporates cognitive, social and system perspectives was developed by Sonnenwald.

Defining "information horizon" as the space in which actors can act, the framework focuses on contexts and

◆ *Cognitive work analysis*

situations that create evolving information horizons that map the location of different information sources within it. Sonnenwald and her colleagues also used this framework to guide their study of the information seeking behavior of lower socio-economic students. In the same way, Lamb and Kling used a context aware institutionalist approach to develop the concept of a social actor through a field study on the use of online databases. Their framework consists of four dimensions: organizational and professional relationships that connect an organization member to various networks (Affiliation); stabilized, regulated and/or institutionalized practices that circumscribe organizational actions (Environment); information, resources, and media of exchange that organization members mobilize as they engage with members of affiliated organizations (Interactions); and avowed presentations of the self and ascribed profiles of organization members as individual and collective entities (Identities). They used this framework to guide their studies on the use of intranets in American firms, and on the role of information and communication technologies among academic and industry scientists. Another framework that has been used to study human information interaction is Cognitive Work Analysis. While it was developed through field studies of interactions in process control, the framework has been guiding studies in information seeking as well.

Summarised Overview

It appears that the challenges of studying Indian society today are enormous given the diversity of perspectives and paradigms. There is no common understanding about the orientation of Indian sociology today. In the context of demand for wider perspective in studying Indian society, one cannot but have to agree with Dhanagare, Oommen, Jayaram and many others about the need for creative and systematic engagement with social history as well as a 'view from below' so as to avoid methodological fundamentalism. The need for balance between the micro and macro analytical perspectives is more prominent as Indian sociology has become more accustomed to accept social criticism. Our effort to contextualise Indian sociology in the present context and make generalisations through theoretical abstractions would guide us to look for variations in field reality so as to develop relevant conceptual tools for public debate and sensitivity. As Partha Nath Mukherji argues, one of the important assumptions underlying indegenisation is that social reality is best comprehended if it is analysed, inferred, explained, interpreted with the help of conceptual abstractions that are (a) either deep rooted in its structure, culture and historical process, (b) or are sufficiently efficient in capturing the complex realities, no matter if they

are formulated in contexts other than their own. In other words, the process of indigenising sociology or social sciences has to be consistent with the process of universalising the discipline. Today the demand for indigeneity is not to be confused with parochialisation in sociology. It is rather a search for the universals in the particulars. And Indian sociology has much to offer in this endeavour.

Assignments

1. Summarize the history and development of field research in India.
2. Explain the Indological approach to studying Indian society. Discuss some of the main limitations or criticisms of this approach.
3. Discuss the concept of “field research”.
4. Analyze the challenges of studying Indian society today. Discuss the debate around approaches like Indology versus field research. What new perspectives are emerging?

Suggested Reading

1. Madan, T. N. (1987). *Non-Renunciation: Themes and Interpretations of Hindu Culture*. New Delhi: Oxford University Press.
2. Oommen, T. K. (1997). *Citizenship, Nationality and Ethnicity: Reconciling Competing Identities*. New Delhi: Polity Press.
3. Singh, Y. (1974). *Modernization of Indian Tradition*. London: Orient Press.
4. Srinivas, M. N. (1952). *Religion and Society Among The Coorgs of South India*. New Delhi: Oxford University Press.



Reference

1. Jayaram, N. (Ed.). (2004). *On Understanding Indian Society: Past and Present: Essays for A. R. Desai*. New Delhi: Orient Blackswan.
2. Desai, A. R. (1986). *Agrarian Struggles in India After Independence*. New Delhi: Oxford University Press.
3. Dumont, L. (1970). *Homo Hierarchicus: The Caste System and Its Implications*. UK: University of Chicago Press.
4. Ghurye, G. S. (1969). *Caste and Race in India*. Delhi: Popular Prakashan.
5. Srinivas, M. N. (Ed.). (1996). *Caste: Its Twentieth Century Avatar*. Delhi: Penguin Books India.

Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.



SGOU

TECHNIQUES IN QUALITATIVE RESEARCH

BLOCK-04





Methods of Qualitative Research

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ describe qualitative research methods commonly used in sociology, including observation, case studies, content analysis, narrative inquiry, discourse analysis, folklore studies, focus groups, oral history, genealogy, and participatory methods
- ◆ identify the uses, advantages and limitations of various qualitative research methods commonly used in sociology
- ◆ analyze how the choice of qualitative research methods depends on the research questions, target population, and resources available
- ◆ identify how using multiple qualitative methods allows triangulation and helps offset the limitations of any single approach in sociological research

Background

Qualitative research is dominantly a route of research in the social sciences as it allows for an in-depth inquiry on the basis of the responses of the respondents. It is a scientific research which aims to seek answers for set research question, this inquiry is satisfied through the use of different set of research methods specifically utilized in qualitative research. Qualitative research will give forth more descriptive data and inferences. The methods of qualitative research had its origin in social and behavioral sciences. By using qualitative research methods, we can collect non numerical data such data is useful in making decisions and drawing up inferences or conclusions about a target audience but in order to be able to do so the data collected must be rich and holistic. While using qualitative research methods the researcher tends to collect data in the real time and the data maybe collected in different forms such as one on one interview, observation and documents. Another important fact about using qualitative research methods is that it allows the researcher to break down complex problems or situation to make more meaningful inferences, and as the methods used are more communicative the researcher can build trust with the respondents and thus gain unadulterated data. In this unit we shall explore different methods employed in qualitative research.



Keywords

Research Methods, Qualitative, Subjective, Narrative

Discussion

4.1.1 Observation

According to Merriam-Webster, the word 'observation' can be defined as 'an act of recognizing and noting a fact or occurrence often involving measurement with instruments', or 'a record or description so obtained'. While this definition is useful in general terms, it's of little use when contemplating the use of observation as a sociological research method. In sociological research, 'observation' refers to a method in which researchers observe the ongoing behavior of their participants or subjects. This is different from techniques such as interviews or questionnaires, because observation is a study of what subjects do instead of what they say.

◆ *Fact finding through viewing*

In social science research, the researcher can collect data using various sources: primary or secondary and sometimes there are tertiary sources as well. Observation is one of the primary source of data collection in social science research. It is a purposeful, systematic and selective way of watching and listening to a phenomenon or interaction as it takes place. Observation can be used in various situations where other methods of data collection are not appropriate or valid. For example, it is not always possible to conduct interviews with every person to collect required information.

◆ *Primary source of data collection*

4.1.1.1 General Characteristics of Observation

- ◆ It is a physical and mental activity
- ◆ It is selective and purposeful
- ◆ It is a scientific tool of research
- ◆ It is a direct study of situation or phenomenon
- ◆ It tries to establish cause and effect relationship in the observed phenomenon

◆ *Involved and engaged method*

4.1.1.2 Types of Observation

The types of observation could be broadly classified



as: participant observation, non-participant observation, structured observation, and unstructured observation. Each one of these types is explained below.

1. Participant Observation

Participant observations when the observer or researcher becomes part of the situation or interaction that he/she is observing. In this type of observation, the researcher is an active member of the situation and his/her presence might impact the situation. The researcher may or may not inform the other participants about his observations though again he/she has to keep in mind the ethics of observing individuals without informing them. For example, to study the reaction of the general public towards beggars the observer can become a beggar and, in this way, he/she will be able to observe closely and originally. In some situations, though, it's not appropriate or possible to become an active member of the situation. For example, you cannot become a thief to know how people treat a thief if he/she is caught red-handed. In some situations, either it's risky or ethically inappropriate to be part of the situation.

◆ *Inclusive and ethical*

Advantages

- ◆ The observer can get the original reactions of the participants
- ◆ Observer can interact with people to get more information
- ◆ The observer will not miss anything which is relevant

Disadvantages

- ◆ The participation of the observer in the situation can bring bias in the situation
- ◆ An inexperienced observer may not know what is relevant and not

2. Non-participant Observations

Non participant observation is when the observer or the researcher does not become part of the situation or interaction that he/she is observing and recording. This kind of observation usually is preferred when becoming part of the situation can impact the situation. Sometimes the observer wants to give more attention to observation and his/her participation can make it difficult for him/her to record the

◆ *Detached and objective*

observations. The observer may or may not inform them that they are getting observed. In most of the occupational settings, the researcher can conduct non-participant observation. The observer can also create controlled situations to observe the respondents.

Advantages

- ◆ The observer can observe and record in-depth because he is passively recording and not the member of the situation.
- ◆ The observer does not impact the situation by keeping himself at bay.
- ◆ It's not possible for the observer to become part of every situation that he/she is observing, on the other hand, non-participant observation is always possible.

Disadvantages

- ◆ Observer bias needs to be controlled to the minimum otherwise the results will not be the true representation of the situation.
- ◆ The observer may not be able to feel the situation since he is not an active member of it. For example, the researcher can better understand the attitude of the general public towards handicaps if he is sitting in a wheelchair otherwise, he won't be able to understand peoples' reaction.

3. Structured Observation

◆ *Planned observation*

When observation takes place strictly in accordance with a plan or a design prepared in advance, it is called structured observation. In such a type the observer decides what to observe, what to focus on, what type of information or activity should be given importance, who are all to be observed, etc.

Features of Structured Observation

- ◆ Filtering what is relevant and focusing on it
- ◆ Avoiding waste of time
- ◆ Studying only the target group
- ◆ Minimizing the bias of the observer

4. Unstructured Observation

In this type of observation, there is no advance designing

◆ *Spontaneous and unplanned*

of what, how, when, who, etc. of observation. The observer is given the freedom to decide on the spot, to observe everything that is relevant. For example, while observing the life style of a hill tribe in their place, the observer may be able to observe several interesting things like how they discuss their plan, how they settle quarrels, who takes decisions, etc. The main strength of the unstructured observation is that at the time of observation everything is taken note of and the researchers then segregate the related and relevant details.

4.1.2 Case Study

◆ *Research design*

Social researchers are curious about their social settings. Their interest is virtually unlimited. Any social setting has the potential for scientific inquiry. The diversity of social topics and situations made researchers plan their actions. This plan for research is conventionally labeled as research design. Case study method is considered as one of the popular types of research design used by social scientists. It is an intensive study of a particular case. In sociological investigation a case may be any of the following, taken singly or in combination. (1) A person, (2) A group of people such as family or gang, (3) A class of persons such as thieves or professors, (4) An ecological initiative such as neighborhood or community, (5) cultural unit such as fashion or institution.

◆ *Method and design*

In the social sciences, the term case study refers to both a method of analysis and a specific research design for examining a problem, both of which can be used to generalize findings across populations. This tab focuses on the latter-how to design and organize a research paper that analyzes a specific case. They encompass a range of qualitative and quantitative research tools to investigate underlying principles of an occurrence within a real-life context. Case study is a social science research method that can provide valuable insights into phenomena or situations. Case studies are used to “explore and investigate. Kvomvey defined “case study involves studying individual cases, often in their natural environment and for a long period of time”. Yin has defined case study as “an empirical inquiry that investigates contemporary phenomena within its real-life context.

◆ *Research strategy*

This kind of research design usually involves the qualitative method of data collection. It presents a holistic account that offers insights into the case under study. Thus, case study is not a method of data collection, rather it is a

research strategy. It is an empirical inquiry that investigates contemporary phenomena by using multiple sources of evidence.

4.1.2.1 Characteristics

Hartfield has referred to the following characteristics of case study:

- ◆ It studies the whole unit in their totality.
- ◆ It employs several methods in data collection to prevent errors and distortions.
- ◆ It often studies a single unit: one unit in one study.
- ◆ It perceives the respondent as a knowledgeable person, not just as a source of data.
- ◆ It studies typical cases.

4.1.2.2 Purpose of Case Study

Burns has pointed out the following purposes of case study:

- ◆ It may be a source of hypotheses for future research.
- ◆ It helps to establish generalizations about the wider population to which the unit belongs.
- ◆ It provides anecdotal evidence that illustrates more general findings.
- ◆ To refute a universal generalization, a single case can represent a significant contribution to theory building.
- ◆ To test the feasibility of the quantitative study.

4.1.2.3 Advantages of Case Study

Black champion enlisted following advantages of case study:

- ◆ It makes in-depth study possible.
- ◆ It is flexible in data collection methods.
- ◆ It could be used for studying any dimension of the topic; one specific aspect of the problem.
- ◆ It could be conducted practically any kind of social setting.
- ◆ Case studies are inexpensive.
- ◆ It helps to study unique case.

4.1.2.4 Disadvantages or criticism

Case study method is generally criticized on the following basis,

- ◆ Subjective bias
- ◆ Little evidence for scientific generalization
- ◆ Time consuming
- ◆ Doubtful reliability
- ◆ Missing validity

4.1.2.5 Uses of Case Study

- ◆ Understand more about *how* and *why* a present circumstance is happening.
- ◆ Explore complex phenomena (particularly salient in socio-environmental systems work).
- ◆ Formulate “lessons learned” which *may* be applicable to future cases.
- ◆ Communicate information through real life stories.

Case studies can be exploratory, descriptive, evaluative, or explanatory. We present exploratory and explanatory case studies below to demonstrate relevance of EPA research. Data collection methods vary, but common methods include participant observation, interviews, and/or archive analysis. Case studies can also use mixed methods where researchers combine qualitative and quantitative data and analysis.

◆ *Mixed method*

4.1.2.6 Benefits

Comprehensive - The most significant benefit of case studies is that they enable a holistic review. Unlike standalone research techniques which give more of a snapshot, e.g., surveys, a case study offers the opportunity for a researcher to use a range of tools on one subject. This gives time and space to build a detailed understanding of the topic, establishing a sound platform from which to explore the factors influencing the case study in greater detail.

◆ *Holistic review*

Reducing bias - Case studies capture a range of perspectives, as opposed to the single view of an individual you get in a survey response or interview. This gives the opportunity to gain a greater understanding of the subject in hand and reduces the potential for any bias, by diluting the agenda of a particular individual.

◆ *attempt for objectivity*

4.1.2.7 Challenges

◆ *broader background research to identify areas of interest*

◆ *Ethical considerations*

◆ *Time consuming*

◆ **Wider relevance** - A common criticism of the case study is that the findings can't be generalized. However, we've found when they're part of a broader research case study can look to explore common problems in greater detail. Case study can be used for broader background research to identify areas of particular interest and then used the case studies to further investigate the causes and impacts. Furthermore, the case study participants are carefully selected to ensure a good spread of locations, technologies and management arrangements.

◆ **Permissions** - In social research, maintaining participants' anonymity helps to provide a true picture of what is happening. Studies have shown that participants are more open with the research team in situations where they are confident that their identity will not be disclosed. However, maintaining anonymity can be challenging given the detailed nature of the case study. For in-depth case studies it may be appropriate to seek confirmation that the lead participant agrees that the material is anonymous and accurate, enabling confidence on both the part of the researcher and the participant. However the process of gaining permission can take time and result in additional iterations of the published research.

◆ **Time** - Case studies can be time consuming. Planning multiple interviews, waiting to receive data and possibly coordinating focus groups can take a considerable amount of time. Especially if you are relying on a case study participant who is often acting in a voluntary capacity and busy fulfilling their day to day tasks. Yet these issues can be overcome by offering participants incentives, outlining what is required from the participant at the outset and sending notification of deadlines well in advance.

4.1.3 Content Analysis

Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within

◆ *Thematic analysis*

some given qualitative data (i.e. text). Using content analysis, researchers can quantify and analyze the presence, meanings, and relationships of such certain words, themes, or concepts. As an example, researchers can evaluate language used within a news article to search for bias or partiality. Researchers can then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of surrounding the text.

◆ *coded to facilitate analysis*

Sources of data could be from interviews, open-ended questions, field research notes, conversations, or literally any occurrence of communicative language such as books, essays, discussions, newspaper headlines, speeches, media, historical documents. A single study may analyze various forms of text in its analysis. To analyze the text using content analysis, the text must be coded, or broken down, into manageable code categories for analysis (i.e. “codes”). Once the text is coded into code categories, the codes can then be further categorized into “code categories” to summarize data even further.

Three different definitions of content analysis are provided below.

- ◆ Holstic: “Any technique for making inferences by systematically and objectively identifying special characteristics of messages.”
- ◆ Ethnography, Observational Research, and Narrative Inquiry: “An interpretive and naturalistic approach. It is both observational and narrative in nature and relies less on the experimental elements normally associated with scientific research (reliability, validity, and generalizability).
- ◆ Berelson: “A research technique for the objective, systematic and quantitative description of the manifest content of communication.”

Technique for interpretive, narrative and systematic analysis

4.1.3.1 Uses of Content Analysis

- ◆ Identify the intentions, focus or communication trends of an individual, group or institution
- ◆ Describe attitudinal and behavioral responses to communications

◆ *Alternative perception*

- ◆ Determine the psychological or emotional state of persons or groups
- ◆ Reveal international differences in communication content
- ◆ Reveal patterns in communication content
- ◆ Pre-test and improve an intervention or survey prior to launch
- ◆ Analyze focus group interviews and open-ended questions to complement quantitative data

4.1.3.2 Types of Content Analysis

There are two general types of content analysis: conceptual analysis and relational analysis. Conceptual analysis determines the existence and frequency of concepts in a text. Relational analysis develops the conceptual analysis further by examining the relationships among concepts in a text. Each type of analysis may lead to different results, conclusions, interpretations and meanings.

1. Conceptual Analysis

◆ *Quantifying and counting*

Typically people think of conceptual analysis when they think of content analysis. In conceptual analysis, a concept is chosen for examination and the analysis involves quantifying and counting its presence. The main goal is to examine the occurrence of selected terms in the data. Terms may be explicit or implicit. Explicit terms are easy to identify. Coding of implicit terms is more complicated: you need to decide the level of implication and base judgments on subjectivity (an issue for reliability and validity). Therefore, coding of implicit terms involves using a dictionary or contextual translation rules or both.

◆ *Process of conceptual analysis*

To begin a conceptual content analysis, first identify the research question and choose a sample or samples for analysis. Next, the text must be coded into manageable content categories. This is basically a process of selective reduction. By reducing the text to categories, the researcher can focus on and code for specific words or patterns that inform the research question.

General steps for conducting a conceptual content analysis:

1. Decide the level of analysis: word, word sense, phrase, sentence, themes



2. Decide how many concepts to code for: develop a pre-defined or interactive set of categories or concepts. Decide either: A. to allow flexibility to add categories through the coding process, or B. to stick with the pre-defined set of categories.

◆ *Level and number of concepts*

- ◆ Option A allows for the introduction and analysis of new and important material that could have significant implications to one's research question.
- ◆ Option B allows the researcher to stay focused and examine the data for specific concepts.

3. Decide whether to code for existence or frequency of a concept. The decision changes the coding process.

◆ *Existence or frequency*

- ◆ When coding for the existence of a concept, the researcher would count a concept only once if it appeared at least once in the data and no matter how many times it appeared.
- ◆ When coding for the frequency of a concept, the researcher would count the number of times a concept appears in a text.

4. Decide on how you will distinguish among concepts.

◆ *Distinction of concepts*

- ◆ Should text be coded exactly as they appear or coded as the same when they appear in different forms? For example, "dangerous" vs. "dangerousness". The point here is to create coding rules so that these word segments are transparently categorized in a logical fashion. The rules could make all of these word segments fall into the same category, or perhaps the rules can be formulated so that the researcher can distinguish these word segments into separate codes.
- ◆ What level of implication is to be allowed? Words that imply the concept or words that explicitly state the concept? For example, "dangerous" vs. "the person is scary" vs. "that person could cause harm to me". These word segments may not merit separate categories, due to the implicit meaning of "dangerous".

5. Develop rules for coding your texts. After decisions of steps 1-4 are complete, a researcher can begin developing

◆ *Establish rules for coding*

rules for translation of text into codes. This will keep the coding process organized and consistent. The researcher can code for exactly what he/she wants to code. Validity of the coding process is ensured when the researcher is consistent and coherent in their codes, meaning that they follow their translation rules. In content analysis, obeying the translation rules is equivalent to validity.

◆ *Determining relevance*

6. Decide what to do with irrelevant information: should this be ignored (e.g. common English words like “the” and “and”), or used to reexamine the coding scheme in the case that it would add to the outcome of coding?

◆ *Coding*

7. Code the text: This can be done by hand or by using software. By using software, researchers can input categories and have coding done automatically, quickly and efficiently, by the software program. When coding is done by hand, a researcher can recognize errors far more easily (e.g. typos, misspelling). If using computer coding, text could be cleaned of errors to include all available data. This decision of hand vs. computer coding is most relevant for implicit information where category preparation is essential for accurate coding.

◆ *Analysis*

8. Analyze your results: Draw conclusions and generalizations where possible. Determine what to do with irrelevant, unwanted, or unused text: reexamine, ignore, or reassess the coding scheme. Interpret results carefully as conceptual content analysis can only quantify the information. Typically, general trends and patterns can be identified.

2. Relational Analysis

◆ *Analysis by establishing relationship between concepts*

Relational analysis begins like conceptual analysis, where a concept is chosen for examination. However, the analysis involves exploring the relationships between concepts. Individual concepts are viewed as having no inherent meaning and rather the meaning is a product of the relationships among concepts.

◆ *Steps of relational analysis*

To begin a relational content analysis, first identify a research question and choose a sample or samples for analysis. The research question must be focused so the concept types are not open to interpretation and can be summarized. Next, select text for analysis. Select text for analysis carefully by balancing having enough information for a thorough analysis so results are not limited with having

information that is too extensive so that the coding process becomes too arduous and heavy to supply meaningful and worthwhile results.

Reliability and Validity

Reliability: Because of the human nature of researchers, coding errors can never be eliminated but only minimized. Generally, 80% is an acceptable margin for reliability. Three criteria comprise the reliability of a content analysis:

◆ *Margin for reliability*

1. **Stability:** the tendency for coders to consistently re-code the same data in the same way over a period of time.
2. **Reproducibility:** tendency for a group of coders to classify category membership in the same way.
3. **Accuracy:** extent to which the classification of text corresponds to a standard or norm statistically.

Validity: Three criteria comprise the validity of a content analysis:

◆ *Validity in content analysis*

1. **Closeness of categories:** this can be achieved by utilizing multiple classifiers to arrive at an agreed upon definition of each specific category. Using multiple classifiers, a concept category that may be an explicit variable can be broadened to include synonyms or implicit variables.

2. **Conclusions:** What level of implication is allowable? Do conclusions correctly follow the data? Are results explainable by other phenomena? This becomes especially problematic when using computer software for analysis and distinguishing between synonyms. For example, the word "mine," variously denotes a personal pronoun, an explosive device, and a deep hole in the ground from which ore is extracted. Software can obtain an accurate count of that word's occurrence and frequency, but not be able to produce an accurate accounting of the meaning inherent in each particular usage. This problem could throw off one's results and make any conclusion invalid.

3. **Generalizability of the results to a theory:** dependent on the clear definitions of concept categories, how they are determined and how reliable they are at measuring the

idea one is seeking to measure. Generalizability parallels reliability as much of it depends on the three criteria for reliability.

4.1.3.3 Advantages

- ◆ 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
- ◆ Unobtrusive means of analyzing interactions
- ◆ Provides insight into complex models of human thought and language use
- ◆ When done well, it is considered a relatively “exact” research method
- ◆ Content analysis is a readily-understood and an inexpensive research method
- ◆ A more powerful tool when combined with other research methods such as interviews, observation, and use of archival records. It is very useful for analyzing historical material, especially for documenting trends over time.

4.1.3.4 Disadvantages

- ◆ 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 too liberally to draw meaningful inferences about the relationships and impacts implied in a study
- ◆ Is inherently reductive, particularly when dealing with complex texts
- ◆ Tends too often to simply consist of word counts
- ◆ Often disregards the context that produced the text, as well as the state of things after the text is produced
- ◆ Can be difficult to automate or computerized

4.1.3 Narrative Inquiry

◆ *Cluster of analytic methods*

Narrative analysis refers to a cluster of analytic methods for interpreting texts or visual data that have a storied form. A common assumption of narrative methods is that people tell stories to help organize and make sense of their lives and their storied accounts are functional, and purposeful. Different approaches to narrative analysis are categorized on the basis of whether they focus on the narrative content or structure, with the thematic version interrogating what a story is about, while the structural version asks how a story is composed to achieve particular communicative aims.

◆ *Less technical and structured*

The narrative technique of gathering information has even less structure than the focus group. Narratives have almost no predetermined contents except that the researcher seeks to hear a person's retelling of an incident or happening in his/her life. Essentially, the person tells his/her story about an incident or situation and you, as the researcher, listen passively. Occasionally, you encourage the individual by using active listening techniques; that is, you say words such as 'uh huh', 'mmm', 'yeah', 'right' and nod as appropriate. Basically, you let the person talk freely and without interrupting. Narratives are a very powerful method of data collection for situations which are sensitive in nature. For example, you may want to find out about the impact of child sexual abuse on people who have gone through such an experience. You, as a researcher, ask these people to narrate their experiences and how they have been affected. Narratives may have a therapeutic impact; that is, sometimes simply telling their story may help a person to feel more at ease with the event. Some therapists specialize in narrative therapy. But here, we are concerned with narratives as a method of data collection. As with focus group interviews, you need to choose the recording system that suits you the best. Having completed narrative sessions you need to write your detailed notes and give them back to the respondent to check for accuracy.

4.1.4 Life Cycle

Life cycle is among the most widely used concepts in the social sciences. It may be invoked merely to denote temporality. It may be applied metaphorically or heuristically to initiate an analysis or it may comprise the core assumptions of a research program in developmental processes. Strictly defined, life cycle refers to maturational and generational processes in

◆ *Tracing history and life cycle*

natural populations. Alternative conceptions of life cycle, like life span and life course, do not share the same intrinsic reference to generation or reproduction that transcends the single lifetime of the individual. Still these concepts are often used interchangeably. The history, meanings, and uses of these concepts across anthropology, psychology, economics, and sociology are reviewed. Three areas of modern sociology – individual aging, family life cycle, and organizational life cycle – are examined specifically in their treatment of life-cycle concepts. Finally, the implications of alternative usages for the study of populations as opposed to individuals and for the study of stability as opposed to change are considered.

4.1.5 Genealogy

◆ *Ancestry*

Genealogy refers to the record of the history of the family or the tracing of the family's lineages. It can also be called the study of descent for an individual, or a family constituting the family tree. Oral interviews from informants, historical records, analyzing the genetics, and some other methods are used in order to gather data on the genealogy of an individual or a family by genealogists.

◆ *Questionable reliability*

Family names also serve with genealogical information. Nevertheless, it brings confusion as well. Often, a person's name refers to the family he belongs to (family name, surname, etc). These surnames are hard to find in directories or other census records. Transmission of names across generation also takes place due to marriages, immigration, etc. Children might also take up the names of their step-parent instead of their real ones. Therefore it is important to be careful while completely relying on genealogical data. The informant providing the data might not be literate enough, he/she can be biased while providing any information, or with passing time, there might arise some errors in the data being collected.

◆ *Links of kinship*

These studies are undertaken in order to understand the important links of kinship determined by marriage and descent, caste or status relations of the people in a group. It is also important in order to carve out a place for a family or a group in the larger historical picture and preserve the past for future generations. Genealogy or kinship also plays a crucial role in determining the structure of nonindustrial societies. Through this genealogist not only try to trace ancestral roots

but also seek to determine where the ancestors came from, how they lived, what were their occupational practices, how was their social status determined, and so on.

◆ *Professional genealogy*

While amateur genealogists are only concerned about tracing the history of their own family, professional genealogists not only trace their own ancestors but also of other people. They even publish a book about their findings, methods of collecting data, etc. They can often be specialized to study a specific society or group, a specific surname or any particular prominent family. For example, a genealogist might be interested in knowing about the history of the people who have a common surname; whether they belong to the same ancestor or same society, etc.

◆ *Benefits of genealogical studies*

Genealogical studies can help confirm claims about one's ancestors or provide a detailed family medical history so that proper preventive measures can be taken. Genealogy is a study across the dimensions of time and space which gives us knowledge about the historical events which shaped or changed the lives of our ancestors and eventually of ourselves. It can also help us in finding relatives who are distant or were not known earlier. Earlier, its focus was on the kinship and descent of high officials, nobles, or rulers, resulting from arguments over claims and legitimacy in properties. However, in modern times, even common people search for their family histories. With the advent of technological innovations, the tracing of family history has become easier, hence widespread. Due to the invention of the internet, genealogists can now easily access resources which help them in their studies. This has resulted in a growing interest in the topic of genealogy.

4.1.6 Focus Group Discussion -FGD

◆ *Controlled group discussion with a specific purpose*

A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. Questions are asked in an interactive group setting where participants are free to talk with other group members. The first focus groups were created at The Bureau of Applied Social Research in the USA, by associate director, sociologist Robert. K. Merton. The term itself was coined by psychologist and marketing expert Ernest Dichter. Powell et al define a focus group as, "A group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is

the subject of the research.”

◆ *Elements to conduct a FGD*

Focus groups discussions last one to two hours, usually done with 6-12 people. The discussion is led by a moderator asking open-ended questions. Focus groups can be used to discover people’s general reactions to an interface or services. A wide range of information can be gathered in a relatively short time span.

◆ *combination of participatory observation and interview method*

In social sciences and urban planning, focus groups allow interviewers to study people in a more natural setting than a one-to-one interview. In combination with participant observation, they can be used for gaining access to various cultural and social groups, selecting sites to study, sampling of such sites, and raising unexpected issues for exploration. Focus groups have a high apparent validity-since the idea is easy to understand, the results are believable. Also, they are low in cost, one can get results relatively quickly, and they can increase the sample size of a report by talking with several people at once.

◆ *Strength of the method*

Focus groups are particularly helpful when used in conjunction with surveys. Your library can follow up a survey with focus groups to clarify the issues revealed, and perhaps hear surprising new ideas or concerns. Unlike doing polls or asking lists, the strength of this technique is the interaction between participants. With a skilled moderator, the conversation can go beyond “like it, don’t like it” and allow new views to surface. Since there is no pressure to reach a consensus, all views can be encouraged and aired.

4.1.6.1 Advantages

- ◆ Focus group research involves organized discussion with a selected group of individuals to gain information about their views and experiences of a topic.
- ◆ Focus group interviewing is particularly suited for obtaining several perspectives about the same topic.
- ◆ The benefits of focus group research include gaining insights into people’s shared understandings of everyday life and the ways in which individuals are influenced by others in a group situation.
- ◆ Problems arise when attempting to identify the individual view from the group view, as well as

◆ *Gaining perspective through observation of group dynamics*



in the practical arrangements for conducting focus groups.

- ◆ The role of the moderator is very significant. Good levels of group leadership and interpersonal skill are required to moderate a group successfully.
- ◆ You can get feedback about what people do over a long period of time.
- ◆ Focus groups used early in a project can produce insights and questions from the interaction among different users or stakeholders.
- ◆ Focus groups are relatively inexpensive (assuming that participants are from the same geographical area) and can be arranged quickly.

4.1.6.2 Disadvantages

- ◆ **Impersonal Group discussions** don't lend themselves to personal revelations, so they might not be suitable for sensitive or controversial issues. For example, group discussions might not be suitable for research pertaining to products people might feel ashamed about using such as alcohol. If people don't feel comfortable sharing their opinions or experiences, the focus group interview won't generate any useful insights. In these situations, anonymous surveys or confidential interviews might be a better means of obtaining information.
- ◆ **Difficult to Control** - For a focus group interview to be revelatory, the conversation must flow naturally to reveal what the participants are thinking. But group discussions can get out of hand quickly, straying from the original topic and getting lost in useless tangents. An effective facilitator will keep the discussion on track, but this might be impossible if the group is rowdy or young.
- ◆ **Dominating Individuals** - The goal of a group discussion is to discover what all the participants think, but outspoken people might skew those results. For example, a shy dissenter might never reveal important insights, or a single persuasive participant might cause other participants to change their original opinions, meaning you never learn about their initial reactions. To avoid

◆ *Deviations and control of FGD*



these problems, facilitators must involve everyone to ensure all the participants have equal time and that all points of view are heard.

4.1.6.3 Steps involved in FGD

Focus group discussion consists of four major steps as shown in Figure 1. These include (1) research design, (2) data collection, (3) analysis and (4) reporting of results

1. Research design

The process begins with identifying the main aim and defining the key research objectives of the study. Based upon the research objectives, a list of questions (schedule or script) is prepared as guidance for each focus group discussion session. This is followed by seeking ethics clearance. Thereafter, participant identification is perhaps the most critical step since the technique is largely based on group dynamics and synergistic relationships among participants to generate data. Participant recruitment follows participant identification. Recruitment can be expensive, difficult, and continues to be a source of contentious debate. Although approaches to participant recruitment are contested, the underlying consideration should be the impact on the discussion. Researchers can use different methods to recruit suitable participants, including recruitment questionnaires and telephone, or door to door canvassing. Furthermore, participants can be recruited by offering incentives or through local networks and contacts. However, the use of local contacts has been criticized for its dependence on the availability, willingness and accessibility of the local contact and the loss of control and direction of the researcher in the recruitment process. This can lead to convenience sampling by selecting participants based on their accessibility, easily leading to “volunteer bias”. Purposive sampling is widely recommended since focus group discussion relies on the ability and capacity of participants to provide relevant information.

◆ *Blueprint of a research*

◆ *Venue for FGD*

The next step is to identify a convenient venue for the discussion. Researchers must take into consideration participants’ comfort, access to the venue, and levels of distraction. In addition, they should be in a normal and familiar setting with sufficient space for different activities within the focus group discussion, such as examination of samples, ranking activities, and exercises. There must also

be enough seating that enables participants with a clear view of each other and the facilitators.

2. Data collection

Focus group discussion requires a team consisting of a skilled facilitator and an assistant. The facilitator is central to the discussion not only by managing existing relationships but also by creating a relaxed and comfortable environment for unfamiliar participants. Similarly, the assistant's role includes observing non-verbal interactions and the impact of the group dynamics, and documenting the general content of the discussion, thereby supplementing the data. Non-verbal data rely on the behavior and actions of respondent's pre-focus group discussion, during and post-focus group discussion. Non-verbal data provide "thicker" descriptions and interpretations compared to the sole use of verbal data. Gorden outlines four non-verbal communication data sources based on participants' behavior reflected by body displacements and posture, use of interpersonal space to communicate attitudes, temporal speech markers such as gaps, silences, and hesitations and variations in volume, pitch and quality of voice. The main methods of data collection during a focus group discussion include audio and tape recording, note-taking and participant observation. However, each of these methods presents different advantages and disadvantages and researchers should consider context-specific issues in selecting a method of data collection.

◆ *Team and methods of FGD*

Regardless of the number of focus group discussion meetings, it is important to consider the duration of the meetings. Participants are likely to suffer from fatigue when discussions are longer. The rule of thumb is 1-2 hr, based on the complexity of the topic under investigation, number of questions and the number of participants. This might differ when the group consists of younger participants such as school children. This is because children tend to have shorter attention spans and will begin to lose focus and interest in the topic quicker than adults.

◆ *Duration of FGD*

3. Analysis

Focus group discussion usually yields both qualitative and observational data where analyses can be demanding. According to Leech and Onwuegbuzie, qualitative analysis techniques that can be used to analyze focus group data

◆ *Qualitative and quantitative data*

include grounded theory analysis, content analysis and discourse analysis. Morgan recommends the use of content and ethnographic analytic techniques to analyze data from a focus group discussion since it affords the researcher an opportunity to obtain both qualitative and quantitative information through a “three-element coding framework” leading to mixed content analysis. The “three coding-framework” refers to the two steps involved in the content analysis that yields quantitative results and the one step involving the ethnographic analysis that yields qualitative results.

◆ *Initial and focused coding*

Data coding is accomplished in two stages. The first step is the initial coding which involves the generation of numerous category codes without limiting the number of codes. At this stage, the researcher lists emerging ideas, draws relationship diagrams and identifies keywords used by respondents frequently as indicators of important themes. The second stage involves focused coding where the researcher eliminates, combines or subdivides the coding categories identified in the first step. Attention should be drawn to recurring ideas and wider themes connecting the codes. This process can yield quantitative results to draw comparisons across focus groups, group dynamics, individual participants or the participants’ statements.

◆ *Informed reporting*

4. Results and Reporting

Once all the data are analyzed, the researcher needs to consolidate the results into a coherent report for dissemination. Key decisions regarding the audience must be made to tailor the report to meet the needs of the target audience. The report can be presented in a narrative or pointwise format. The report should capture participant information such as gender, age and education level in addition to key quotes from participants to emphasize points. The findings should be shared with the participants of the study through a process called member checking, respondent validation, or participant validation to validate the results thereby increasing the credibility of the report or study.

4.1.6.4 Types of Focus Group Discussion

Five types of focus group discussion have been identified in the literature, and a further two are emerging with the growth in access and variety of online platforms.

1. Single Focus Group

◆ *Common method of FGD*

The key feature of a single focus group is the interactive discussion of a topic by a collection of all participants and a team of facilitators as one group in one place. This is the most common and classical type of focus group discussion. It has been widely used by both researchers and practitioners across different disciplines.

2. Two-way Focus Group

◆ *Observatory FGD*

This format involves using two groups where one group actively discusses a topic, whereas the other observes the first group. Usually, this type of focus group is conducted behind a one-way glass. The observing group and the moderator can observe and note the interactions and discussion of the first group without being seen. Hearing what the other group thinks (or by observing their interactions) often leads the second group to different conclusions from those it may have reached otherwise.

3. Dual Moderator Focus Group

◆ *More than one moderator*

This involves two moderators working together, each performing a different role within the same focus group. The division of roles ensures a smooth progression of the session and ensures that all topics are covered.

4. Dueling Moderator Focus Group

◆ *Opposing view of moderators*

This involves two moderators who purposefully take opposing sides on an issue or topic under investigation. Proponents believe that the introduction of contrary views to the discussion by the moderators is critical to achieving more in-depth disclosure of data and information.

5. Respondent Moderator Focus Group

◆ *Respondent as a moderator*

In this type of focus group discussion, researchers recruit some of the participants to take up a temporary role of moderators. Having one of the participants lead the discussion is thought to impact on the dynamics of the group by influencing participants' answers, thereby increasing the chances of varied and more honest responses.

6. Mini Focus Group

Researchers are usually faced with a situation where there is a small potential pool of participants and are difficult to

◆ *Smaller but specialized group for FGD*

reach, yet the research design requires that the topic must be discussed in a group. Under these circumstances, researchers can only convene a small group of two to five participants. Such groups are usually made up of individuals with a high level of expertise.

7. Online Focus Groups

◆ *Virtual FGD*

It is applied within the online environment, using conference calling, chat rooms or other online means. Online focus groups boast an aura of dynamism, modernity and competitiveness that transcends classic problems with face-to-face focus group discussion. However, these discussion platforms are only accessible to participants with access to the Internet and are prone to technical problems such as poor or loss of connectivity and failure to capture non-verbal data.

4.1.7 Oral History

◆ *self-reflective narrative*

Oral history is an approach in historiographic research which, having an interdisciplinary essence, developed during the past decades within historian societies. Oral history is an organized collection of living people's statements about their experiences. It is a present narrative of historical events. The type of research method used in oral history is qualitative and the true researchers are the narrators who play a significant role in the very events which they narrate with the help of the interviewers. In contrast to written history, oral history is a special way of historiography which uses interviews as its tool. Common people are the primary audience of this method of historiography. One of the most prominent characteristics of this approach is the collection of different thoughts and opinions by the interviewer. Oral history is not only "a determining method in enhancing people's understanding of and sensibility towards contemporary events, perceiving the essence of time and historical constructs' functionalities", but also "is both a primary source of and a supplement to historiography."

◆ *Marginalized narrative*

Oral history deals with narratives of present people who advance live history as active participants in the events. This research method enables the marginalized groups, especially women, clergymen, proletarians, African Americans and other operative groups in the realm of history who sometimes have been wrongly neglected as margins of no importance to be heard.



4.1.7.1 Functions of Oral History

Oral history has diverse functions which are briefly listed below:

1. Invocation of people's memory as a research tool, in the process of expansion and completion of historiography of contemporary events enriches historical research.
2. In oral history, active and facilitating interviews can result in disclosure of important matters and throwing light on the hidden angles of events; much unsaid can be said.
3. By providing equal opportunities for the presence of different groups, such as women, proletarians, soldiers, migrants, etc. participation in historiography can take place at a more general and all-encompassing level.
4. Historiography can be released from centralization and government monopoly. Diverse actors can play their roles.

◆ *Active and emphasis on equality*

4.1.8 Discourse Method

Discourse analysis is a research method for studying written or spoken language in relation to its social context. It aims to understand how language is used in real life situations. Discourse is the complete system by which people communicate; it's the widest interpretation of what we call 'language'. It includes both written, verbal and non-verbal communication, as well as the wider social concepts that underpin what language means, and how it changes. For example, it can be revealing to look at how some people use a particular word, or terms of a particular local dialect. This can show their upbringing and life history, or influences from other people and workplace culture.

◆ *Socially placing language*

It can also be interesting to look at non-verbal communication: people's facial expressions and hand movements are an important part of the context of what people say. But language is also a dynamic part of culture, and the meanings behind terms change over time. How we understand terms like 'fake news' or 'immigration' or 'freedom' tells us a lot, not just about the times we live in or the people using those terms, but groups that have power to change the discourse on such issues. We will look at all

◆ *Language as an important medium*

these as separate types of discourse analysis. But first it's important to understand why language is so important; it is much more than just a method of communication.

◆ *Beyond communication*

Language is more than a neutral way of communicating, it's deeply connected with actions and personal identity, and can even shape the way we think about and understand the world. Who we are, what we do, and our beliefs are all shaped by the language we use. This makes it a very rich avenue for analysis.

4.1.8.1 Types of Discourse Analysis

Just like so many blanket qualitative terms, there are a lot of different practices and types of analysis called 'discourse' analysis, and many different ways of applying them. Hodges, identifies 3 meta-types, broadly going from more face-value to conceptual analysis:

◆ *Meta Types*

- ◆ Formal linguistic (basically looking at words/phrases, grammar or semantics)
- ◆ Empirical (social practice constructed through text)
- ◆ Critical (language constructing and limiting thought)

Tannen categories three similar broad types of analysis, again becoming increasingly socially conceptual:

- ◆ language use
- ◆ anything beyond the sentence
- ◆ a broader range of social practice that includes non-linguistic and non-specific instances of language

When you do discourse analysis, you might focus on:

- ◆ The purposes and effects of different types of language
- ◆ Cultural rules and conventions in communication
- ◆ How values, beliefs and assumptions are communicated
- ◆ How language use relates to its social, political and historical context

Discourse analysis is a common qualitative research

◆ *Critical discourse analysis*

method in many humanities and social science disciplines, including linguistics, sociology, anthropology, psychology and cultural studies. It is also called critical discourse analysis.

4.1.8.2 Uses of Discourse Analysis

Conducting discourse analysis means examining how language functions and how meaning is created in different social contexts. It can be applied to any instance of written or oral language, as well as non-verbal aspects of communication such as tone and gestures.

Materials that are suitable for discourse analysis include:

- ◆ Books, newspapers and periodicals
- ◆ Marketing material, such as brochures and advertisements
- ◆ Business and government documents
- ◆ Websites, forums, social media posts and comments
- ◆ Interviews and conversations
- ◆ By analyzing these types of discourse, researchers aim to gain an understanding of social groups and how they communicate.

◆ *Aiding discourse analysis*

◆ *Contextual meaning of language*

How is discourse analysis different from other methods? Unlike linguistic approaches that focus only on the rules of language use, discourse analysis emphasizes the contextual meaning of language. It focuses on the social aspects of communication and the ways people use language to achieve specific effects (e.g. to build trust, to create doubt, to evoke emotions, or to manage conflict). Instead of focusing on smaller units of language, such as sounds, words or phrases, discourse analysis is used to study larger chunks of language, such as entire conversations, texts, or collections of texts. The selected sources can be analyzed at multiple levels.

4.1.9 Folklore

The folkloric materials are signs of the history of a society at present. The epics, historical anecdotes and proverbs give clues of historical events. Even folk music and names can help a researcher if the researcher has the ability to evaluate them. As known, sometimes the statesmen evade some documents, which may contain unpleasant information to be put on the shelves of archives. In this case, the folkloric material can

◆ *Alternate source of history*

be a very vital source of documents for a researcher to find out a historical event. Folklore generally refers to cultural expressions, such as narratives, jokes, beliefs, proverbs, legends, myths, music, songs, dances, costumes, food, and festivals, through which individuals and groups shape and disseminate a shared identity. There is, however, hardly any consensus among folklorists on either how to define folklore or how to explain the issues with the meaning and the function of it.

◆ *studying folklife through folklore*

The interest in folklore emerged primarily out of the Romantic nationalism of the early nineteenth century. Enthusiastic intellectuals, amateurs, and artists started to collect different kinds of folklore material in order to be able to study various aspects of 'the folk' and folk-life. During this early period, folklore was viewed as 'the lore' - the materials of folklore - of 'the folk' - the people who utilize the materials.

◆ *Dying rural group*

The discoverers of folklore identified the 'folk' as peasant society or rural groups, regarding them as the main carriers of distinct traditions that were slowly dying out due to urbanization and industrialization during the transition to modernity.

◆ *Perceived as primitive*

The bourgeois nostalgia for the 'paradise lost' motivated the efforts to examine and preserve different aspects of folk-life. In some countries, the rising interest in folklore studies was also motivated by the eighteenth-century Enlightenment. Within this perspective, the folk and their traditions were regarded as primitive and therefore had to be studied in order to be transformed. Early folklorists focused primarily on oral traditions, such as ballads, folktales, epics, and sagas, and how these were transmitted within rural communities.

◆ *Oral history*

Kirshenblatt-Gimblett defines folklore as "the study of a particular mode of cultural Production", which focuses more on oral tradition and less on inaugural reception. The power of oral performance is based on the authority, poetics and charm of the spoken word transmitted from mouth to ear in traditional society. Folklore genres, means ear in traditional societies.

4.1.10 Action Research

Action research is a philosophy and methodology of research generally applied in the social sciences. It seeks

◆ *Research leading to social action*

transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection. Kurt Lewin, then a professor at MIT, first coined the term “action research” in 1944. In his 1946 paper *Action Research and Minority Problems* he described action research as “a comparative research on the conditions and effects of various forms of social action and research leading to social action” that uses “a spiral of steps, each of which is composed of a circle of planning, action and fact-finding about the result of the action”.

◆ *Research for change*

Action research is an interactive inquiry process that balances problem-solving actions implemented in a collaborative context with data-driven collaborative analysis. After six decades of action research development, many methods have evolved that adjust the balance to focus more on the actions taken or more on the research that results from the reflective understanding of the actions. This tension exists between those who are more driven either by the researcher’s agenda or by participants; those who are motivated primarily by instrumental goal attainment or by the aim of personal, organizational or societal transformation; and 1st-, to 2nd-, to 3rd-person research, that is, my research on my own action, aimed primarily at personal change; our research on our group (family/team), aimed primarily at improving the group; and ‘scholarly’ research aimed primarily at theoretical generalization or large-scale change.

◆ *Problem solving and knowledge creation*

Action research challenges traditional social science by moving beyond reflective knowledge created by outside experts sampling variables, to an active moment-to-moment theorizing, data collecting and inquiry occurring in the midst of emergent structure. “Knowledge is always gained through action and for action. From this starting point, to question the validity of social knowledge is to question, not how to develop a reflective science about action, but how to develop genuinely well-informed action – how to conduct an action science”. In this sense, engaging in action research is a form of problem-based investigation by practitioners into their practice, thus it is an empirical process. The goal is both to create and share knowledge in the social sciences.

◆ *Learning and problem solving from within the community*

4.1.11 Participatory Rural Appraisal - PRA

Participatory Rural Appraisal, an approach towards empowering the poor and marginalized communities, offers a basket of techniques. It helps to learn from as well as with

the community or villagers. A set of principles, a process of communicating and interacting with the participants (villagers/ community people) using a set of methods for seeking their participation. In PRA, the use of local graphic representations created by the community that legitimize local knowledge and promote participants' empowerment.

4.1.11 Stages of Participation

Generally, the following five stages are followed for PRA in qualitative method

1st stage: outside experts tells and manipulates the villagers

2nd stage: the outside experts inform participants

3rd stage: the outside experts and participants consult each other to make decision together

4th stage: they act together

5th stage: the outside experts delegate authority and support to the participants

4.1.11 Key Techniques for Participatory Rural Appraisal

- ◆ Interviews/ discussions: Individuals, households, focus groups, community meetings
- ◆ Mapping: community maps, personal maps, institutional maps
- ◆ Ranking: problem ranking, preference ranking, wealth ranking
- ◆ Trend Analysis: historical diagramming, seasonal calendars, daily activity charts

1. Participatory Mapping

Participatory mapping (social mapping, historical mapping, natural mapping, resource mapping, etc.) is used to learn about physical and socio-economic conditions of study by the villagers/ community. A suitable place is selected for this and sticks, stones, seeds, pens, etc. are provided to them. The researchers usually sit back and watch mapmaking without any interruption after giving the initial instructions.

2. Body Mapping

Body mapping represents part or all of the body, drawn by women/men on paper or on the ground from the

◆ *Social mapping*



◆ *Interpreting reproductive and contraceptive functions of the body*

villagers/ community people. Body mapping is usually used to examine their knowledge about reproduction or their interpretations of non-indigenous contraception and many more things related to body organism by using people's own representations of their bodies as a starting point from which to explore particular medical issues. It can facilitate a less directive interviewing style than would otherwise be possible. People's own classifications and visual descriptions can be used as a basis for probing. Ideas and issues can be explored by body mapping which may be more difficult to access through verbal discussion alone.

3. Wealth Ranking

◆ *Wellbeing indicators*

Wealth ranking is used to learn about wealth or wellbeing ranking of the villagers. The facilitators describe wealth ranking tools and techniques in local terms to them. Stratification may be used as a basis for sampling households or targeting poor households.

4. Preference Ranking

◆ *Preferential*

The preference ranking is used to learn participants' assessment on different items. It is an introductory exercise in a group discussion for revealing differences among group members.

4.1.12 Participatory Learning and Action - PLA

◆ *Studying local communities*

Participatory Learning and Action (PLA) is a type of qualitative research, which can be used to gain an in-depth understanding of a community or situation. It is widely used in work involving local communities. PLA is a participatory methodology, and should always be conducted with the full and active participation of community members.

◆ *Analyzing from within*

The main purpose of PLA is to support people within communities to analyze their own situation, rather than have it analyzed by outsiders, and to ensure that any learning is then translated into action. PLA was originally called Participatory Rural (or Rapid) Appraisal (PRA). It became very popular in the 1980s and 1990s, and has since kept its popularity with many CSOs. PRA was originally designed for use during appraisals and needs assessments in rural areas.

However, it can be used at any stage of the project cycle

◆ *Used in urban setting as well*

- design, planning, monitoring, review and evaluation - and is now used in urban as well as rural areas. The name was changed to Participatory Learning and Action (PLA) to reflect its broader application, and to emphasize that the process is designed to help set in motion locally-led action.

4.1.12.1 Principles of PLA

◆ *Diverse and participatory method*

1. PLA is designed to seek out multiple perspectives and embrace diversity. It is based around group analysis and learning.
2. It is designed to be flexible, adaptive and innovative, rather than conforming to top-down or rigid methods of data collection and analysis.
3. PLA is designed to encourage people to discuss issues, errors and mistakes in a non-judgmental environment
4. High ethical standards should always be applied within the PLA.
5. PLA facilitators should act as catalysts rather than as trainers or teachers
6. The languages and concepts of PLA should reflect the way a community thinks, rather than reflecting how those seeking the information think. This means the language and concepts of PLA should be appropriate to the local culture and context.
7. PLA is designed to seek out the voices and opinions of the most marginalized communities and people, such as children, women, people of lower caste or status, or people with disabilities
8. PLA is based around triangulation. This means accessing information about the same things in different ways, and from different sources, to ensure it is reliable, and that different viewpoints are recognized.
9. PLA is facilitated by multi-disciplinary teams, including people with different skills and different views. Teams should include members of the communities as well as outsiders.
10. PLA is designed to provide insights and understanding that helps guide community development, rather than providing evidence that would be seen as rigorous in an academic article.

Summarised Overview

The unit provides an overview of various qualitative research methods commonly used in sociology. It discusses techniques like observation, case studies, content analysis, narrative inquiry, discourse analysis, folklore studies, focus group discussions, oral history, genealogy, and participatory methods like participatory rural appraisal and participatory learning and action. The file explains each research method, its main characteristics, uses, advantages and limitations. It highlights how these methods help researchers gather in-depth, contextual insights into social phenomena through techniques like interviews, focus groups, mapping, analysis of texts and documents, and immersive observation. The choice of methods depends on the research questions, target population, and resources available. Using multiple methods allows triangulation and helps offset the limitations of any single approach. Overall, the unit offers a useful introduction to the range of qualitative techniques that help sociologists systematically investigate social processes, relationships, institutions, cultures and experiences.

Assignments

1. Choose two qualitative research methods and compare their key characteristics. What are their respective advantages and limitations? In what kinds of sociological research would each be most appropriate?
2. You are researching the culture and social practices surrounding teenage pregnancy in a particular community. Recommend three appropriate qualitative methods you could use for this research and explain why they would be suitable.
3. What is triangulation in qualitative sociological research? Why is it considered important when using qualitative methods? Provide at least two examples of how triangulation could be incorporated into a qualitative study.
4. Discuss the key principles and process involved in conducting participatory rural appraisal (PRA) as a qualitative research method. What are some ethical considerations when using PRA?
5. Select one of the qualitative methods covered in the unit (e.g. focus groups, discourse analysis, case studies) and discuss how you would apply it to research a specific sociological topic of your choice. Explain the process you would follow and how the method would help generate insights.

Suggested Reading

1. Gorden, R. L. (1980). *Interviewing: Strategy, Techniques, and Tactics*. Homewood, IL: Dorsey Press.
2. Hodges, A. (2008). *Discourse Analysis*. In L. M. Given (Ed.), *The SAGE Encyclopedia of Qualitative Research Methods* (pp. 217-220). Thousand Oaks, CA: SAGE Publications, Inc.
3. Kvale, S. (2007). *Doing Interviews*. London: SAGE Publications Ltd.
4. Leech, N. L., & Onwuegbuzie, A. J. (2008). *Qualitative Data Analysis: A Compendium of Techniques for School Psychology Research and Beyond*. *School Psychology Quarterly*, 23(4), 587–604. <https://doi.org/10.1037/1045-3830.23.4.587>
5. Morgan, D. L. (1988). *Focus Groups as Qualitative Research* (Vol. 16). Sage publications.
6. Tannen, D. (2015). *Discourse Analysis – What Speakers do in Conversation*. *Linguistics*, 530, 1-10.

Reference

1. Yin, R. K. (2017). *Case Study Research: Design and Methods* (6th ed.). Thousand Oaks, CA: SAGE Publications, Inc.
2. Berger, R. (2015). *Now I See It, Now I Don't: Researcher's Position and Reflexivity in Qualitative Research*. *Qualitative Research*, 15(2), 219–234. <https://doi.org/10.1177/1468794112468475>
3. Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.). SAGE Publications, Inc.
4. Given, L. M. (Ed.). (2008). *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, CA: SAGE Publications, Inc.
5. Lapan, S. D., Quartaroli, M. T., & Riemer, F. J. (2011). *Qualitative Research: An Introduction to Methods and Designs*. John Wiley & Sons.
6. Saldana, J. (2015). *The Coding Manual for Qualitative Researchers*. SAGE Publications Ltd.
7. Seidman, I. (2019). *Interviewing as Qualitative Research: A Guide for Researchers In Education and The Social Sciences* (5th ed.). Teachers College Press.



Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.

SGOU



Qualitative Data Analysis

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ summarize key qualitative methods including thematic analysis, narrative analysis, and analytic induction
- ◆ compare thematic and narrative analysis in terms of their focus, data collection, analysis, and outputs
- ◆ evaluate the advantages and limitations of thematic analysis, narrative analysis, and analytic induction

Background

Qualitative data analysis is different from that of quantitative data analysis, the later focuses on finding meaning from the numerical data using statistical measures whereas the former that is qualitative data analysis tries to find data and meaning from the non-numerical data, it aims to discover the why and how trying to give a deeper understanding to peoples emotions and situations. Qualitative data analysis is inductive and focuses on meaning, approaches in analyzing data are diverse with different purposes and ontological and epistemological underpinnings. An appropriate strategy must be chosen to undertake qualitative analysis. This unit shall discuss various strategies of qualitative analysis such as thematic analysis, narrative analysis, analytic induction, coding of qualitative data and the different software that assist in qualitative data analysis.

Keywords

Data, Analysis, Coding, Qualitative data, Analysis software



4.2.1 Thematic Analysis

◆ *Identifying common theme and coding*

Thematic analysis is a qualitative research method that involves identifying common themes or patterns within qualitative data sources like interviews, field notes, and documents. It goes beyond merely summarizing data to interpret and make sense of key themes and their meaning. Themes emerge through identifying repetition, emphasis, and recurrence of ideas. Coding is used to categorize data into meaningful groups and identify themes. Coding breaks down the data into small chunks of meaning that are compared and contrasted. Thematic analysis is flexible and can be used with different qualitative approaches like grounded theory or discourse analysis. It is mainly inductive, with themes emerging from the data, but can also incorporate theories as deductive codes. Thematic analysis provides a rich, detailed, yet complex description and interpretation of the data and key themes. This generates insights related to the research questions. It is important that the identified themes directly reflect the content, rather than the researcher's preconceptions. A robust thematic analysis is grounded in the original data. In summary, thematic analysis identifies, analyzes and interprets key patterns or themes within qualitative data to understand the studied phenomenon.

Advantages

1. Flexibility - can be used within different frameworks and with various types of qualitative data
2. Accessible to researchers with little or no experience of qualitative research
3. Results are generally accessible/understandable to educated general public
4. Can summarize key features of a large body of data and offer a rich description
5. Can highlight similarities and differences across the data set
6. Can generate unanticipated insights

7. Allows for social as well as psychological interpretations of data
8. Can be useful for producing qualitative analyses suited to informing policy development

Disadvantages

1. Flexibility can lead to inconsistency and lack of coherence if not applied systematically
2. Risk of selective reporting of themes only partially representing data
3. Difficult to go beyond surface meanings and understand latent or implicit meanings
4. Danger of researcher's preconceptions influencing analysis and interpretation
5. Does not allow broader theorization unlike approaches like grounded theory
6. Lacks depth for understanding social processes or ideologies shaping the data
7. Contextual nuances may be lost if thematic analysis conducted on translated data
8. Difficult to ascertain relevance of themes across the data set
9. Hard to develop nuanced accounts of particular themes compared to narrative analysis
10. May appear descriptive if researcher fails to interpret broader meanings and implications of themes

4.2.1.1 Narrative Analysis

Narrative analysis or narrative inquiry is a qualitative research approach whereby the researcher analyzes the stories people create, engaging in an inquiry of asking a given question of the narrative 'texts' for a given purpose. This approach can help us to understand how people are representing themselves, or their experiences, to themselves and to others. It comes under the umbrella of social constructionism. Narrative analysis is a qualitative research approach that involves studying the stories or narratives told by individuals about their experiences. It aims to

◆ *Analyzing narratives for a specific purpose*



interpret the meaning of people's narratives rather than just summarizing their content.

Key features of narrative analysis

1. Focuses on collecting and analyzing first-person accounts or stories about experiences, events or actions. This could be through interviews, diaries, photographs, blogs, etc.
2. Views people as 'storytellers' and stories as embodiments of people's experiences rather than factual reports.
3. Pays close attention to language and the way a narrative is constructed and conveyed by the storyteller.
4. Sees stories as contextual, influenced by time, place, culture, etc.
5. Aims to elicit detailed, nuanced stories through open-ended questioning. Researchers may collaborate with participants.
6. Analyzes stories by looking at structure, plot, imagery, key events, gaps, contradictions, themes, etc.
7. Interprets the meaning of stories, what they reveal about the storyteller, their culture, identity, motivations etc.
8. Write-ups retain some of the original narrative excerpts interwoven with analytical commentary.

◆ *Analyzing stories and interpreting meaning*

◆ *Perspectives on experiences*

Narrative analysis is useful for understanding individuals' perspectives, identity development, psychological motivations, cultural influences, etc. It provides insights into how people make sense of experiences in their lives. However, it relies heavily on subjectivity in storytelling and interpretation. The small number of narratives makes generalization difficult.

Advantages

1. Provides rich, detailed insights into personal perspectives and experiences
2. Allows silenced or marginalized voices to be heard

3. Sensitive to the contexts and cultures shaping people's narratives
4. Can illuminate identity development and motivations
5. Retains the sequence and complexity of lived experiences
6. Powerful data collection through open-ended interviewing
7. Meaningful collaboration possible between researcher and participant
8. Captures nuances through attention to language and narrative style
9. Can complement other forms of qualitative research

Disadvantages

1. Findings cannot be generalized due to small samples
2. Reliant on subjectivity in storytelling and interpretation
3. Difficult to validate the 'truth' of narratives
4. Needs highly skilled interviewers to elicit detailed narratives
5. Analysis and interpretation are time-consuming
6. Hard to draw causal inferences or predictive theories
7. Requires reflexivity from researchers about their own biases
8. Ethical issues around anonymity, confidentiality, and ownership of stories
9. Participant voices filtered through researcher's own narrative
10. Danger of prioritizing certain narratives over others

4.2.1.2 Difference Between Thematic and Narrative Analysis

Here is a comparison of thematic and narrative analysis in a tabular format:



Table no: 4.2.1 Differentiating between Thematic and Narrative Analysis

Basis of Comparison	Thematic Analysis	Narrative Analysis
Focus	Identifying, analyzing and reporting patterns and themes across a data set	Studying in detail individuals' stories about their experiences
Data Collected	Any qualitative data like interviews, observations, documents, etc.	First-person accounts of experiences e.g. through interviews
Unit of Analysis	Codes and themes across the data set	Individual narratives/ stories
Objective	Describe and interpret key patterns of meaning	Interpret the meaning and context of each narrative
Role of language	Important only insofar as it leads to themes	Central focus, how narratives are constructed and conveyed
Context	May or may not be explicitly analyzed	Vital to understand narratives in context
Approach	Mainly inductive approach	Generally inductive but shaped by research questions
Sampling	Purposive sampling for relevant data	Small purposive sample of individuals
Analysis	Coding data, cataloging codes, comparing themes	Analyzing structure, imagery, gaps in narrative etc.
Output	Thematic description of patterns and interpretive commentary	Stories interwoven with analytical insights
Generalizability	Results can potentially be generalized	Findings relate to particular narratives

◆ *Finding patterns vs Evaluating perspectives*

In summary, thematic analysis looks for patterns across qualitative data while narrative analysis dives deep into individual stories to understand personal perspectives and meanings.

◆ *Causal explanation for social phenomena*

4.2.2 Analytic Induction

Analytic induction is a research strategy developed by sociologist Florian Znaniecki in 1934. It aims to systematically develop causal explanations for social phenomena, as opposed to just finding probabilistic correlations like statistical analysis does. Znaniecki argued that science should discover causal universals, and analytic induction is the means to do this in social science. In analytic induction, the researcher first studies a small number of cases looking for similarities that could indicate common causal factors. A hypothetical explanation is developed. More cases are then examined, and if any don't fit the hypothesis, either the hypothesis is revised to fit all cases, or the definition of the phenomenon is refined, if some cases don't represent a causally homogeneous category. This continues until no anomalies emerge with new cases.

◆ *Finding necessary explanation and not causal*

The approach was further developed by Alfred Lindesmith, Donald Cressey and Howard S. Becker in studies of opiate addiction, embezzlement and marijuana use. It has been critiqued, notably by W.S. Robinson who argued it can only find necessary not sufficient causal conditions. The term is also used variably. Analytic induction is similar to but distinct from grounded theory and qualitative comparative analysis. A key feature is the potential refinement of the initial categorization and explanation of the phenomenon during the research process. In brief, analytic induction uses a systematic qualitative approach to collect data, analyze, and present findings aimed at developing causal explanations. It involves progressively redefining the target phenomenon and explanatory factors to maintain a universal relationship as new cases are examined. The research continues until no anomalies emerge.

Key Features

1. Aims to develop causal explanations of social phenomena
2. Studies a small set of cases initially to identify similarities and develop hypotheses



3. Tests hypotheses against further cases
4. Refines hypotheses or redefines phenomena to remove anomalies
5. Iterative process of examining cases, revising explanations, until no anomalies emerge
6. Emphasizes discovering causal universals rather than just correlations
7. Focuses in-depth on qualitative data rather than producing probabilistic models

Advantages

1. Can provide convincing causal accounts of social phenomena
2. Responsive to new evidence and counter examples
3. Refines categories and theories grounded in empirical cases
4. Useful for studying complex or poorly understood processes
5. Close engagement with qualitative data
6. Can complement statistical and variable-based analyses

Disadvantages

1. Difficult to isolate necessary and sufficient causes
2. Risk of confirmation bias in revising hypotheses
3. Revision can lead to trivial or obscure definitions
4. Hard to establish when explanation is finalized
5. Findings may not be generalizable beyond cases studied
6. Does not indicate probability or prevalence
7. Time and labor intensive
8. Requires transparent documentation of revisions
9. Scope of phenomena studied is narrow

◆ *Causal explanation vs Difficulty in sufficing causes*

In summary, analytic induction is an iterative approach that engages deeply with cases to develop causal explanations, but can struggle to establish sufficiency of causes and generalizability.

4.2.3 Coding

◆ *Assigning numerical for efficient analysis*

Coding refers to the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes. Such classes should be appropriate to the research problem under consideration. They must also possess the characteristic of exhaustiveness (i.e., there must be a class for every data item) and also that of mutual exclusivity which means that a specific answer can be placed in one and only one cell in a given category set. Another rule to be observed is that of unidimensionality which means that every class is defined in terms of only one concept. Coding is necessary for efficient analysis and through it the several replies may be reduced to a small number of classes which contain the critical information required for analysis.

◆ *Coding in preliminary stages*

Coding decisions should usually be taken at the designing stage of the questionnaire. This makes it possible to precode the questionnaire choices and which in turn is helpful for computer tabulation as one can straight forward key punch from the original questionnaires. But in case of hand coding some standard method may be used. One such standard method is to code in the margin with a colored pencil. The other method can be to transcribe the data from the questionnaire to a coding sheet. Whatever method is adopted, one should see that coding errors are altogether eliminated or reduced to the minimum level.

4.2.4 Analytic Memos

◆ *Interaction with research data*

Analytical memos are brief notes about the thoughts, ideas, and questions that come to the researcher's mind during data gathering, coding, or data analysis. Qualitative researchers use analytical memos to note down their reflections and code them as additional data for their research. The memo's content may be thoughts about the collected data, plans for their study, and discoveries during the research, or whatever they feel is worth articulating. In simple terms, analytical memos are recordings of the conversations you are having with your research data. This process inspires critical thinking and helps you reflect on your data and

challenge your assumptions. There are no standard formats or styles for writing analytical memos- you can write them in whatever style you like, informal, formal, or conversational.

4.2.4.1 Importance of Analytical Memos in Qualitative Research

Analytical memos are an essential part of qualitative inductive logic. Here are some of the reasons why memoing is important in research:

1. It allows the researcher to reflect and record their thoughts on their data, coding process, coding choices, data analysis methods, and more.
2. Analytical memos can help you remember things you might forget if not written down.
3. Researchers use analytical memos to keep a record of their decision-making trail, i.e., keeping records of the decisions made in each phase of the study.
4. Analytical memos make it easy to explore a phenomenon, reflect on the data available, compare data, examine relationships, and challenge interpretations.
5. Although analytical memos are usually written for the researcher's eye only, you can use them to share your ideas or get opinions about your study from other persons.
6. Analytical memos can provide supporting documentation for your research.

◆ Part of qualitative inductive logic

4.2.5 Qualitative Data Analysis Software

Qualitative data analysis (QDA) relies on various methods for systematizing, organizing, and analyzing non-numeric data. Today, researchers increasingly make use of computer software for their qualitative data analysis (QDA). Qualitative data analysis software (QDAS) is used in many academic fields, such as sociology, psychology, political science, medicine, and educational sciences, and it is also a popular tool for businesses and market researchers. QDA software such as MAXQDA serves to provide insights into qualitative data sets without suggesting interpretations. Based on a content analysis, the researcher can draw conclusions about the respective object of research (e.g. interview data). While qualitative data analysis software, in

◆ *Software assisted qualitative analysis*

general, does not itself suggest or require a specific method of qualitative data analysis, it provides a broad choice of tools to facilitate a profound, systematic analysis of many types of media, regardless of the chosen method of analysis. Software tools for qualitative data and text analysis allow for easy sorting, structuring, and analyzing of large amounts of text or other data and facilitate the management of the resulting interpretations and evaluations.

◆ *Accommodating and analyzing different kinds of qualitative data*

In addition to the traditional use of textual data in the social sciences, there is a trend toward the inclusion and analysis of image files, audio and video materials, as well as of social media data. Therefore, state-of-the-art qualitative data analysis software MAXQDA has a high data capacity and can handle more file types than you think – text document, Excel table or PDF file, a picture, audio or video file, an SPSS or bibliographic record, even a tweet or YouTube comments. The first software programs allowing researchers to use a computer-based tool for their qualitative analysis was developed in the mid-1980s. Today, qualitative data analysis software is an established tool in the field of qualitative research. MAXQDA is one of the pioneer software programs in this field. In 1989, MAXQDA (named “MAX” back then) was one of the first QDA software programs worldwide and the first one to be released in Germany. Since then, MAXQDA has become one of the world’s leading professional tools for qualitative data analysis.

4.2.5.1 Key features of QDAS

Qualitative data analysis software (QDAS) refers to specialized computer programs designed to assist with the analysis of non-numerical, textual, audio or visual data generated from qualitative research methods.

1. Help organize, manage and code qualitative data, such as interview transcripts, field notes, documents, images, videos, etc.
2. Provide tools for indexing segments of data to particular themes, categories or codes.
3. Allow annotating, linking and memos to be attached to data segments.
4. Support complex Boolean search queries to retrieve coded data segments.
5. Generate codebooks and code frequency counts.

◆ *Non numerical analysis*

6. Compare coding between multiple researchers.
7. Offer visual representations of codes/themes.
8. Help manage large volumes of qualitative data.
9. Maintain links to the original data source.
10. Examples of software packages include ATLAS.ti, NVivo, MAXQDA, Dedoose.

◆ *Facilitating analysis*

QDAS does not actually analyze or interpret the data itself, but facilitates human analysis and interpretation. It enhances efficiency and transparency of qualitative analysis. Critics argue it distances researchers from the data. Usage requires training and an understanding of qualitative methods. QDAS should complement, not replace, human analysis skills.

Summarised Overview

This unit covers key methods and concepts in qualitative data analysis, including strengths and limitations of thematic, narrative, and analytic induction approaches, the use of coding and memos, and an overview of qualitative analysis software. Thematic analysis is a qualitative method that identifies, analyzes, and reports patterns and themes within qualitative data. It interprets key themes while going beyond just summarizing data. Themes emerge through coding and finding repetition, emphasis, and recurrence in the data. Thematic analysis is flexible and can be used with various qualitative approaches, mainly inductively with themes emerging from the data. It provides a rich description of the data and themes, generating insights related to research questions. However, flexibility can lead to inconsistency if not applied systematically. Narrative analysis studies the stories individuals tell about their experiences to interpret their meaning. It focuses on collecting first-person accounts through interviews, etc. and analyzes them by examining structure, events, language use, etc. Narrative analysis provides detailed insights into perspectives and experiences but has limitations around subjectivity and difficulties in validating stories and generalizing findings. Analytic induction uses a systematic qualitative approach to develop causal explanations of social phenomena. It identifies similarities among cases to form hypotheses, then tests them against further cases, revising explanations until no anomalies occur. However, analytic induction struggles to isolate necessary and sufficient causes. Coding categorizes qualitative data into groups and classes to identify themes. Coding decisions are made early when designing questionnaires. Analytical memos record thoughts during data gathering and analysis. Qualitative data analysis software helps organize, manage, code, and visualize qualitative data. It enhances analysis but does not replace human analytical skills.

Assignments

1. Explain the key features of thematic analysis and discuss advantages and limitations of this method.
2. Compare and contrast thematic analysis and narrative analysis in terms of their core focus, data collection, analysis techniques, and research outputs.
3. What is analytic induction? Explain the key features of this approach and discuss two advantages and two limitations.
4. Why is coding an important process in qualitative data analysis? Briefly explain two different approaches to coding qualitative data.
5. What is the role of qualitative data analysis software? Discuss key features of QDAS and one potential limitation of relying on such software.

Suggested Reading

1. Bazeley, P., & Jackson, K. (Eds.). (2013). *Qualitative Data Analysis with Nvivo*. Sage Publications Limited.
2. Znaniecki, F. (1934). *The Method of Sociology*. Rinehart & Company.
3. Given, L. M. (Ed.). (2008). *The Sage Encyclopedia of Qualitative Research Methods*. Sage Publications.

Reference

1. Braun, V., & Clarke, V. (2006). *Using Thematic Analysis in Psychology*. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
2. Riessman, C. K. (1993). *Narrative Analysis*. *Qualitative Research Methods*, 30.
3. Saldaña, J. (2015). *The Coding Manual for Qualitative Researchers*. Sage.



Space for Learner Engagement for Objective Questions

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SGOU



Complementarities of the Various Research Methods

Learning Outcomes

By the end of this unit, the learner will be able to:

- ◆ understand the different types and purpose of triangulation in enhancing research validity
- ◆ recognize the major mixed methods research designs and their components
- ◆ appreciate the continuity and interdependence between quantitative and qualitative research approaches

Background

Mixed research is a collaboration between quantitative and qualitative research methods and techniques, it combines the elements from both. Mixed methods allows to gain a stronger insight than a standalone quantitative or qualitative study as it makes possible for inductive and deductive thinking to come together. Mixed methods is employed in behavioral and social sciences research to get an insight into the multidisciplinary setting of a complex society. Mixed methods research does not imply just the use of both quantitative and qualitative research methods but rather how the data collected using these techniques can be brought together to reach a cohesive conclusion. By employing mixed research methods, the researcher is able to obtain different perspectives to gain validation, build comprehensive understanding, provide in depth explanation to statistical results and have better contextualized measures.

Keywords

Mixed methods, Tools, Quantitative, Qualitative, Research design



4.3.1 Triangulation

It means using multiple datasets, methods, theories and/or investigators to address a research question. It's a research strategy that can help you enhance the validity and credibility of your findings. It is the use of more than one approach to the research question in order to enhance confidence in ensuring findings. It is popularly used in sociology. "The concept of triangulation is borrowed from navigational and land surveying techniques that determine a single point in space with the convergence of measurements taken from two other distinct points. Triangulation is mainly used in qualitative research, but it's also commonly applied in quantitative research. The purpose of triangulation in qualitative research is to increase the credibility and validity of the results. Several scholars have aimed to define triangulation throughout the years.

◆ *Combination of research methods*

◆ *Validating and enriching the data of diverse human behavior*

- ◆ Cohen and Manion define triangulation as an "attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint".
- ◆ Altrichter et al. contend that triangulation "gives a more detailed and balanced picture of the situation".
- ◆ According to O'Donoghue and Punch, triangulation is a "method of cross-checking data from multiple sources to search for regularities in the research data".

4.3.1.1 Types of Triangulation

Denzin extended the idea of triangulation beyond its conventional with the research methods and designs. He distinguishes four forms of triangulation. They are:

1. Data triangulation: Collect both quantitative data (e.g. surveys) and qualitative data (e.g. interviews, focus groups) about social media use and mental health.
2. Investigator triangulation: Have two or more researchers independently analyze the interview transcripts and survey data and compare their findings.

◆ *Various forms of triangulation*

3. Theory triangulation: Analyze the data using different theoretical frameworks like social comparison theory and social support theory.
4. Methodological triangulation: Conduct surveys with a representative sample as well as in-depth interviews with selected individuals. Observe social media usage in a natural setting.
5. Disciplinary triangulation: Consult both psychology and sociology literature and experts to gain disciplinary perspectives.
6. By triangulating the data sources, theories, methods, investigators and disciplines, the researcher can gain a more comprehensive understanding of this complex topic from different viewpoints and validate their findings in multiple ways. This strengthens the reliability of the overall conclusions drawn.

4.3.1.2 Advantages of Triangulation

1. Reduce bias that comes from using a single method, theory, or investigator
2. Enhance validity by approaching the same topic with different tools
3. Providing a clear understanding of the problem.
4. Using several methods together also helps to rule out rival explanations.
5. Establish credibility by giving you a complete picture of the research problem

4.3.1.3 Disadvantages of Triangulation

1. It's time-consuming and labor-intensive, often involving an interdisciplinary team.
2. Your results may be inconsistent or even contradictory.
3. The potential conflicts between different investigations, theories, hypotheses and methods.

4.3.2 Mixed Research

Mixed methods research can be defined as research projects that bring together results from both qualitative and quantitative studies. The two primary qualitative

◆ *Use of both qualitative and quantitative research methods*

methods used are participant observation and open-ended interviewing, and the two most common quantitative methods are surveys and program interventions. All four of these techniques are widely used by sociologists, but the combination of qualitative and quantitative methods remains relatively rare within the field. Mixed methods research is often used in the behavioral, health, and social sciences, especially in multidisciplinary settings and complex situational or societal research. Mixed methods research may be the right choice if your research process suggests that quantitative or qualitative data alone will not sufficiently answer your research question. There are several common reasons for using mixed methods research:

◆ *Richer narratives and strengthening of research premises*

- ◆ **Generalizability:** Qualitative research usually has a smaller sample size, and thus is not generalizable. In mixed methods research, this comparative weakness is mitigated by the comparative strength of “large N,” externally valid quantitative research.
- ◆ **Contextualization:** Mixing methods allows you to put findings in context and add richer detail to your conclusions. Using qualitative data to illustrate quantitative findings can help “put meat on the bones” of your analysis.
- ◆ **Credibility:** Using different methods to collect data on the same subject can make your results more credible. If the qualitative and quantitative data converge, this strengthens the validity of your conclusions. This process is called triangulation.

4.3.2.1 Mixed Methods Research Designs

There are different types of mixed methods research designs. The differences between them relate to the aim of the research, the timing of the data collection, and the importance given to each data type.

While you design your mixed methods study, also keep in mind:

◆ *Dictating research design*

- ◆ Your research approach (inductive vs deductive)
- ◆ Your research questions
- ◆ What kind of data is already available for you to use
- ◆ What kind of data you’re able to collect yourself

4.3.2.2 Types of Mixed Methods Designs

1. Convergent parallel

◆ *Parallel data collection*

In a convergent parallel design, you collect quantitative and qualitative data at the same time and analyze them separately. After both analyses are complete, compare your results to draw overall conclusions.

2. Embedded

◆ *Collection and analysis of both at the same time*

In an embedded design, you collect and analyze both types of data at the same time, but within a larger quantitative or qualitative design. One type of data is secondary to the other. This is a good approach to take if you have limited time or resources. You can use an embedded design to strengthen or supplement your conclusions from the primary type of research design.

3. Explanatory sequential

◆ *Collection and analysis of quantitative data first*

In an explanatory sequential design, your quantitative data collection and analysis occur first, followed by qualitative data collection and analysis. You should use this design if you think your qualitative data will explain and contextualize your quantitative findings.

4. Exploratory sequential

◆ *Collection and analysis of qualitative data first*

In an exploratory sequential design, qualitative data collection and analysis occur first, followed by quantitative data collection and analysis. You can use this design to first explore initial questions and develop hypotheses. Then you can use the quantitative data to test or confirm your qualitative findings.

4.3.2.3 Advantages of Mixed Methods Research

- ◆ “Best of both worlds” analysis. Combining the two types of data means you benefit from both the detailed, contextualized insights of qualitative data and the generalizable, externally valid insights of quantitative data. The strengths of one type of data often mitigate the weaknesses of the other. For example, solely quantitative studies often struggle to incorporate the lived experiences of your participants, so adding qualitative data deepens and enriches your quantitative results.

◆ *Utilizing and strengthening research by use of both data*

- ◆ Solely qualitative studies are often not very generalizable, only reflecting the experiences of your participants, so adding quantitative data can validate your qualitative findings.
- ◆ Method flexibility- Mixed methods are less tied to disciplines and established research paradigms. They offer more flexibility in designing your research, allowing you to combine aspects of different types of studies to distill the most informative results.
- ◆ Mixed methods research can also combine theory generation and hypothesis testing within a single study, which is unusual for standalone qualitative or quantitative studies.

4.3.2.4 Disadvantages of Mixed Methods Research

- ◆ Workload: Mixed methods research is very labor-intensive. Collecting, analyzing, and synthesizing two types of data into one research product takes a lot of time and effort, and often involves interdisciplinary teams of researchers rather than individuals. For this reason, mixed methods research has the potential to cost much more than standalone studies.
- ◆ Differing or conflicting results: If your analysis yields conflicting results, it can be very challenging to know how to interpret them in a mixed methods study. If the quantitative and qualitative results do not agree or you are concerned you may have confounding variables, it can be unclear how to proceed.
- ◆ Due to the fact that quantitative and qualitative data take two vastly different forms, it can also be difficult to find ways to systematically compare the results.

4.3.3 Continuity and Interdependence Between Quantitative and Qualitative Research

In recent years, there has been an increase in the number

◆ *Choosing qualitative or quantitative research*

of social science research studies adopting a qualitative approach compared to a quantitative approach. Changes in the technological, sociological, and anthropological environment have led to greater complexity that requires qualitative research methods. The philosophical paradigms underlying social science research have implications for how research is conducted. The debate between quantitative and qualitative research began in the early 1960s. For many years quantitative and qualitative research methodology were seen as rivals. Distinguishing between qualitative and quantitative research can be problematic. The primary motivation for qualitative or quantitative research comes from the observation that qualitative research is subjective and aims for an in-depth description, while quantitative research is designed to ensure objectivity, generalizability, and reliability. Recently, there are acceptable levels of comfort among researchers with using quantitative methods in qualitative research in areas that cannot be fully described or reasonably interpreted through qualitative methods alone.

◆ *Advantages of using either quantitative or qualitative approach*

Quantitative research employs experimental methods and quantitative measures to critically test hypothetical generalizations. This approach, which continues to garner great interest among researchers, focuses on comprehensive theory testing rather than theory generation. Quantitative research is viewed as a useful way to measure attitudes, behaviors, preferences or beliefs using statistical analysis and generalization. The advantages of quantitative research are that the results are statistically reliable and able to be projected to the population.

There is both continuity and interdependence between quantitative and qualitative research:

1. Continuity

1. Both quantitative and qualitative research aim to describe, explain, predict or control phenomena through systematic collection and analysis of data.
2. They involve rigorous and transparent research design, data collection, analysis, interpretation and reporting procedures.
3. Concepts like validity, reliability and generalization are relevant in both approaches.
4. Standards like careful sampling, accurate measurement

◆ *Prospects of continuity in quantitative and qualitative use*

and making warranted conclusions apply to both.

5. Both produce empirical evidence that contributes to collective knowledge.
6. Findings from one approach inform the other approach.

2. Interdependence

1. Qualitative research can help generate hypotheses and develop measurement instruments for quantitative testing.
2. Quantitative research can provide generalizable results that qualitative data can help elaborate, refine and explain.
3. Using both approaches provides more comprehensive insights through in-depth, contextualized qualitative data supplemented by broad, generalizable quantitative data.
4. Mixed methods research strategically combines both approaches to leverage their complementary strengths.
5. Insights from one approach inform how the other approach is designed, implemented and interpreted.
6. Together they enhance rigor, breadth, complexity and richness of inquiry.
7. Combining approaches crosses verifies and validates findings.
8. Therefore, there is continuity in the broad aims and standards between approaches. But they also work best independently through strategic combination to provide robust, multi-faceted research.

◆ *Complementary factors*

Summarised Overview

The unit covers different research methods primarily triangulation, mixed methods, and the interdependence between quantitative and qualitative research. Triangulation refers to using multiple datasets, theories, methods, and investigators to study a research question. This enhances confidence in the findings by providing corroborating evidence from different approaches. There are four main types of triangulation: data, investigator, theoretical, and methodological. Triangulation reduces bias, enhances validity, provides a comprehensive understanding, and establishes credibility. However, it is time-consuming and results may be inconsistent. Mixed methods research combines both quantitative and qualitative data in a single study. There are four major mixed methods designs: convergent parallel, embedded, explanatory sequential, and exploratory sequential. Each has different aims, timing of data collection, and prioritization of the two data types. Reasons to use mixed methods include enhancing generalizability, adding contextualization, increasing credibility through triangulation, and allowing method flexibility. Drawbacks are increased workload, potential for conflicting results, and difficulty comparing different data forms. Quantitative research deals with numbers and statistics to test theories, while qualitative research deals with words and meanings to understand experiences. There is continuity between them in aims to understand phenomena systematically, and interdependence as they inform one another. Qualitative research can generate hypotheses and develop quantitative instruments. Quantitative research provides generalizable results that qualitative data can refine and explain. Using both leverages their complementary strengths through mixed methods.

Assignments

1. Define triangulation and discuss the four main types of triangulation used in research.
2. What are the four major mixed methods research designs? Explain the key components of each design.
3. What are three advantages and three disadvantages of using a mixed methods approach for research?
4. Explain the difference between quantitative and qualitative research methodologies.
5. Discuss the concepts of continuity and interdependence between quantitative and qualitative research. Provide at least two examples of how they inform each other.



Suggested Reading

1. Mertens, D. M. (2014). *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods*. Sage Publications.
2. Tashakkori, A., & Teddlie, C. (Eds.). (2010). *Sage Handbook of Mixed Methods in Social & Behavioral Research*. Sage.

Reference

1. Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications.
2. Denzin, N. K. (1978). *The Research Act: A Theoretical Introduction to Sociological Methods*. McGraw-Hill.
3. Johnson, R. B., & Onwuegbuzie, A. J. (2004). *Mixed Methods Research: A Research Paradigm Whose Time Has Come*. *Educational researcher*, 33(7), 14-26.

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Use of Computers in Data Representation and Report Writing

Learning Outcomes

After the completion of this unit, learner will be able to:

- ◆ summarize the key components and functions of a research report
- ◆ identify different methods for visually representing and presenting data
- ◆ explain the importance of effective data presentation and representation in statistics

Background

The strength of a research will only be as efficient as the analysis of the data collection in the due process of the research. The analyzed data maybe presented in a structured form which will be inclusive of different depictions in the form of graphical representation or descriptive inferences. For graphical representation there are various graphical and chart-based depiction, such a representation will be effective and communicative. The conclusion of a research is effectively represented through the research report which is presented through a structured format with specific heads for descriptive explanations of various findings and process of research. In this unit we shall explore the different methods for representation of data and the act of research report writing.

Keywords

Research report, Data representation, Data visualization, Report writing, Data presentation



4.4.1 Representations

◆ *Visual representation of data*

Representation refers to the visual depiction of data through graphs, charts, plots, tables, infographics, and other means that translate numbers and statistics into graphical formats. Effective data representation employs techniques like appropriate chart choice, layout, color, clarity, and simplicity to highlight key aspects of a dataset, make patterns and trends observable, and communicate insights in a concise and interpretable way. When designing data representations, key considerations include the data type, analysis goals, target audience, and principles of visual communication and ethics. Interactivity can also be incorporated through filters, tooltips, and clickable elements. Generally, representation is a crucial component of impactful data analysis, allowing better understanding and communication of findings contained within the data. Careful choice and design of representations can turn complex datasets into compelling stories and actionable insights.

4.4.1.1 Importance of Representation in Research

1. Allows effective communication of findings - Well-designed data representations concisely communicate complex results, patterns and insights from research to diverse audiences.
2. Highlights relevant relationships in data - Careful graphical encoding choices emphasize the most salient trends, contrasts and findings in the dataset to support analysis.
3. Enhances understanding and memorability - Visuals leverage human visual perception abilities, improving comprehension, learning and recall of research findings.
4. Provides an overview of large datasets - Condensing large, multilayered data into well-designed visual summaries enhances the ability to make sense of complex information.
5. Makes limitations and biases apparent - Flaws in data or collection methods can become more obvious through

◆ *Effective representation of data*

- the process of visualization and representation.
6. Encourages reproducibility - Data representations allow other researchers to better evaluate and reproduce findings from a study.
 7. Enables verification of results - Representations visualize relationships in data that support testing, confirming or disproving hypotheses and results.
 8. Sparks further questions and investigations - Effective representations provide starting points for deeper data exploration and further research inquiries.
 9. Builds engaging narratives - Data-driven visualizations and infographics make research stories more intrinsically interesting and impactful.

◆ *Aspects of visual data representation*

Data representation refers to the practice of translating datasets into visualizations like charts, graphs, maps, and other graphics that depict key aspects of the data. It involves encoding numbers, categories, geospatial information, networks, and other data types into visual variables like position, size, shape, and color to uncover and convey patterns, trends, and insights. Effective data representation adheres to principles of visual perception and graphical excellence to construct meaningful, accurate, and engaging data stories. Choices are guided by the data itself, the message being communicated, the target audience, and the medium. Both static and interactive representations can be created to enable exploration at different levels of detail. Misrepresentation through distortions, lack of context, or unethical practices should be avoided. Overall, thoughtful data representation is essential for making sense of data, uncovering insights, crafting compelling narratives, and effectively communicating findings to diverse audiences. It transforms abstract numbers into impactful visual evidence.

4.4.1.2 Graph Representation

A few of the graphical representation of data is given below:

- ◆ Bar chart
- ◆ Frequency distribution table
- ◆ Histogram
- ◆ Pie chart
- ◆ Line graph

◆ *types of representation*

1. **Bar Chart:** The bar graph represents the qualitative data visually. The information is displayed horizontally or vertically and compares items like amounts, characteristics, times, and frequency. The bars are arranged in order of frequency, so more critical categories are emphasized. By looking at all the bars, it is easy to tell which types in a set of data dominate the others. Bar graphs can be in many ways like single, stacked, or grouped.
2. **Frequency Distribution Table:** A frequency table or frequency distribution is a method to present raw data in which one can easily understand the information contained in the raw data.
3. **Histogram:** The histogram is another kind of graph that uses bars in its display. It is used for quantitative data, and ranges of values known as classes are listed at the bottom, and the types with greater frequencies have the taller bars. A histogram and the bar graph look very similar; however, they are different because of the data level. Bar graphs measure the frequency of the categorical data. A categorical variable has two or more categories, such as gender or hair color whereas histogram shows the distribution of a variable by dividing into bars.
4. **Pie Chart:** The pie chart is used to represent the numerical proportions of a dataset. This graph involves dividing a circle into different sectors, where each of the sectors represents the proportion of a particular element as a whole. Thus, it is also known as a circle chart or circle graph.
5. **Line Graph:** A graph that uses points and lines to represent change over time is defined as a line graph. In other words, it is the chart that shows a line joining multiple points or a line that shows the link between the points.
6. **Tables:** Display quantitative data in columns and rows in a structured format. Useful for looking up specific values and precise comparisons.
7. **Scatter plots:** Plot quantitative data points to assess relationship between two variables. Shows correlation and distribution.

◆ *Different modes of graphical representation*

8. **Heatmaps:** Use color intensity to represent density of data points, often over two dimensions. Highlight concentrations.
9. **Maps:** Represent geospatial data plotted over geographic regions, with embedding of other visuals like choropleth shading.
10. **Network diagrams:** Depict relationship connections and flows between nodes in a network. Reveal structure.
11. **Box plots:** Condense distribution into key quantiles to show spread, outliers and center.
12. **Word clouds:** Greater text frequency shows as larger words to highlight key terms and concepts.

4.4.1.3 General Rules for Representation of Data

We have few rules to present the information in the graphical representation effectively, and they are given below:

◆ *Guidelines for graphical representation*

1. **Suitable Title:** Ensure that the appropriate title is given to the graph, indicating the presentation's subject.
2. **Measurement Unit:** Introduce the measurement unit in the graph.
3. **Proper Scale:** To represent the data accurately, choose an appropriate scale.
4. **Index:** In the Index, the appropriate colors, shades, lines, designs in the graphs are given for better understanding.
5. **Data Sources:** At the bottom of the graph, include the source of information wherever necessary.
6. **Keep it Simple:** Build the graph in a way that everyone should understand easily.
7. **Neat:** You have to choose the correct size, fonts, colors, etc., in such a way that the graph must be a model for the presentation of the information.

4.4.2 Presentations and Writing Report

Statistical data without effective presentation can be confusing and hard to understand. Data presentation is a

◆ *Effective conveyance of data*

key aspect of statistics that helps users study and explain the data thoroughly. It involves laying out information in a clear, organized way. Data analysis and presentation have important uses in many fields like academia, business, and professional practices. Raw data alone can be very complex to make sense of. Data analysis breaks data down into understandable charts and graphs, transforming it into useful information. Once key information is obtained through analysis, the next step is presenting the data visually. Effective graphical presentation helps get better responses and outcomes. Presenting data effectively is an art. Even if research findings are complex, data presentation makes them easy to quickly understand. As research has become more advanced, effective data presentation is crucial to communicate insights.

◆ *Depicting relationship between different datasets*

Data presentation refers to using graphs and charts to visually represent relationships between datasets. This allows informed decisions to be made based on the data. The key is transforming complex data into clear, meaningful visual stories.

4.4.2.1 Types of Data Presentation

Broadly speaking, there are three methods of data presentation:

- ◆ Textual
- ◆ Tabular
- ◆ Diagrammatic

1. Textual Ways of Presenting Data

◆ *Descriptive presentation of data*

Textual presentation involves communicating data findings through written descriptions and narratives. This is the simplest approach, where you explain the results in words, sentences, and paragraphs. The main advantage is it's straightforward to write out your findings. The disadvantage is that readers have to read through all the text to fully understand the message. Summaries and conclusions can help shorten the key points. However, long blocks of text can be tough to scan for insights. Readers may miss key information hidden in the details. Text alone lacks visuals to convey complex insights efficiently. So while it may be easy to produce, textual presentation risks being inefficient for comprehending complex data.

2. Tabular Ways of Data Presentation and Analysis

◆ *Use of tables to advance the descriptive representation*

To make data easier to understand than pure text, tables and charts are commonly used. In tables, data is organized into rows and columns. Each row or column has an attribute label like name, year, gender, age. The data values are then entered into the cells. This matches data to specific attributes. For example, a table showing cricket players' runs would have columns for player name, year, and runs scored. The rows would represent each player's scores for that year. This formats the data into an easy to scan structure. Charts visually present data using graphs like bar charts, line charts, or pie charts. They plot the data to show relationships between attributes. Charts allow patterns and trends to be seen at a glance. Tables and charts make data more accessible than text blocks. The visual formats are easier to quickly comprehend. Relationships become more apparent. So tables and charts improve clarity and understanding compared to just textual presentation.

3. Diagrammatic Presentation

◆ *Visual representation through graphical aids*

Diagrammatic presentation refers to visually displaying data using charts, graphs, and other pictorial representations, rather than just numbers or text. Some common types of diagrams used in statistics include: Bar chart, pie charts, Line graphs, histogram, scatter plots, etc. The main advantage of diagrams is that they quickly and clearly visualize the patterns, trends, and relationships in data. By representing data visually instead of just numerically, diagrams can reveal insights that are hard to see from the numbers alone. This makes diagrammatic presentation a very useful analysis tool in statistics. The visual format highlights key information and makes it easier to understand at a glance.

4.4.3 Writing Research Report

A research report is a well-crafted document that outlines the process, data and finding of a systematic investigation. It is an important document that serves as a first-hand account of the research process and it is typically considered as an objective and the accurate source of information. A research report presents the findings of an in-depth study on a particular topic. It typically begins with an introduction that provides background information, states the research goals and questions, and explains why the topic is significant. The methods section details how the research was conducted,

◆ *Accounting the research process*

including the study design, data collection procedures, instruments utilized, variables examined, and limitations. The results section reports the data and main findings, often using tables, graphs, and statistics. The discussion section interprets the findings, relates them to previous research, draws conclusions, and identifies implications. The conclusion summarizes the main interpretations, highlights key findings, and makes suggestions for further research. A research report also includes a literature review summarizing past studies, a list of references, and appendices with supplementary information. This report structure facilitates clear communication and enables readers to efficiently assess the study, methods, results, and conclusions.

4.4.3.1 Functions of Research Report

A research report serves several important functions:

◆ *essentials of a research report*

1. Communicates research findings and conclusions clearly and logically to readers. The structured format helps convey the key information from the study.
2. Provides transparency about the research methodology, data, and analyses, allowing readers to critically evaluate the study's validity and reliability.
3. Allows other researchers to understand the study fully and potentially replicate or expand upon it. This supports the accumulation of scientific knowledge.
4. Persuades readers to accept the findings and conclusions because of the comprehensive documentation and justification.
5. Records the research systematically so that it becomes part of the scholarly record and literature on the topic for future researchers.
6. Demonstrates the research skills and academic capabilities of the author(s), important for building credentials.
7. Makes research accessible to practitioners who can apply the findings to real world contexts and use knowledge learned to inform their work.
8. Share knowledge that may lead to practical applications, new policies, innovative solutions, or other advancements that benefit society.

◆ *Conclusive document about the research process*

9. Provides visibility for research that may otherwise go unseen and make no contribution to the field.
10. Allows critical feedback and review from others that can strengthen research and identify flaws or limitations.

4.4.3.2 Components of a Research Report

A research report is usually broken down into multiple sections which allow for a concise presentation of information.

Pre-factory items

◆ *Prerequisites in a research report*

1. **Title-** This is the title of your systematic investigation. Your title should be concise and point to the aim, objective and findings of a research report.
2. **Certificate of the guide-** In the format as prescribed in its contents must strictly be adhered and duly signed by the concerned guide.
3. **Declaration by the candidate-** He/she should declare that all information given by him/her in the Research is true and correct to the best of his/her knowledge
4. **Acknowledgement-** It must specify the gratitude offered to the people's concerned instrumental in finalization of report. eg. parents, teachers, friends, guides, etc. And it must be signed by the student concerned.
5. **Table of Content-** Index must be specified with appropriate topic and page- number as specified
6. **List of Table-** The list of table names and locates any table in a report or similar document.
7. The figures and tables are not listed together, but the lists follow the same guideline and use the same form.
8. **List of figures-** List of figures, identifies the titles and location of visuals [fig, drawing, photo] in administrative or research documents.
9. **List of appendices-** Appendix may include
 - ◆ supporting evidence
 - ◆ contributory facts
 - ◆ sample calculation

BODY

1. Introduction

The introduction to a research is where you set up your topic and approach for the reader, it provides background or summarizes existing research. Detail your specific research problem.

2. Review of Literature

A literature review surveys the books, scholarly articles and any other source relevant to a particular issue, area of research or theory and critical evaluation of these works in relation to the research problem being investigated.

3. Statement of the Problem

A problem statement is a concise description of an issue to be addressed or a condition to be improved upon. The statement of the problem briefly addresses the question, what is the problem that the research will address, what are the goals of the statement of the problem.

◆ *components of body'*

4. Significance of research problem

A research problem helps you formulate the sequence. Research problems also help you avoid unnecessary steps during the research. Here the researcher should mention the relevance of the study.

5. Objective

The objective of research is to discover answers to the question through the application of scientific method which are defined properly.

6. Methodology

It is the section in which you describe the actions you took to investigate and research a problem and your rationale for the specific processes and technique you see within your research to identify, collect and analyze information that help you to understand.

7. Type of research

It describes the type of research you perform and how you develop your research method. This section also discusses the question or problem you investigate through your research



and the type of data you need to perform evaluation and research assessment.

8. Period of study

The study duration is of data collection starting from commencement of data collection till end.

9. Area of Study

Specify the area where your research has taken place

10. Hypothesis

A hypothesis states your prediction about what your research will find. It is a tentative answer to your research question that has not been tested yet.

11. Definition of concept

Researchers generate concepts by generalizing from particular facts. Concepts are based on our experiences.

12. Source of Data

Data sources can include data that are already collected and data that will be collected during the study

13. Tools of data collection

Here we mention the tools used to collect the data.

- a. Qualitative data: observation, interview guide
- b. Quantitative data: questionnaire, interview

14. Variables

In research, variables are any character that can take on the different values such as height, age, temperature or test score.

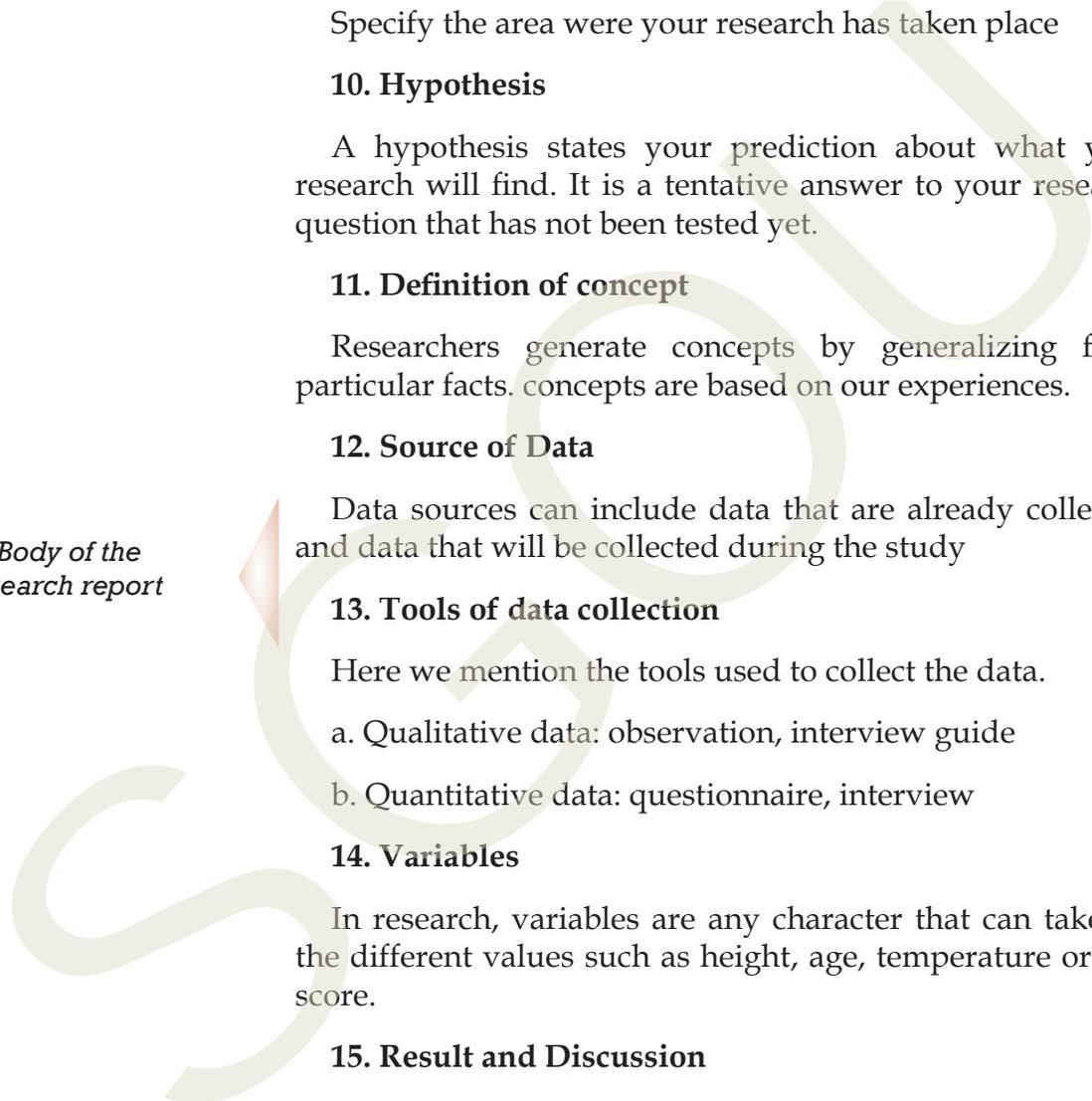
15. Result and Discussion

The result section is a section containing a description about the main findings of a research, whereas the discussion section interprets the result for the reader and provides the significance of the findings.

16. Summary of the research and the conclusion

Summary refers to the concise statement of account of the key point of a text, research or essay. The conclusion is that

◆ *Body of the research report*



section of the text, research, book or essay which serve as the final answer to a research question.

Terminal items

1. Bibliography

It is a list of sources including books, articles or journals the researcher is referred to while preparing their work.

2. Thesis

Thesis is your proposed answer to your research question, which you finalize only after completing the research.

3. Use of Appendix

An appendix contains supplementary material that is not an essential part of the text itself but which may be helpful in providing a more comprehensive understanding of research problems.

4. Indexing

It is an ordered list of cited articles, each accompanied by a list of citing articles.

◆ *Items for summing up of research report*

Summarised Overview

The unit discusses various methods for effectively presenting and representing data in statistics and research reports. It first explains diagrammatic data presentation, which involves visually displaying data using charts, graphs, and pictorial representations rather than just numbers or text. Common diagram types like bar charts, pie charts, line graphs, scatter plots, and histograms are described, showing how each visualizes patterns, trends, and relationships in data. Diagrams reveal insights not easily seen from numbers alone. The main advantage is quickly and clearly conveying key data insights visually. The text then covers different data presentation types - textual, tabular, and diagrammatic. Textual uses written descriptions but can be inefficient for complex data. Tabular uses tables and charts to organize data into visual formats that are easier to comprehend. Diagrammatic goes further by picturing data visually. Effective graphical presentation helps communicate insights efficiently. Next, the text discusses components of a research report, which presents study findings logically and transparently. Key sections covered

include the introduction, literature review, methods, results, discussion, and conclusion. Functions of a report like recording findings, enabling replication, and sharing knowledge are highlighted.

Assignments

1. Create a bar chart, pie chart, and line graph to represent a dataset of your choice. Write 2-3 sentences analyzing what insights each diagram provides.
2. Write a short research report on an experiment or study you conducted. Include an introduction, methods, results, and discussion section.
3. Evaluate two research papers in your field. Compare their use of data presentation and representation. Which paper conveyed findings more effectively? Why?
4. Select 3-5 key graphs or tables from a published research paper. Explain why the authors chose those specific data presentations and what insights they enabled.
5. Write a literature review summarizing 5-7 sources on a specific topic. Synthesize the sources and explain how they relate to each other and your research question.

Suggested Reading

1. Khan, A., & Smith, J. (2020). *Effective Data Visualization in Research Reports*. *Journal of Research Communication*, 55(3), 422-441. <https://doi.org/10.1234/jrc.2022.55.3.422>
2. Lee, C., Jones, A., & Johnson, K. (2021). *Diagrammatic Presentation of Complex Statistical Data*. *The Visual Communication Journal*, 33(2), 77-99. <https://doi.org/10.1080/00025677.2021.1901114>



Reference

1. Williams, S. (2019). *Writing Impactful Research Reports: A Guide for Young Scientists*. Sage Publishing.
2. Xu, L., & Chow, M. (2017). *Tabular, Textual and Diagrammatic Presentation of Data: An Empirical Investigation*. *The American Statistician*, 71(3), 205-211. <https://doi.org/10.1080/00031305.2016.1277159>
3. Smith, R., & Sandhu, P. (Eds.). (2022). *Data Visualization: Principles, Techniques and Practices*. Springer Nature. <https://doi.org/10.1007/978-3-030-80645-8>

Space for Learner Engagement for Objective Questions

Learners are encouraged to develop objective questions based on the content in the paragraph as a sign of their comprehension of the content. The Learners may reflect on the recap bullets and relate their understanding with the narrative in order to frame objective questions from the given text. The University expects that 1 - 2 questions are developed for each paragraph. The space given below can be used for listing the questions.



SGOU



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QP CODE:

Reg. No :

Name :

Model Question Paper- set-I

SECOND SEMESTER MA SOCIOLOGY EXAMINATION
DISCIPLINE CORE M21SO06DC- RESEARCH METHODS IN SOCIOLOGY

(CBCS - PG)

2022-23 - Admission Onwards

Time: 3 Hours

Max Marks: 70

Section A - Objective Type Questions

Answer any ten questions in a word or sentence each. Each question carries 1 mark.
(10x1=10 marks)

1. ----- aims at the evaluation of the quality implementation and serves as feedback for improving the performance.
2. Which sampling technique ensures that each and every participant has an equal opportunity at selection?
3. Which organization is responsible for large scale multi round survey conducted in a representative sample household throughout India?
4. Who developed Thurstone scale?
5. ----- aims at data driven decision making, hypothesis testing and knowledge generation.
6. From the given data calculate mode:
50,70,80,180,150,120,70,50
7. Which is a statistical hypothesis test that compares a sample mean to a known population to determine if there is a significant difference between the two?



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8. ----- is a programming language and software focused on statistical analysis and graphics.
9. Which is the theoretical movement that brings an alternative philosophical assumption regarding reality construction and knowledge production?
10. Participants may change their behavior if they know they are being studied this is known as-----.
11. The effort to establish Indian sociology in its own footing different from that of western or colonial categories led to the inception of -----.
12. -----is a research tool used to determine the presence of certain words, themes, concepts within some qualitative data.
13. Who developed analytic induction?
14. Which is method uses multiple data sets and methods to address a research question?
15. ----- is a proposed answer to your research question which is finalised after completing the research. price index

Section B- Very Short Questions

Answer any five of the following. Each question carries 2 marks

(5x2=10 marks)

16. In your opinion, is open ended question or closed ended question more beneficial in a questionnaire?
17. What are the features of social constructionism as discussed by McLeod?
18. Work out the range of the following values:
3,2,6,11,13
19. List and discuss briefly the three types of evaluation in research?
20. Calculate the arithmetic mean of the following data set:
82,23,59,94,70,26,32,83,87,94,32

21. Calculate the standard deviation from the following data:

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

22. What do you mean by MANOVA?

23. What is SITE?

24. What is participant observation?

25. Differentiate between PRA and PLA?

Section C- Short Answer

Answer any 5 questions. Each question carries 4 marks

(5x4=20 marks)

26. Discuss the steps for locating and recruiting qualitative study participants through site-based approach?

27. Briefly discuss the history of field research in India?

28. How is PRA substantial in empowering the poor and marginalized communities, Discuss?

29. Explain the different types of mixed method designs?

30. Calculate the appropriate measures of dispersion from the following:

Wages in Rs per week	No. of wage earners
Less than 35	14
35-37	62
38-40	99
41-43	18
Over 43	7

31. Calculate median and upper quartile for the following data:

22, 27, 15, 25, 30, 18, 27, 20, 21, 35, 23

32. Differentiate between questionnaire and interview schedule?

33. List and explain different types of non-probability sampling methods?

Section D- Long Answer/Essay Question

Answer any 3 questions. Each question carries 10 marks

(3x10=30 marks)

34. Examine and explain the process of classification, tabulation and interpretation of quantitative data?
35. Draw a bar chart, pie chart and line graph for a data set of your choosing and follow it up with concluding remarks and inferences?
36. Does triangulation enrich qualitative research? Justify
37. Critically discuss the concept of reflexivity and evaluate why is it considered important in post-positivist qualitative research?
38. Find the mean, median and mode from the following frequency distribution:

Output	No of workers
300-309	9
310-319	20
320-329	24
330-339	38
340-349	48
350-359	27
360-369	17
370-379	6

39. Find the quartiles and quartile deviation of the following data:
17, 2, 7, 27, 15, 15, 14, 8, 10, 24, 48, 10, 18, 7, 18, 28



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Model Question Paper- II

SECOND SEMESTER MA SOCIOLOGY EXAMINATION
DISCIPLINE CORE M21SO06DC- RESEARCH METHODS IN SOCIOLOGY

(CBCS - PG)

2022-23 - Admission Onwards

Time: 3 Hours

Max Marks: 70

Section A - Objective Type Questions

Answer any 10 questions. Each question carries 1 mark

(10x1=10 marks)

1. -----researchers fail to distinguish people and social institutions from the world of nature.
2. A smaller representation of a sample is known as -----.
3. -----is a property that takes on different values.
4. Likert Scale is named after -----.
5. What is the formulae to calculate mode when no item appears a greater number of times than others?
6. Which test makes comparison between two or more nominal variables?
7. -----describes the variations and scatter of values inside a series.
8. -----is an open source general programming language also widely used for social network analysis?
9. By observing and interviewing people in their natural settings field research has high -----validity.
10. Places, organization or services used by members of the population of interest is known as -----.
11. -----emerged as an opposing view that empirical science is the only source of meaningful knowledge.

12. Which approach is designed to generate a representative or stratified sample for qualitative research in large community-based studies?
13. Who coined the term Action Research?
14. -----is a qualitative research approach whereby researcher analyses the stories people narrate.
15. -----analysis involves identifying common themes or patterns within qualitative data sources. What inscription found in Afghanistan provides information about Kanishka?

Section B- Very Short Questions

Answer any 5 questions. Each question carries 2 marks

(5x2=10 marks)

16. The following is the monthly salaries in rupees of the employees in a branch bank, Calculate the arithmetic mean.

10, 17, 29, 95, 100, 100, 175, 250, 750

17. Find the mode of the following series:

Size	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Frequency	40	48	52	56	60	63	57	55	50	52	41	57	63	52	48	40

18. List the uses of statistics in research?
19. How has the use of computer application in social research transformed data analysis? State your opinion?
20. What are the things to be considered while preparing a questionnaire?
21. What is non probability sampling?
22. What are the features of structured observation?
23. What do you mean by Life cycle method?
24. Who is referred to as the gate keeper in the research process and what role do they play?
25. In your own words, briefly state what is post-modernist paradigm?.

Section C- Short Answer

Answer any 5 questions. Each question carries 4 marks

(5x4=20 marks)

26. Discuss the factors that a researcher should be mindful of while making selection of a site?
27. Discuss the advantages and disadvantages of field research?
28. Identify and discuss different types of content analysis?
29. What is discourse method? List and explain different types of discourse analysis?
30. List and explain the different types of probability sampling methods?
31. Given is the age of children in a science fair:
10,12,13,10,11,14,15,10,12
Calculate the mean, median, mode and range
32. You are given two variables A and B. using quartile deviation, state which is more variable.

A		B	
Mid – point	Frequency	Mid – point	Frequency
15	15	100	340
20	33	150	492
25	56	200	890
30	103	250	1420
35	40	300	620
40	32	350	360
45	10	400	187
		450	140

33. Discuss the advantages and disadvantages in using an interview schedule?

Section D- Long Answer/Essay Question

Answer any 3 questions. Each question carries 10 marks

(3x10=30 marks)

34. Elucidate the difference between Likert Scale and Thurstone scaling techniques with examples?
35. Discuss in detail what focus group discussion is and emphasize on the steps to conduct a successful focus group discussion?
36. Explain the method and techniques of participatory rural appraisal?
37. Critically discuss the phenomenological perspective and assess what are phenomenologists aiming to understand through their research?
38. Draw the histogram and obtain graphically the mode from the following data

Profit in Rs	5-9	10-14	15-9	20-24	25-29	30-34	35-39
No of shops	8	18	27	21	10	28	8

39. Calculate coefficient of correlation, using Karl Pearson's formula based on actual mean value of the series given below.

Year	Index of Industrial Production	No of Unemployed People in Thousands
2010	100	11.3
2011	102	12.4
2012	104	14.0
2013	107	11.1
2014	105	12.3
2015	112	12.2
2016	103	19.1
2017	94	26.4

സർവ്വകലാശാലാഗീതം

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വിശ്വപൗരരായി മാറണം
ഗ്രഹപ്രസാദമായ് വിളങ്ങണം
ഗുരുപ്രകാശമേ നയിക്കണേ

കുരിശിൽ നിന്നു ഞങ്ങളെ
സൂര്യവീഥിയിൽ തെളിക്കണം
സ്നേഹദീപ്തിയായ് വിളങ്ങണം
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Research Methods in Sociology

COURSE CODE: M21SO06DC

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